CONSERVATION ELEMENT

OF THE

CITY OF LOS ANGELES GENERAL PLAN

City Plan Case No. 2001-0413-GPA
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INTRODUCTION

The state (1970 and 1971) requires that conservation and open space elements be included in city and county general plans. The latter is to address conservation, protection, development, utilization and reclamation of natural resources. The former is to address the remaining natural and other open space resources. The emphasis of state law is on "natural" resources. Guidelines prepared by the Governor's Office of Planning and Research make clear that subject areas to be addressed by these and other general plan elements often overlap. Jurisdictions are allowed to organize their general plans in accordance with their unique needs and conditions. Los Angeles has opted to place the conservation aspects of open space within its Conservation Element.

In the interim since the adoption of the city's first conservation and open space plans (1973) much has changed. The environmental movement of the 1970s and 80s and concerns about public health, quality of life, environmental protection and other issues spawned laws, court actions and requirements which changed jurisdictional authority and mandated implementation programs to protect natural resources. Consequently, many of the areas to be addressed by the elements are now more fully addressed by other legal requirements and other mandated plans.

This Conservation Element surveys laws, requirements and procedures which have been established for protection of natural resources. It primarily is an informational document which is designed to help readers understand the context, history and opportunities for protection and improvement of the city's natural resources.

The alphabetical topical organization of the element is to assist people in finding information about subjects that relate to their areas of interest. Each topical section includes references to related sections and plans. Given the scope of the topics covered, the element is intended as a general reference, not a comprehensive encyclopedia of information about all related laws and programs.

CHAPTER I: BACKGROUND

PLANNING AREA

The element relates to the entire city of Los Angeles.

DEMOGRAPHICS

The 1990 federal census estimated that the city's population was 3,485,399 individuals.

CALIFORNIA GENERAL PLAN REQUIREMENTS

Mandated elements and zoning. In 1970-71 the State of California required cities and counties to adopt general plan conservation and open space elements by 1973 (Government Code Section 65302). The Los Angeles conservation and open space plans were adopted in 1973. They were deemed by the state to be in compliance with its laws.

The requirements for the conservation and open space elements are among the most detailed and complex of any of the seven mandated elements. The other mandated elements are land use, circulation, housing, noise and safety.

General plan consistency and relationship to other elements. State law recognizes that state requirements regarding the content of one element may overlap the requirements for another. Therefore, it allows the required information to be contained in one element and to be incorporated by reference in another. State law also allows local jurisdictions to organize their general plans in a manner that is appropriate to the jurisdiction and needs, providing that all general plan requirements are met.

All elements and parts of a general plan are required to be integrated, internally consistent and compatible (Government Code Section 65300.5). The Conservation is consistent with all adopted elements of the city's general plan.

Scope of element. State law intends that conservation elements address "conservation, development, and utilization of natural resources including water and hydraulic force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals, and other natural resources." State general plan legislation was amended (1995) to require that preparation of the water portion of the general plan address water and land reclamation, water (including ocean) pollution,

regulation and use of land in stream beds, erosion, watershed protection, flood control and rock, sand and gravel resources.

Open space, as defined by the California Government Code (Section 65560), is "any parcel or area of land or water that essentially is unimproved and devoted to an open-space use," including:

(1) preservation of natural resources, e.g., preservation of flora and fauna (animal habitats), bird flyways, ecologic and other scientific study areas, watershed;

(2) managed production of resources, e.g., recharge of ground water basins or containing mineral deposits that are in short supply;

(3) outdoor recreation, e.g., beaches, waterways, utility easements, trails, scenic highway corridors; and/or

(4) public health and safety, e.g., flood, seismic, geologic or fire hazard zones, air quality enhancement.

Identification, preservation, protection and management of the natural resources is a primary thrust of the state open space and conservation element requirements. As is allowed by state law, Los Angeles has organized its general plan to meet its own particular circumstances and needs. It has opted to incorporate natural open space, agricultural and other open space features of the state's open space requirements into this Conservation Element. The Conservation Element references other city plans that address mandated subjects, including water supply and demand, which is addressed by city water plans and the general plan Infrastructure Systems Element. The Conservation Element primarily addresses preservation, conservation, protection and enhancement of the city's natural resources.

Requirements and related issues addressed by other elements. Conservation and open space subjects that are required or suggested by state law and the Governor's Office of Planning and Research Guidelines, and which are not addressed or only in part by this element, are included in other general plan elements, such as:

-- air quality (Air Quality Element);

-- bicycle paths (Transportation and Open Space elements);

-- equestrian and hiking trails (Public Facilities and Services Element and Open Space Element);

-- electrical energy resources and systems (Infrastructure Systems Element);

-- fire, flood, geologic and seismic hazard (Safety Element);

-- landfills (Infrastructure Systems Element);

-- parks (Public Facilities and Services Element and Open Space Element);

-- rivers and streams (open space aspects by Open Space Element; drainage systems by Infrastructure Systems Elements; flood hazard also by Safety Element);

-- scenic highways (Transportation and Open Space elements);

-- water resources (Infrastructure Systems Element).

Implementation. This element is implemented by the various city regulations and programs described herein, consistent with the implementation requirements of state general plan law (Government Code Section 65400). In addition, some of the above listed elements and individual community plans, which comprise the Land Use Element, address conservation related land use and systems issues.

TECHNICAL REFERENCES. During the preparation of this element the primary sources for technical information were enforcement and resources management agencies. Exhibits were prepared from the planning department's geographic information system (GIS).

FORMAT. Chapter II surveys resources that are to be conserved. It is organized alphabetically according to topic. The table of contents provides subheadings to assist the reader with subject searches. The text includes general historic, legislative and program information, along with cross references to related plans and information sources and a summary of continuing issues that need to be addressed by city government.

The objectives, policies and programs are those that are within the jurisdiction of the City of Los Angeles. Programs related to matters outside the authority of the city are not listed. The element contains a single goal which applies to all topics.

The "General Plan Guidelines" issued by the Governor's Office of Planning and Research (1998) advises that a general plan should contain goals, objectives, policies, programs and implementation monitoring. Goals are described as a general setting of direction, objectives as

intermediate steps in attaining the goal, policies as specific guides to decision making and programs as specific means of achieving the policies. Each policy is to have at least one corresponding implementation measure. The element complies with these guidelines.

CHAPTER II: RESOURCE CONSERVATION AND MANAGEMENT

Topics are addressed alphabetically. The emphasis, in keeping with state law, is on conservation and preservation of natural resources. Facilities and systems, including standards relating thereto, will be addressed by the Public Facilities and Services, Infrastructure Systems or other elements of the general plan.

Goal, objectives, policies and programs (an asterisk * indicates the program lead agency, if any). One goal applies to all sections.

Goal 1: a city that preserves, protects and enhances its existing natural and related resources.

SECTION 1: AGRICULTURAL LANDS

A few parcels of land in the city is deemed significant farmland by the state geologist (Exhibit B), e.g., a significant commercial crop or animal producing site. the largest of these is the Open Space Zone portion of Pierce College (Woodland Hills). Its agricultural use is related to the state community college's educational curriculum.

Until World War II the city was an important center for agriculture in California. Los Angeles was established by Spain in 1781 as an agricultural way station to provide supplies for Spanish military forces. By the time California achieved statehood (1850), the Los Angeles economy was primarily cattle ranches, vineyards, wineries and grain fields. Following statehood, immigrants, mostly from the midwestern and eastern United States, began establishing fruit and vegetable farms. A series of droughts (1864-76) killed thousands of cattle and caused ranchers to subdivide and sell their large holdings for conversion to orchards, vineyards, wineries and vegetable farms. By 1876 the city's economy had shifted from a ranch to a farm economy and sheep raising had been introduced. With the opening of the Los Angeles aqueduct (1913) agricultural uses expanded, particularly in the San Fernando Valley where irrigation turned desert lands into rich farmlands. By World War II Los Angeles was the home of the largest dairy and egg farms in the nation and one of the principal sources for lima beans. New vineyards and wineries, citrus groves and fruit orchards continued to be established.

City planners were so confident that agriculture would remain a permanent part of the city's economy that they planned (1944) new Valley urban centers surrounded by agricultural lands. The plan was radically changed when the county tax assessor reassessed the Valley farmlands to "higher" uses, envisioning the need for housing to

accommodate the rapidly growing population. By the time the city's new zoning ordinance was adopted to implement the plan (1947), farmers already were selling their holdings and moving their businesses outside the city. Zone changes and subdivisions rapidly transformed farmlands into residential tracts to provide homes for workers in the burgeoning aeronautics and other industries that were established during and following World War II.

Between the 1940s and 1960s the Los Angeles economy shifted from an agricultural to an industrial and commercial economy. Today only the Pierce College parcel remains. The college master plan, approved in 2000, designates the parcel for agricultural and related uses.

Conclusion. The largest significant agricultural site in the city is within Pierce College. Reuse of the site is under consideration by the state, which owns the property.

Continuing issue: potential conversion of the Pierce College agricultural resource site to other uses.

Agricultural lands objective, policy and program:

Objective: retain in agricultural use, as appropriate, the last state-designated significant agricultural parcel within the city, the Pierce College parcel.

Policy: continue to work with the college and neighbors to encourage the retention of the parcel in agricultural use for educational and related purposes, which are compatible with neighboring uses.

Program: periodic Canoga Park-Winnetka-Woodland Hills Community Plan review and revision.

Responsibility: *Department of City Planning.

For related information see: Animal Keeping, Nurseries, Crop Gardens Section.

SECTION 2: ANIMAL KEEPING, NURSERIES, CROP GARDENS

Some lands, mostly in the San Fernando Valley, are zoned for agricultural or animal keeping uses and are improved with small garden plots and/or animal oriented uses (e.g., equine boarding, petting zoos, private animal keeping). These uses and the equine trail systems help preserve the historic rural character of sections of the city. Commercial nurseries still exist throughout Los Angeles. Through planning and infrastructure decisions, Los Angeles has encouraged

establishment and retention of rural uses. For example, small parcels of public land have been formally or informally opened for neighborhood gardens tended by local residents; special overlay districts and equine oriented parks and trails have been established to encourage equine uses; and power system rights-of-way and other public lands have been leased for nurseries.

Continuing issue: loss of the last remaining animal keeping, nursery and crop gardening uses.

Animal keeping, nurseries, crop gardens objective, policy and program:

Objective: retain, to the extent feasible, the last remaining agricultural features of the city as part of the city's heritage and economy.

Policy: continue to encourage the retention of parcels in agricultural and low density land use and zoning categories that will encourage their retention in agricultural and related uses.

Program: community plan review and revision.

Responsibility: *Department of City Planning.

For related information see:

N Agricultural Lands Section and

N Equine Areas Section.

SECTION 3: ARCHAEOLOGICAL AND PALEONTOLOGICAL

Archaeological. Pre-historic and historic archaeological sites exist throughout the city. Hunter-gatherer Indians inhabited the Los Angeles region long before Europeans arrived. Remnants of their various cultures continue to be unearthed and documented. The oldest find is the partial skeleton of La Brea Woman, among the oldest human bones ever found in California. She is believed to have been buried approximately 9,000 years ago. Her grave became engulfed in tar and was discovered in 1914, during an excavation for tar ("brea") in what is now called La Brea Tar Pits in the Wilshire community.

Site protection. Various federal, state and local regulations have been promulgated to protect archaeological sites and resources. Although the state general plan law calls for mapping of the sites, all mapping of pre-historic sites is confidential, pursuant to California Government

Code Section 6254.10. This is to protect sites from disturbance, scavenging and vandalism.

The federal Archaeological Resources Protection Act of 1979 (Public Law 96-95) protects archaeological resources and sites on federal and Indian lands, including requirements for issuance of permits by federal land managers to excavate or remove archaeological resources. The Native American Graves and Repatriation Act (1990) and the Native American Heritage Act (1984 and 1992) provide guidelines for protection of Native American remains and artifacts.

The California Environmental Quality Act (CEQA) provides guidelines for identification and protection of archaeological sites and artifacts as a part of local development permit processing. CEQA guidelines define an archaeological resource as "significant," i.e., to be protected if: (1) it is associated with an event or person of recognized significance to California or American history or of recognized scientific importance in pre-history, including culturally significant Native American sites; (2) it can provide information that is of demonstrable public interest and is useful in addressing scientifically consequential and reasonable archaeological research questions; (3) it has a special or particular quality, such as the oldest, best, largest or last surviving example of its kind; (4) it is at least one hundred years old and possesses substantial stratigraphic integrity; or (5) it involves important research questions that historical research has shown can be answered only with archaeological methods.

If it is determined that a development project may disrupt or damage such a site, the project is required to provide mitigation measures to protect the site or enable study and documentation of the site, including funding of the study by the applicant. The city's environmental guidelines require the applicant to secure services of a bona fide archaeologist to monitor excavations or other subsurface activities associated with a development project in which all or a portion is deemed to be of archaeological significance. Discovery of archaeological materials may temporarily halt the project until the site has been assessed, potential impacts evaluated and, if deemed appropriate, the resources protected, documented and/or removed.

Under CEQA, discovery of human remains requires evaluation by the county coroner of the nature of the remains and cause of death. If the remains are determined to be of Native American origin, the Native American Heritage Commission is asked to determine the descendants who are to be notified or, if unidentifiable, to establish procedures for burial.

The state-designated repository in the Los Angeles area for archaeological data is the South Central Coastal Information Center. Reports concerning archaeological investigations are to be filed with the center. Other academic institutions, research facilities and museums in the area also have archaeological resource information and expertise.

Paleontological. Los Angeles is rich in paleontological sites. Fossils have been found mostly in sedimentary rock that has been uplifted, eroded or otherwise exposed. Most of the sites are in local mountains. However, the best known and most abundant fossil resource are La Brea Tar Pits, which are owned and operated by the County of Los Angeles. They are within and surround the 23-acre Hancock Park, which includes an art museum and the Page Museum (tar pit related displays and activities). The tar pits have provided an abundance of animal and plant fossils. Most are from the Pleistocene epoch (Ice Age) and date as far back as 40,000 years. Finds include mammoths, saber-tooth cats, insects and birds.

Site protection. Pursuant to CEQA, if a land development project is within a potentially significant paleontological area, the developer is required to contact a bona fide paleontologist to arrange for assessment of the potential impact and mitigation of potential disruption of or damage to the site. If significant paleontological resources are uncovered during project execution, authorities are to be notified and the designated paleontologist may order excavations stopped, within reasonable time limits, to enable assessment, removal or protection of the resources. For Los Angeles city and county, the Los Angeles County Museum of Natural History, including the George C. Page Museum, provides advice concerning paleontological resources.

Conclusion. The city has a primary responsibility in protecting significant archaeological and paleontological resources.

Continuing issues: loss of or damage to archaeological and paleontological sites due to development, unauthorized removal and vandalism.

Archaeological and paleontological objective, policy and program:

Objective: protect the city's archaeological and paleontological resources for historical, cultural, research and/or educational purposes.

Policy: continue to identify and protect significant archaeological and paleontological sites and/or resources known to exist or that are

identified during land development, demolition or property modification activities.

Program: permit processing, monitoring, enforcement and periodic revision of regulations and procedures.

Responsibility: departments of *Building and Safety, *City Planning and Cultural Affairs and/or the *lead agency responsible for project implementation.

For related information see: Cultural and Historical Section.

SECTION 4: CONSERVATION

Conservation is the managed or controlled use of natural, cultural and historical resources. In Los Angeles it includes a diversity of programs, including acquiring, preserving and protecting large tracts of open space for habitat conservation, species protection, watershed maintenance and other purposes; acquiring, preserving and protecting cultural and historical resources; reducing the demand for nonrenewable mineral and petroleum resources, water and other natural resources; recycling water, wood products, metals, glass and other materials. Conservation is addressed by various sections of this element in relation to particular subject matter.

SECTION 5: CULTURAL AND HISTORICAL

The city's form, institutions and culture have been shaped by a diversity of events, individuals and groups and the city's environmental setting. Modern cultural history of Los Angeles dates to the establishment of the pueblo (town) in 1781 by a Spanish expedition which originated in Sonora of Lower California (now Mexico). With the establishment of the Republic of Mexico (1821) Los Angeles came under Mexican rule. From 1847 to 1850 it was occupied by United States military forces. In 1850 California became a state of the United States and Los Angeles became a U.S. city. A combination of the gold rush and the opening of California spurred immigration, mostly by settlers from the midwest and eastern United States. Population growth continued almost unabated until the 1970s. Settlers, merchants and imported workers brought new cultural traditions or reinforced old traditions. Today over 100 languages and dialects are spoken in the local schools, over 42% of the population is of Hispanic origin, over 12% of African American origin, slightly under 10% of Asian and Pacific Islander origin and one percent is Native American.

To identify, protect and preserve historic sites and structures for the enrichment of future generations various city, state and federal

procedures have been promulgated. The most significant for Los Angeles are described in the following. The general plan Historic Preservation and Cultural Resources Element will address historic and cultural protection issues in greater detail.

Conservation and protection. Five types of historic protection designations apply in the city: (1) Historic-Cultural Monument designation by the city's Cultural Heritage Commission and approved by the City Council; (2) placement on the California Register of Historical Resources or (3) the National Register of Historic Places (1980 National Historic Preservation Act); (4) designation by the Community Redevelopment Agency (CRA) as being of cultural or historical significance within a designated redevelopment area; and (5) classification by the City Council (recommended by the planning commission) as an Historic Preservation Overlay Zone. Designations help protect structures and support rehabilitation fund requests.

The California Environmental Quality Act (CEQA) also protects significant cultural and historic resources. CEQA was revised in 1998 to redefine "historic resource" to include resources that are presumed to be significant, unless the preponderance of evidence is to the contrary. A property no longer must be designated officially as a landmark or of historic importance to be considered under CEQA review. The lead agency for permit processing may deem properties not formally listed and not included in historic surveys as "historically significant," if they meet criteria for listing in the California Register.

Under the city's CEQA guidelines, an environmental assessment must be prepared for any proposed demolition, destruction or significant modification of an Historic-Cultural Monument or resource listed on the national or state registers, or on the CRA list, or cited as a proposed historical resource by a community plan or historic preservation overlay zone survey, or which are over 50 years old and are substantially intact examples of an architectural style important in Los Angeles or are associated with an architect or other person of importance in Los Angeles history. Under the 1998 amendment, buildings less than 50 years old may also be considered.

Historic-Cultural Monuments. In 1962, at the request of the Los Angeles Chapter of the American Institute of Architects, the city drafted and approved an ordinance designed to protect and/or identify architectural, historical and cultural buildings, structures and sites of importance in the city's history and/or cultural heritage. In the intervening 30 years the Cultural Heritage Commission (CHC) has designated almost 700 sites as Historic-Cultural Monuments.

The list of the designated sites is maintained by the CHC. It includes historic buildings, corridors (tree lined streets) and geographic areas. In some instances plaques have been erected on sites of historic events or former structures that were of cultural or historic significance. Sites are mapped on the city's zoning maps to guide permit processing. The building department will not issue permits for modification of a designated monument unless authorized to do so by the CHC, which may impose conditions of permit approval.

Additional protections apply to structures or sites that are listed on the state or national registers. The National Park Service administers the National Register of Historic Places and the California Office of Historic Preservation administers the state register. Criteria applied to determine qualification for the registers includes context (importance to an historic theme, place, time), integrity (location, design, setting, workmanship, materials) and, if a recent resource, exceptional importance.

The Community Redevelopment Agency maintains a list of buildings and structures of historical significance for purposes of project planning and evaluating neighborhood improvement proposals.

Historic Preservation Overlay Zones (HPOZ). The HPOZ provision of the zone code, Los Angeles Municipal Code (LAMC) Section 12.20.3, was adopted in 1979; amended 2001. It contains procedures for designation and protection of areas that have structures, natural features or sites of historic, architectural, cultural or aesthetic significance. Fourteen areas of the city are classified as HPOZs and twelve other areas are under study. HPOZ areas contain significant examples of architectural styles characteristic of different periods in the city's history. They may be a few blocks or a few square miles in area.

Property owners are encouraged to make property improvements that will enhance the historic character of the HPOZ area. Neighbors often join together to secure period street lights and other features that will contribute to historic and cultural emphasis. Alleys may be converted to park-like uses or street signs or circulation modified to support the HPOZ area goals. Street fairs and other activities generate community involvement and general public awareness of the unique area and help raise funds for neighborhood and property improvement.

A consultant to the planning department prepared (1997) a general survey of all pre-1950s structures within five community plan areas of the city. It provides a primary data resource for establishing future HPOZ areas and for guiding public and private efforts to preserve individual structures. The consultant also prepared a computerized survey, including digital photos, of historic structures within the

Highland Park HPOZ. Using the same techniques, staff are preparing similar surveys for other HPOZ areas. The data is used to assist city personnel and citizen design review boards in evaluating proposed projects and building modifications and to help them assess trends and devise preservation strategies.

Conclusion. The city has primary responsibility for identifying and protecting its cultural and historical heritage.

Continuing issues: loss of significant, important or contributory cultural and historical sites and structures to neglect, site redevelopment or damage.

Cultural and historical objective, policy and programs:

Objective: protect important cultural and historical sites and resources for historical, cultural, research, and community educational purposes.

Policy: continue to protect historic and cultural sites and/or resources potentially affected by proposed land development, demolition or property modification activities.

Program 1: development permit processing, monitoring, enforcement and periodic revision of regulations and procedures.

Responsibility: departments of *Building and Safety, *City Planning, *Cultural Affairs and *Community Redevelopment Agency and/or the *lead agency responsible for project implementation.

Program 2: prepare the Historic Preservation and Cultural Resources Element of the general plan.

Responsibility: departments of *City Planning and Cultural Affairs.

Program 3: continue to survey buildings and structures of any age in neighborhoods throughout the city in order to develop a record that can be used in the present and future for evaluating their historic and cultural value as individual structures and within the context of surrounding structures.

Responsibility: departments of Building and Safety, *City Planning, and *Cultural Affairs and the *Community Redevelopment Agency.

Program 4: continue to establish Historical Preservation Overlay Zones throughout the city.

Responsibility: departments of Building and Safety, *City Planning and Cultural Affairs and the Community Redevelopment Agency.

For related information see:

N Archaeological/Paleontological Section;

N "Cultural and Historical Monuments Plan, an Element of the Master Plan of the City of Los Angeles," Department of City Planning and Cultural Heritage Board, 1969.

N "Cultural Heritage Master Plan," under preparation by the Cultural Affairs Department.

N Historic-Cultural Monuments list, Cultural Heritage Commission, City of Los Angeles Cultural Affairs Department;

N "Historic Preservation and Cultural Resources Element," City of Los Angeles General Plan (to be prepared); and

N "Public Facilities and Services Element," City of Los Angeles General Plan (under preparation) for cultural and historical facilities within city parks.

SECTION 6: ENDANGERED SPECIES

Without protection of habitats suitable for species propagation, entire species of native plants and animals gradually will decline or become extinct. A couple of hundred plants and animals that live in Los Angeles habitats are listed on the federal and/or state endangered, threatened or species of special concern lists. Within the Santa Monica Mountains National Recreation Area alone 26 plants and animals are classified as rare, threatened or endangered and 58 more have been placed on the list of species of special concern by the National Park Service. Within the city more than 180 plant and animal species are listed by the Environmental Affairs Department for the city as a whole.

Definitions:

Endangered species. In danger of extinction throughout all or a significant portion of their range.

Sensitive species. All the plant and animal species classified as endangered, threatened, rare or of special concern.

Threatened species. Likely to become an endangered species in the foreseeable future.

Species of special concern. Rare, very restricted distribution, declining or at a critical life cycle stage when residing in California.

Species protection. Under the federal Endangered Species Act of 1973 (Public Law 93-205, 16 United States Code 1531 et seq.) the Secretary of the Interior or Secretary of Commerce determines which species are to be listed on the endangered or threatened species registers. Any species on these lists is protected. The current registries are available from the U.S. Fish and Wildlife Service which also maintains lists of sensitive species and species of special concern. Some of the animal species are further protected through international treaties, such as the migratory bird treaties that have been signed between the United States and Canada, Mexico and Japan and the Migratory Bird Treaty Act, which is administered by the U.S. Fish and Wildlife Service. The latter protects all common wild birds except house sparrows, starlings, feral pigeons and resident game birds. Under this act it is unlawful to kill, capture, collect, possess, import or export any migratory bird or items associated with them, such as feathers, parts, nests and eggs, except by permit for scientific purposes, falconry, Native American ceremonial purposes or taxidermy.

Under the California Endangered Species Act (Fish and Game Code, Division 3, Chapter 1.5) the California Fish and Game Commission establishes endangered and threatened species lists and lists of species classified as "of special concern."

The California Native Plant Protection Act (NPPA) prohibits the taking, import or sale of rare, threatened or endangered plant species, except as exempted by the act. Even where exceptions apply, where the Department of Fish and Game (DFG) has notified a property owner of the presence of such a plant, the property owner must notify the DFG before destroying the plant. This provides an opportunity for the state to salvage the plant.

With the passage of the National Environmental Policy Act (NEPA) in 1969, protection of significant features of the natural environment was mandated. NEPA applies only to projects in which federal funds are involved or where a major federal permit is required. The California Environmental Quality Act (CEQA) of 1970 established environmental protection procedures for processing land development projects within

the state. It provides the primary local means of identifying and protecting species listed in any of the sensitive species categories; protecting local species diversity and numbers; and evaluating potential impacts on and protecting habitats, wildlife dispersal and migration corridors.

If a protected species is identified as potentially impacted by a proposed development project, the developer is required by CEQA to provide protection of the species. Protection may involve project design to avoid disturbing, damaging or destroying the habitat; acquisition of all or part of the site by an environmental conservation or governmental agency for purposes of resource management; agreement to contribute to the protection of a habitat at another site; or some other mitigation measure. The DFG and/or U.S. Fish and Wildlife Service, often with the assistance of local environmental conservation organizations, works with the developer and city to devise a mitigation plan.

Protection/propagation enhancement programs. A few examples of sensitive species protection and propagation enhancement programs that exist within the city are described below.

Belding's Savannah Sparrow. The endangered sparrow lives in the Ballona wetlands. The Playa Vista development project mitigation measures include restoration of the wetlands. Restoration will include increasing the flow of water which will enhance the survival and growth of pickleweed upon which the sparrow depends for foraging, breeding and perching.

California condor and other endangered captive species. Zoos, including the Los Angeles Zoo, have joined with other organizations in efforts to research and carry out programs for propagation of endangered species, some of which no longer exist in the wild. For example, the Los Angeles and San Diego zoos have joined with the Peregrine Fund and U.S. Fish and Wildlife Service in a condor breeding program. The program includes mating of birds in captivity, hatching eggs, raising young condors, releasing captive birds into local mountain ranges, monitoring their survival, and evaluating carcasses of dead condors to assess how to better protect them in the wild.

California Least Tern. The endangered terns nest at two sites within the city, on the Venice Beach and within the Los Angeles Harbor. Both sites are restricted to public access during nesting season. It is estimated that the breeding pairs at the Venice beach site have increased from 165 pairs to 375 pairs since 1988.

California native oaks. The only plant group specifically protected by city ordinance is native oaks. The ordinance prohibits destruction of the Valley oak (Quercus lobata) and California live oak (Quercus agrifolia) and any tree of the oak genus indigenous to California which measures eight inches or more in diameter four and one-half feet above the ground (Ordinance No. 153,478). It excludes scrub oaks (Quercus dumosa aka Quercus herberidifolia) and nursery grown oaks. The Department of Public Works enforces the ordinance. The Department of City Planning may authorize removal or relocation relative to subdivision permits. Public works, as the primary enforcement agency, has the authority to authorize relocation or removal under certain circumstances, such as public endangerment.

El Segundo Blue butterfly. The largest known population of the endangered butterfly is located in a portion of El Segundo Dunes, which lie west of the Los Angeles International Airport. The butterfly was threatened with extinction due to urban encroachment, including homes and introduction of non-native plants that threatened to eliminate the buckwheat and other native vegetation on which the butterfly thrives. Two preserves were created on airport and Chevron refinery lands in the 1980s. The sites are restricted from general public access. They have been cleared of much of the introduced vegetation and replanted, resulting in a regeneration of the native plants. The airport department estimates that the butterfly population on its property has increased from 500 to between 40,000 and 50,000 El Segundo Blues since 1985. The figure fluctuates annually depending upon the weather and growth of the plants on which the blues depend.

Conclusion. The city has a primary role in protecting endangered and other at risk plant and animal species.

Continuing issues:

N Loss of native species unique to the Los Angeles environs.

N Loss of sensitive species.

N Loss of habitats that contribute to the healthy propagation of unique native and migratory species.

Endangered species objective, policies and programs (see also Habitats Section):

Objective: protect and promote the restoration, to the greatest extent practical, of sensitive plant and animal species and their habitats.

Policy 1: continue to require evaluation, avoidance, and minimization of potential significant impacts, as well as mitigation of unavoidable significant impacts on sensitive animal and plant species and their habitats and habitat corridors relative to land development activities.

Program: Permit processing, monitoring, enforcement and periodic revision of regulations and procedures.

Responsibility: departments of *Building and Safety and *City Planning, Environmental Affairs and the *lead agency responsible for city project implementation.

Policy 2: continue to administer city-owned and managed properties so as to protect and/or enhance the survival of sensitive plant and animal species to the greatest practical extent.

Program 1: environmentally sensitive property management.

Responsibility: *agencies responsible for property management, especially the departments of Airports, Harbor, Public Works and Recreation and Parks, and Water and Power.

Program 2: local, state and international endangered species protection, propagation and survival enhancement programs.

Responsibility: *Los Angeles Zoo and *agencies that participate specific programs (e.g., departments of Airports and Harbor).

Policy 3: continue to support legislation that encourages and facilitates protection of endangered, threatened, sensitive and rare species and their habitats and habitat corridors.

Program: City legislative program.

Responsibility: *Mayor and *City Council (and City Legislative Analyst).

For related information see: Habitats Section.

SECTION 7: EQUINE AREAS

One of the unique features of highly urbanized Los Angeles is its equine areas, which are located mostly on the fringes of the San Fernando Valley and Santa Monica Mountains, where there is access to mountain trail systems. Horsepower was the primary means of locomotion until the early part of the 20th century when automotive and rail

transportation rapidly transformed Los Angeles from a rural to an urban economy. Ranches and farmlands disappeared. Equine routes were paved or abandoned. Equines for work uses gave way to equines for show, film, recreational, therapeutic and educational purposes. Throughout the century the number and size of equine keeping areas continued to shrink until they were threatened with extinction, largely due to encroachment from development, especially development of non-animal keeping residential projects.

Zoning/K supplemental use district. To protect the equine uses and to encourage establishment of new uses, equines (horses, donkeys, mules) were specifically permitted by right on lots zoned for agricultural uses and on certain large lot (17,500 square feet or more) residential uses. However, zoning and county health code regulations contributed to a continuing loss of equine uses. The laws were intended to protect non-equine residential uses from animal impacts, e.g., odor, dust, health and safety concerns.

To reduce the impact of health code regulations on existing equine uses, the 'K' Equinekeeping District enabling provisions (LAMC Section 13.05) were enacted (1964). The intent of the K District supplemental use designation is to better protect existing equine areas and to encourage establishment of new equinekeeping areas. The provisions have been amended many times to strengthen equine protection and make it easier to establish K Districts. Less restrictive land use regulations apply to lots in K Districts than to those in non-K areas. A new district can be as small as five acres and may include several contiguous ownerships. For current K Districts see Exhibit B.

Today equine uses have recognized rights vis-a-vis residential uses and improved dust control and odor technology enables them to be more compatible with residential uses. Prior to the 1970s, health and other regulations required that equine uses be moved 75 feet from dwellings, even if they were established prior to the dwelling. If the equine use could not be moved, it was terminated. Forced termination threatened the viability of some K Districts and eliminated many other equine uses.

In the 1970s zoning laws were changed to protect legally established equine uses from encroachment. Equine uses in K Districts may remain and the use may be modified if a dwelling is located between 75 and 35 feet of the equine use. In non-K Districts a legal equine was permitted to remain but became nonconforming. Nonconformity limits modification of the equine use.
In 1986 discretionary permits were required for dwellings proposed for location closer than the health department's 35-foot limit to a legal equine use. A zoning administrator must consider the hardship to both

the dwelling and the equine use properties; whether either can be relocated. If the zoning administrator permits the dwelling to be built closer than 35 feet to the equine use, the equine use must move or be terminated.

Trails. There are over 90 miles of equine trails within the city. Riding trails, especially around the north rim of the San Fernando Valley and in and around the Santa Monica Mountains reinforces the existing equine uses and makes their expansion more viable. Careful planning and maintenance of equine trails is important for the protection of the watershed and natural environments.

New subdivisions within a K District typically are required by decision makers to provide equestrian trails, as are subdivisions that are proposed adjacent to equinekeeping uses and the Rim of the Valley Trail Corridor. However, this requirement is discretionary. Sometimes the development's homeowners' association is required to maintain the trails or volunteer groups arrange to maintain trails. Sometimes the Department of Recreation and Parks accepts responsibility for trail upkeep, provided the land developer pays an initial maintenance fee. Usually the fee is insufficient to pay for long term maintenance and repair of the trails, thereby placing a financial burden on the city.

"Guide to Existing and Potential Equestrian Trails" (adopted 1977, revised 1991) guides trail and equine area development and protection in the northwest San Fernando Valley. Equine trails will be more fully addressed by the Open Space Element of the general plan. In addition, some of the community plans identify equine areas and trails and contain equine policies.

Equine oriented parks. Some city parks have equine oriented trail features, such as rest areas with hitching posts and watering troughs. Griffith Park has 54 miles of riding trails, a pony ring and an 80 acre Equestrian Center. The Center has been the site of important local, national and international events, including the 1984 Olympic Games and 1995 World Cup Dressage. It has a 4,300 seat covered arena, several uncovered arenas, training facilities, 520 boarding stalls and related facilities. Stetson Ranch Park in Sylmar is an equine oriented park with two equestrian rings. Hansen Dam in Lake View Terrace is crisscrossed by riding trails and has a 40 acre equestrian center with 17 arenas and several hundred boarding stalls. Orcus Park near Hansen Dam was converted to an equestrian park in 1999 and renamed Gabrielino Equestrian Park. It has staging areas and parking for recreational vehicles with overnight use by groups allowed by reservation. All of these city parks are linked by trails to the Angeles National Forest and Rim of the Valley Corridor trail systems. The Hansen Dam and

Griffith Park equestrian centers are managed by private operators, through leases with the Department of Recreation and Parks.

Equine population. The number of licensed equines has remained fairly stable during recent years. The annual license fee goes into the Equestrian Facilities Trust Fund for acquisition, construction and maintenance of equine trails and facilities on City properties. It is estimated that less than a third of all equines stabled in the city are licensed. In 1996-97 the Department of Animal Regulation issued 1,622 equine permits; 1,505 in 1997-98; and 1,695 in 1998-99. Most of the equines are boarded privately. Some are stabled in one of 52 private boarding stables, most of which are in the San Fernando Valley. In addition, equines stabled in the immediate environs utilize the city's equine trails and facilities. The largest concentration (approximately 1,500 equines) is located north of Griffith Park in Burbank and Glendale.

Conclusion. The city has a primary role in encouraging and enabling the retention and expansion of equine uses.

Continuing issues:

N Loss of equine sites due to change in use and encroachment.

N Lack of city standards for equine trail dedication, development, maintenance, safety and protection of the environment.

N Lack of city funds to maintain existing trails that are within the city's responsibility.

N Funding to accelerate the implementation of the Rim of the Valley Corridor and other trail and facility systems before opportunities are lost to acquire land for connecting trails and systems.

N Safe interface of trails with city streets.

Equine areas objective, policies and programs:

Objective: retain equine oriented uses as a part of the city's heritage and for recreational, educational and economic purposes.

Policy 1: continue to encourage the establishment of new equine uses and K districts and to protect existing significant areas from encroachment.

Program 1: designation of equine oriented policies, areas, trails and related information in community plans.

Responsibility: departments of *Building and Safety and *City Planning.

Program 2: as a part of community plan and/or other city plan preparation, identify equinekeeping areas that would be suitable for new K Districts and recommend that the City Council or planning commission initiate said districts.

Responsibility: departments of Animal Regulation, *City Planning, and Recreation and Parks.

Program 3: periodic review and revision of the equine provisions of the Los Angeles Municipal Code.

Responsibility: departments of *Animal Regulation, *City Planning, and *Recreation and Parks.

Policy 2: establish standards and procedures for a comprehensive equine trail system, similar to the bikeways system, including provisions for protection of watershed and natural environments.

Program: with the assistance of a citizen-technical advisory committee, develop requirements, guidelines, standards and procedures for equine trail dedications and maintenance and prepare a trail system plan.

Responsibility: departments of Animal Regulation, *City Planning, Public Works, *Recreation and Parks, and Transportation.

Policy 3: continue to expand and maintain trail linkages which will reinforce the viability of equine uses.

Program 1: street dedication, improvement and maintenance.

Responsibility: departments of *City Planning, *Public Works, Recreation and Parks and *Transportation.

Program 2: city park and cooperative trail development and linkage programs.

Responsibility: departments of City Planning, Environmental Affairs, and *Recreation and Parks.

Policy 4: continue to increase funding for equine trails and facilities acquisition, construction, maintenance and equine related city activities.

Program: exploration and development, with the assistance of private equine interests, of potential funding sources for equine related facilities and activities.

Responsibility: departments of *Animal Regulation, Office of Administration and Resource Services, *Recreation and Parks, other agencies as appropriate.

For related information about trails see:

N Community plans of the Los Angeles City General Plan, Los Angeles Department of City Planning (especially for communities in the north San Fernando Valley).

N "Guide to Existing and Potential Equestrian Trails," Los Angeles Department of City Planning, revised February 1991.

N "Major Equestrian and Hiking Trails Plan, an Element of the Master Plan of the City of Los Angeles," Department of City Planning and Department of Recreation and Parks, 1968.

N "Open Space Element," Los Angeles City General Plan (under preparation).

SECTION 8: EROSION

Wind, water and human activity cause erosion of land surfaces. Erosion can result in the loss of valuable ground surface materials, depositing them into basins and the ocean, and can result in the reduction in air quality due to wind carried dust. Erosion, especially water erosion, can damage the watershed and contribute to hillside instability and flooding. Following brush fires, the threat of erosion is great due to loss of ground cover.

Inland erosion. Since 1952, when Los Angeles became the first city in the nation to regulate hillside grading, the city has promulgated regulations that enable evaluation of slope stability and imposition of mitigation measures. The building code (LAMC Sections 91.700 et seq.) and Specific Plan for the Management of Flood Hazards (Ordinance 172,081) regulate grading, excavations, landfill and other construction activities that might cause or be impacted by slope or ground instability, erosion or flooding. Other development permits, such as subdivision permits, for projects on hillsides or in unstable areas

typically contain conditions for mitigation of potential slope instability and erosion, including slope reinforcement, planting, irrigation and drainage requirements. To hold the soil and protect watersheds from erosion following major brush fires, federal or state agencies sometimes seed denuded areas with wild plant seeds which rapidly germinate. However, such seeding may introduce plants which damage the local ecological balance and may increase brush density. Some botanists recommend no seeding and, instead, reliance on the natural regeneration of existing plants, some of which are assisted in their germination by fire conditions.

Beach erosion. Beaches within the boundaries of the city include Will Rogers and Dockweiler state beaches and Venice beach. City beaches are leased to Los Angeles county. The county maintains them and their related facilities and provides life guards and other services. Beaches are part of the ocean related ecological system. In addition, they provide a buffer which protects coastal areas and infrastructure (e.g., adjacent neighborhoods and streets) and they are a prime recreational and visual attraction for tourists and local residents. The loss of beaches could have a direct impact on the ecosystem, safety and the economy.

Los Angeles is affected by seasonal storms, generally between October and April. The storms can dump several inches of rain in a few hours. A 100-year capital storm can drop as much as 24 inches within 24-hours. Storms wash the land and carry debris, sediments, waste and other matter to the ocean. Over the millennia changes in river courses and geologic structures have resulted from earthquakes, erosion and other natural phenomenon. These natural actions have changed the shape and character of the coastline. They continue to operate but, in some cases, human activity has interceded to contain, redirect or redefine the coastline and natural events in ways that have impacted the beaches.

Apart from the flood control system, probably the most significant human intervention was the development of the Los Angeles-Long Beach harbors in the San Pedro Bay. In 1891 the U.S. Congress selected the bay as the site for a deep water port to serve southern California. The U.S. Army Corps of Engineers completed the port in 1914. Construction and expansion of the port and creation of the adjoining port at Long Beach required dredging of existing sediments, creation of new land forms and beaches and installation of structures within the bay. These activities caused significant changes in the ecology of the bay and adjacent coast. The initial channeling of the Los Angeles River (1921) was to divert water away from the harbor to protect it from flood damage. Channeling local rivers and streams and capturing sediments

before they reached the ocean reduced replenishment of ocean sediments and modified natural erosion and sedimentation patterns.

Harbor dredging and other development created and eroded beaches by changing tidal patterns or adding sand that created new beaches or replenished existing beaches. For example, in 1928 more than one million cubic yards of sand was dredged from the harbor and used to create what became Cabrillo Beach in San Pedro.

In the 1930s, the engineering bureau's hydraulic research laboratory evaluated sand migration in order to identify causes of erosion which were damaging roads and public systems. The study concluded that the primary cause of beach erosion was breakwaters and other army corps projects that had modified wave action along the coast. Flood control and drainage projects blocked the natural discharge of sediments into the ocean, virtually eliminating the natural replenishment of beach sands. Dredging removed sediments from the migration stream. Mitigation of beach erosion eventually was recognized by the federal government as being beyond the expertise, resources and authority of local jurisdictions.

Beach erosion management. An Act For the Improvement and Protection of the Beaches Along the Shores of the United States was enacted by Congress in 1936. It provided funding for federal construction of facilities to prevent coastal erosion in areas where federal interests were involved. The 1946 the Shore Protection Cost Sharing Act (Public Law 79-727) provided for up to one-third federal cost sharing for construction of shore protection projects on publicly-owned lands. But more was needed. By 1956 beach erosion was so endemic to large bodies of water within the United States that Congress placed the army corps in charge of beach erosion management in an effort to establish more comprehensive oversight. In 1962 the River and Harbor and Flood Control Act (PL 87-874) provided for the federal government to pay up to 70% of the beach erosion and shore protection construction costs.

The 1986 Water Resources Development Act (WARDA; PL 99-662) recognized hurricane and storm damage reduction and recreation as the primary purposes of beach erosion control projects. A 1996 amendment to WARDA added environmental restoration. WARDA is reenacted every two years. It delegates beach erosion management, in part, to the U.S. Army Corps of Engineers. WARDA provides federal cost sharing up to 65% and provides federal participation in periodic renourishment projects for up to 50 years, when protective dunes or sacrificial sand is employed to protect against storm and wave damage.

With reduction of beach renourishment funding in the mid-1990s, the beach erosion management program was severely curtailed. Migration of

sand and lack of sand replenishment has resulted in the virtual disappearance of some beaches in California. To address the issue, the American Coastal Coalition was formed to lobby for fund reinstatement and acceleration of beach renourishment programs. The coalition is comprised of representatives of coastal jurisdictions, including the Los Angeles County Beaches and Harbors Department, and interested groups throughout the nation. The county has initiated efforts to involve local jurisdictions in coalition activities which will help protect and renourish local beaches.

Conclusion. Although the city does not have primary jurisdiction over beach management, it has primary responsibility over dredging and construction in the harbor and land use actions on shore that can affect sedimentation patterns and result in erosion or replenishment of beaches. In addition, the city can lobby for state and federal legislation and programs that will protect beaches.

Continuing issues:

N Erosion of hillsides resulting in loss of natural watershed and features, flooding and endangerment to structures and people.

N Loss of beach sands resulting in loss of beaches; undermining or loss of natural features and endangerment to structures and people.

Erosion objective, policies and programs (for landslide and flood, see the Safety Element):

Objective: protect the coastline and watershed from erosion and inappropriate sedimentation that may or has resulted from human actions.

Policy 1: support legislation and efforts to secure and retain federal funding for Pacific coast beach protection and renourishment programs.

Program: include beach protection and renourishment in the city's federal and state legislative (lobbying) programs.

Responsibility: *Mayor and *City Council (and City Legislative Analyst).

Policy 2: continue to prevent or reduce erosion that will damage the watershed or beaches or will result in harmful sedimentation that might damage beaches or natural areas.

Program 1: permit processing and enforcement, especially mitigation of potential beach and soil erosion and protection of hillside and coastal terrain.

Responsibility: departments of *Building and Safety, City Planning and/or *any city agencies that have responsibility for planning, construction or maintenance of projects that could affect beach sediments and erosion.

Program 2: community plan land use provisions, especially protection of hillsides, watershed, beaches and the coastline.

Responsibility: *Department of City Planning.

Program 3: information dissemination about erosion abatement and landscaping.

Responsibility: departments of *Building and Safety, *City Planning, *Public Works, and *Water and Power.

Program 4: researching and continuing to improve Municipal Code regulations regarding soil stability and erosion abatement.

Responsibility: *Department of Building and Safety.

For related information see:

N Ocean Section (contamination and cleanup);

N "Infrastructure Systems Element" (wastewater discharge into the ocean), Los Angeles City General Plan (under preparation); and

N "Safety Element" (flood hazard, erosion), Los Angeles City General Plan, Los Angeles Department of City Planning, 1996.

SECTION 9: FISHERIES

A fishery is a water body containing a population or populations of fish, including shellfish. The only fisheries in the city are ocean fisheries. All lakes within the city are reservoirs. Most natural water courses are contained within flood control channels, which do not contain significant fish populations. Completion of the Donald C. Tillman Reclamation Plant in the Sepulveda Dam basin resulted in continuous discharge of treated water down the river, creating the first year-round Los Angeles River flow since the 1930s. Regeneration of the river environment due to the flow can support fish along the natural bottom stretches of the river, which now are rich in plant

life. The river fish tend to be introduced fish, like carp. Naturally occurring fish may be washed into the river from streams during storms.

Sport and commercial fishing takes place in freshwater and ocean environments. Pleasure fishing occurs at large local lakes that have been stocked by the California Department of Fish and Game (DFG). The program was initiated locally between 1993 and 1995. The lakes are stocked with catfish from May through November and with rainbow trout from November through April. In 1999, the DFG gave the city's Department of Recreation and Parks authority to contract with private suppliers, approved by the DFG, to stock city lakes with Channel Cat Fish.

Sport or recreational ocean fishing occurs from piers, beaches and boats. Commercial fishing boats ply the off-shore waters. Weather and other factors can affect the fishing industry and fisheries. In 1997-98 El Niño conditions warmed local waters, driving large communities of anchovies, squid and rock fish to cooler waters and attracting increased populations of sea bass, yellow tail and barracuda from Mexican waters. Until the early 1970s tuna canning was a major industry in California and in San Pedro. By 1985 the industry had shifted to American Samoa and Puerto Rico, partially due to international competition, labor costs and costs associated with the upgrading of aging plants to meet waste discharge cleanup regulations. During the same period in California the sea urchin industry expanded from 77,000 pounds (1972) to 51 million pounds (1981), largely for processing and export to Japan. In 1975 Mexico excluded U.S. fishing boats from its territorial waters and restricted access to white bass, yellowtail and other fish off the Baja coast, thereby significantly curtailing the local fishing industry. Contaminants also can affect fisheries. Chemical contaminants can make fish and shellfish hazardous to eat and can cause mutations to and death of entire populations. For information about contaminant impacts on the Santa Monica and San Pedro bays see the Ocean Section.

Fisheries protection. Too much harvesting can damage ocean animal populations. Market forces periodically shift due to changing culinary demands associated with shifts in food fads, local ethnic populations and international markets, sometimes resulting in damaging over harvesting of particular populations or species.

Under regulations promulgated by the state legislature, state Fish and Game Commission and the U.S. Fishery Management Council, the California Department of Fish and Game (DFG) sets catch limits and other regulations designed to protect marine populations from over harvesting. The DFG is responsible for state fisheries management. To protect the local fisheries, DFG restricts commercial fishing in 62% of

Santa Monica Bay, from Rocky Point (Palos Verdes Peninsula) to Malibu Point. It prohibits use of gill nets, trammel nets, purse seines and trawling in near shore areas and sets minimum size limits for some species, including the California halibut. The state legislature in 1998 directed the DFG, under the authority of the Marine Life Management Act, to develop comprehensive management plans to conserve and sustain designated classifications of threatened fish.

Fisheries are impacted by contaminants. Pollution discharge management is discussed in the Ocean Section.

Conclusion. Fisheries management is outside city authority. However the city has stewardship responsibility relative to discharges into the Santa Monica and San Pedro bays.

Continuing issues:

N Reduction and loss of remaining fisheries due to human activities and contaminants.

N Restoring native fisheries that have been lost or significantly reduced by over harvesting, contamination or loss of habitat.

N Contaminants that make local fish and shell fish a health hazard to humans and other animals if eaten.

Fisheries objectives, policies and programs:

Objective 1: protect and restore ocean fisheries (habitats).

Policies and programs: see the Ocean Section.

Objective 2: protect fisheries and enhance, restore or create fisheries for native fish populations and for sport fishing or harvesting in city managed waters.

Policy 1: continue to implement and to cooperate with lake fish stocking or enhancement programs.

Program 1: Coordination of the California Department of Fish and Game park lake fish stocking program.

Responsibility: *Department of Recreation and Parks.

Program 2: stocking or management of fisheries at Lake Crowley and other city-owned or managed lakes and fisheries outside the city boundaries.

Responsibility: *Department of Water and Power.

Policy 2: continue to consider and implement measures that will mitigate potential damage to and will encourage maintenance or restoration of fisheries.

Program: development permit processing and city property management and development.

Responsibility: departments of *Building and Safety and *City Planning, *lead agencies responsible for city development project implementation and *agencies that own or manage properties.

For related information see:

N Habitats and Scenic Areas Outside the City Section;

N Ocean Section (contamination, restoration and NPDES permit); and

N "Infrastructure Systems Element" (wastewater discharge into water bodies), City of the Los Angeles General Plan (under preparation).

SECTION 10: FOREST

The only remaining substantial conifer and big tree forests within the immediate Los Angeles city area are located outside the city's boundaries within the Angeles National Forest (aka Angeles Forest) and on the north slope of the Santa Susana Mountains (mostly within the Santa Clarita Woodlands Park). The park, noted for its Big Cone Spruce, is managed by the Santa Monica Mountains Conservancy. Plans are underway to develop an access-habitat corridor connecting the park to O'Melveny Park within the City of Los Angeles.

Angeles Forest contains natural flora ranging from desert to alpine growth, including 2,000 year old limber pines. Approximately 3,500 acres of Angeles Forest lands are located within the northern portions of the Sunland and Tujunga communities of the city. The forest reserve was established in response to a petition from the citizens of Los Angeles under the 1891 Forest Reserve Act. On December 20, 1892 President Benjamin Harrison announced the creation of the "San Gabriel Timberland Reserve" and placed it under the authority of the U.S. Department of Interior. The reserve was renamed the San Gabriel National Forest (1907) and then the Angeles National Forest (1908). It was the first national forest established in California and the eighth in the nation. The reserve was set aside to protect the watershed for development of farmlands in the Los Angeles and San Gabriel valley

basins. Today Angeles Forest comprises one-fourth of the land area of Los Angeles County, provides 35% of the Los Angeles basin's total ground water supply and continues to play a significant role in reducing flood hazards in the region, controlling erosion and providing large habitats for propagation and protection of native plants and wildlife.

Angeles Forest is comprised of two large sections that are separated by Soledad Canyon. It extends from the Tehachapi Mountains (near Kern County) to the San Bernardino National Forest (San Bernardino County). It is bounded by the Mojave Desert (north) and by Los Angeles, Pasadena and other cities and unincorporated areas (south). Its land area rises from the desert to one of the highest peaks in southern California, 10,064-foot high Mount Baldy. It contains over 690,000 acres of land, including most of the San Gabriel Mountains. Over 650,000 acres are managed by the U.S. Forest Service. Some 40,000 acres are privately owned parcels which the forest service is attempting to acquire. The city for decades has cooperated with the forest service in zoning private lands within and adjacent to the forest in very low density zoning, protecting equine and hiking trail linkages to the forest system and by supporting the forest service's efforts to acquire private lands within the forest boundaries and periphery of the forest.

While watershed protection is the primary purpose of the reserve, from before its inception it has been a major recreation resource for the region. Hikers and equestrians blazed trails through the forest beginning in the 1880s. The introduction of roads in the 1920s opened it to greater public access, leading to construction of camping facilities and private resorts. After World War II it became an increasingly important recreation area for Los Angeles.

It is one of the few national forests that is located close to the cities it serves. It provides recreational opportunities for over 12 million people in the region and ranks second to beaches in outdoor recreation popularity within the region. In addition to hiking, equine and off-road vehicle trails, within the forest boundaries are wilderness areas, fishing and other water recreation, the Mount Wilson observatory complex, campsites, youth camps, skiing facilities, experimental forestry sites, dams and other flood control facilities, reservoirs, protected historical and archaeological sites, fire service facilities, and other recreational, research, maintenance and educational sites and facilities. More than 16 threatened and endangered species are protected by habitats of the Angeles Forest.

Conclusion. The city does not have jurisdiction over the national forest. However it works cooperatively with the forest service in

integrating land use and trail systems, providing fire fighting assistance and other cooperative relationships.

Continuing issues:

N Acquisition of private lands within and adjacent to Angeles Forest for watershed, habitat protection, recreation and other forest compatible purposes.

N Coordination of public and private sectors to develop trail and habitat linkages that connect with the Angeles Forest systems.

Forest objective, policy and programs:

Objective: retain the forests as primary watershed, open space and recreational resources for the region.

Policy: continue to support the preservation and protection of Angeles Forest and Santa Clarita Woodlands.

Program 1: community plans, zoning and other land use policies and controls designed to prevent inappropriate development and uses adjacent to Angeles Forest.

Responsibility: *Department of City Planning.

Program 2: development of park lands adjoining, in proximity to or which link with the Angeles Forest and Santa Clarita woodlands with uses that are compatible with forest habitat protection, trail and corridor systems and forest facilities.

Responsibility: *Department of Recreation and Parks.

For related information see:

N "Infrastructure Systems Element" (groundwater, watershed), Los Angeles City General Plan (under preparation);

N "Open Space Element" (urban forest), Los Angeles City General Plan (under preparation); and

N "Safety Element" (fire protection agreements), Los Angeles City General Plan, Los Angeles Department of City Planning, 1996.

SECTION 11: GEOLOGIC HAZARD

The general plan Safety Element addresses seismic, geologic, flood, fire and other natural hazards, including identified risk areas within fault zones, potential liquefaction and landslide areas and flood plains. The general plan Infrastructure Systems Element will address associated facilities and systems.

SECTION 12: HABITATS

Los Angeles has a rich biodiversity, principally within mountain and coastal habitats. Many of the natural areas are threatened by urbanization which encroaches upon, reduces and fragments them and severs connecting habitat corridors that are essential for the survival of some species.

Definitions:

Habitat. Areas that support the survival of wild animals and native plants. These include native plant environments, (e.g., coastal sage scrub, oak woodlands, dunes and stream fed woodlands) and trees throughout the city that serve as stopovers and nesting places for migratory birds.

Biodiversity. The variety of living things, both plant and animal, in the environment.

Ecology. The relationship between living things and their environment. A balanced environment enables maintenance of healthy habitats which perpetuate biodiversity.

Habitat types within Los Angeles.

Inland habitats. Inland habitats are natural or artificially created refuges or water bodies. They provide habitats for resident species or stopovers for migratory birds. These include undeveloped areas, especially in the mountains, flood plains and other protected, restricted or private undeveloped lands; created lakes, reservoirs and dam sites and associated park and open space lands; and parks, golf courses, cemeteries and other lands with extensive natural or introduced vegetation.

Until the 1970s, acquisition generally was for development purposes, such as for expansion of the infrastructure (reservoirs, power transmission-rights-of-way, schools), for recreational or aesthetic purposes (parks and scenic parkways) or for protection of watersheds (national forests). In the 1970s local open space acquisition began to emphasize protection of biodiversity.

The emphasis began to shift due to national public interest in protection of the environment. This concern made possible one of the most significant measures for protection of habitats and establishment of public parks in U.S. history, the National Parks and Recreation Act of 1978, which was engineered by Congressman Philip Burton of San Francisco. It provided funds for hundreds of parks, trail linkages, wilderness areas, historic and cultural sites and facilities, seashores, scenic and wild rivers and other sites throughout the United States and its territories, including $150 million for the establishment of the Santa Monica Mountains National Recreation Area (SMMNRA).

Until the mid-1990s public land acquisition and dedications often were opportunistic, resulting in some parcels being isolated from public access and lacking in wildlife corridors to interconnect habitats, further species propagation or link recreational uses. A scarcity of funding, increasing demands for conveniently accessible recreational opportunities and continuing encroachment into open space areas resulted in a shift in emphasis from opportunistic acquisition to securing lands that provide the greatest amount of habitat preservation and human values.

Today a variety of entities and organizations in the region are working together to link the existing parcels of public and quasi-public forest and park land in order to provide permanent wildlife habitats and habitat corridors, protect native plants and scenic areas, provide trails and other open space-compatible recreation, enhance the public's access to views and use of open space, provide research and educational opportunities, and protect historical, paleontological and archaeological sites. The largest collection of publicly owned natural habitats in the city are the parks and publicly owned open spaces in the San Gabriel, Santa Monica, Verdugo and Santa Susana Mountains.

Significant Ecological Areas (SEAs). SEAs are significant habitats identified by Los Angeles County as important for the preservation and maintenance of biodiversity. They were identified and formally documented by the Regional Planning Commission (1976) to elaborate the "significant ecological area" provisions contained in the 1972 interim county general plan (finalized 1980). Each SEA was selected on the basis of existing known habitats of sensitive or endangered species as well as sites containing a diversity of native plant and animal resources. Within the City of Los Angeles all or part of some of the sites (Exhibit B) are privately owned, some of which have been developed with structures or other uses. Publicly owned portions of SEAs generally have been classified in the Open Space Zone and often are part of public park sites. SEA designations provide an informational basis for analysis of private projects relative to CEQA

review and guide public and private efforts to develop strategies for protecting and acquiring existing habitats. For example, in October 1999 the Department of Water and Power agreed to maintain the Chatsworth reservoir as a natural reserve. Designation of the site as a SEA assisted efforts to protect it from sale and possible development. The county is in the process of revising its general plan and the SEA designations.

Wildlife corridors. Wildlife corridors are land segments that connect two or more large habitat areas and provide a habitat for movement of animals between those areas. They encourage protection and health of animal populations by enabling access to food and broader animal interchange for healthy species propagation. Loss of corridors especially impacts large carnivores that need extensive territory for survival. As freeways and other barriers block corridors and as habitats shrink, large animals are forced from the city or are unable to survive.

The most extensive local effort to establish corridor linkages is the Rim of the Valley Trail Corridor. The corridor plan is based on the masters thesis of California State University at Northridge student Marge Feinberg (1974). Her plan was adopted into state law (Public Resources Code Section 33204.3) in 1990. The act authorizes the Santa Monica Mountains Conservancy, a state agency, to work with counties and cities within the greater Los Angeles area to acquire land and coordinate efforts to create a continuous necklace of public parks, habitat corridors and trails which will link the entire mountain system around the San Fernando and La Crescenta Valleys. One of the prime features of the plan is creation of permanent habitat corridors to protect endangered and threatened native plant and animal species.

Another important corridor project is the carnivore study (begun 1996), which is sponsored by the National Park Service in coordination with UCLA, the University of Massachusetts and other entities. It is monitoring large carnivores (including cougars, bobcats and coyotes) within a 30 square mile portion of the central Santa Monica Mountains National Recreation Area (SMMNRA) to estimate their chances of long-term survival in an urbanized environment. The study is providing field data on which to base protection and management actions and is assisting in identifying and evaluating additional properties needed for habitat and corridor preservation and restoration. It has identified several corridors, including corridors between the Santa Susana Mountains and the Simi Hills and between the Simi Hills and the Santa Monica Mountains. Other corridors include connections between the Santa Monica Mountains and the Verdugo and San Gabriel Mountains.

The study has found that, although SMMNRA is a largely undeveloped area, wildlife corridors and habitats have been encroached upon and fragmented by urbanization. Some corridors have been eliminated, forcing animals to cross roads or use culverts and roadway underpasses to access their territories. The study is monitoring the use of such introduced passageways. Other studies have arrived at the same conclusion. In recognition of the impact new transportation systems can have on wildlife corridors, the U.S. Congress (1998) authorized funding under the Transportation Equity Act for the 21st Century (TEA-21) for wildlife corridor protection relative to proposed federally funded transportation projects, including mitigation of potential vehicle and animal conflicts, e.g., construction of animal tunnels.

Ocean habitat. See Ocean Section.

Coastal wetlands. Wetlands are transitional lands between water and land systems where the water table is usually at or near the surface or the land is covered by shallow water, e.g., marshes and bogs. Wetlands in the city are associated with springs, streams, rivers (e.g., Tujunga Wash) and lakes, as well as the ocean. Among the largest and most threatened wetlands are the coastal wetlands. Wetlands filter and cleanse water of pollutants and provide wildlife habitats. During the 20th century an estimated 95% of the wetlands along the Los Angeles coast disappeared, largely due to water being diverted by flood control and drainage systems, development of wetlands, encroachment, water contamination and other impacts associated with urbanization.

Only remnants of coastal wetlands have survived in the city. The largest is in the Westchester-Playa del Rey community. It is the Ballona wetlands, an identified SEA. Approximately 374 acres of the wetlands are within the Playa Vista development project. Much of the wetlands, Ballona Creek Channel and associated dune and habitat areas are proposed by the project for habitat enhancement, including wetlands restoration, creation of a freshwater marsh and establishment of a riparian corridor.

Within the Venice community is the Venice Canal System, which is an SEA, a city historic monument and an important part of the wetlands system. The Venice Local Coastal Program, Venice Community Plan and Venice Coastal Zone Specific Plan contain policies and regulations to guide public and private canal enhancement and protection.

The Ballona Lagoon is part of the system. It connects the canals to the Pacific Ocean. Over the century since the canals were built as a part of a unique subdivision (1905), accumulated sediments have impacted water circulation and pollutants and human activity have damaged the ecology of the canal system. In 1988, concerned citizens formed the

Ballona Lagoon Marine Preserve (BLMP) to protect and restore the lagoon. BLMP's efforts led to the lagoon restoration and enhancement project (1997), which is nearing completion. To gain greater control of the lagoon, the city swapped city-owned lands for private land on the west bank and, along with the California Coastal Conservancy, acquired additional land control through easements. Upon completion of the project the city's Bureau of Street Services will assume responsibility for maintenance of the lagoon. Plans for additional enhancements and public access improvements are under consideration.

In 1993 the Bureau of Engineering completed the Venice Canals rehabilitation project. Begun in 1991, it included dredging of the canals to improve water circulation, construction of new canal banks, reconstruction of several bridges, replanting canal banks with indigenous and compatible vegetation and improvement of public access, including construction of bikeways and pedestrian paths. Upon completion of the project the Bureau of Street Services assumed responsibility for canal maintenance.

Habitat protection legislation.

California Environmental Quality Act (CEQA). CEQA requires evaluation of potential impacts of proposed projects on biodiversity, habitats, wildlife dispersal and migration corridors. Potential negative impacts are to be avoided, minimized or mitigated to a level of insignificance. Off-site mitigation may be employed to reduce on-site mitigation burdens on a project.

The Bolsa Chica Restoration Project in neighboring Orange County is an example of the application of off-site mitigation for a Los Angeles based project. Bolsa Chica is a combined federal-state management project headed by the California Coastal Conservancy. The project includes the purchase of approximately 880 acres of oil fields and restoration of almost 600 acres of wetlands to establish a habitat preserve. Although a variety of agencies and private parties are contributing funds to the project, the bulk of the funding for land purchase and restoration is from the ports of Los Angeles and Long Beach. They have contributed millions of dollars, as part of their CEQA mitigation requirements, to compensate for natural resources lost within the harbor due to harbor expansion.

Development of the city's Geographic Information System (GIS) will greatly assist in CEQA evaluation and the mapping of environmental data. In a cooperative effort, the planning department and other public agencies are recording data from a variety of information sources for every parcel of land in the city. Environmental and other geographically based data will be accessible by system users, including

the general public, via the Internet. GIS already is providing invaluable information to agencies for land use planning, development projects and CEQA analysis. The exhibits that are a part of this element were generated from the city's GIS data base.

Natural Community Conservation Act (NCCA). Following complaints by developers and property owners that protection of identified species unduly delayed projects and constituted a taking of their land, the state enacted the Natural Community Conservation Act of 1991 (Fish and Game Code Chapter 10, Division 3, Sections 2800 et seq.). The NCCA is administered by the Department of Fish and Game (DFG). Its goal is to identify and secure habitat areas for protection of biodiversity. Habitat areas are identified by the DFG and plans are prepared for habitat protection. The pilot program for southern California is the coastal sage scrub habitat area, including the Palos Verdes Peninsula, the only site near Los Angeles city. The coastal sage scrub is the home of the California gnatcatcher and approximately 100 other potentially threatened or endangered species.

When a development project is proposed, a determination is made concerning the potential impacts of the project on biodiversity and the best means of avoiding or mitigating them. The NCCA allows local, state or federal agencies to enter into agreements with public and private entities to implement a "natural community conservation plan" (NCCP), e.g., habitat and species protection within a specified geographic area. Participation in an NCCP does not exempt a development project from CEQA. Mitigation measures pursuant to CEQA may, as an alternative, include participation in an NCCP in order to reduce the burden for on-site mitigation. As far as can be ascertained, no projects within the City of Los Angeles are utilizing the NCCA.

Conclusion. The city has an important role in preserving, protecting, enhancing, creating and monitoring habitats to ensure the maintenance of the rich local biodiversity. Its primary means are acquisition, management of publicly owned sites, permit processing, data collection, regulatory authority and cooperative efforts with other entities.

Continuing issues:

N Loss or degradation of the last remaining SEAs.

N Loss or severing of habitats, habitat corridors and migratory bird stopover sites that are essential for the healthy propagation and maintenance of native and migratory species.

Habitats/ecological areas objective, policies, programs (see also Endangered Species, Fisheries, Ocean and Wetlands sections):

Objective: preserve, protect, restore and enhance natural plant and wildlife diversity, habitats, corridors and linkages so as to enable the healthy propagation and survival of native species, especially those species that are endangered, sensitive, threatened or species of special concern.

Policy 1: continue to identify significant habitat areas, corridors and buffers and to take measures to protect, enhance and/or restore them.

Program 1: development permit environmental review and other applicable processes that identify and/or require evaluation, avoidance, minimization and mitigation of potential significant impacts on natural habitats, corridors and linkages.

Responsibility: departments of *Building and Safety and *City Planning, *lead agencies responsible for city development project implementation and *agencies that own or manage properties.

Program 2: community plan land use classification of significant habitats in categories that will encourage their retention.

Responsibility: *Department of City Planning.

Policy 2: continue to protect, restore and/or enhance habitat areas, linkages and corridor segments, to the greatest extent practical, within city owned or managed sites.

Program: City property management.

Responsibility: *city agencies that own or manage lands and/or are responsible for project implementation.

Policy 3: continue to work cooperatively with other agencies and entities in protecting local habitats and endangered, threatened, sensitive and rare species.

Program: property acquisition and providing support or assistance to other public and private entities in acquiring habitat areas and corridors and for habitat recovery efforts for species protection and recreational uses.

Responsibility: *Mayor, *City Council (and City Legislative Analyst), *Department of Recreation and Parks.

Policy 4: continue to support legislation that encourages and facilitates protection of local native plant and animal habitats.

Program: City legislative program.

Responsibility: *Mayor and *City Council (and City Legislative Analyst).

For related information see:

N Endangered Species Section;

N Fisheries Section;

N Habitats/Scenic Lands Outside the City Section;

N Ocean Section; and

N "Open Space Element," Los Angeles City General Plan (under preparation).

SECTION 13: HABITATS AND SCENIC AREAS OUTSIDE THE CITY

The city, by virtue of its facility and utility sites outside city boundaries, has a habitat stewardship role beyond its borders. Its land holdings and its facility and land agreements include park, recreation, airport, dam, power transmission rights-of-way, power plant, aqueduct and other facilities, systems and sites. Most of the lands and facilities are under the ownership or management of the Department of Water and Power (DWP). The remainder are owned or managed by the airports department, or other city agencies.

The city's environmental stewardship has occasionally been challenged. Challenges recently have resulted in commitments to protect, restore and/or enhance four significant habitat and scenic areas: the Grand Canyon-Colorado River Plateau, Owens Valley, Owens Lake and Mono Lake. The four cases and related commitments are summarized below.

Grand Canyon-Colorado River Plateau. One of the nation's most important open space resource areas is the Colorado River Plateau, which includes the Grand Canyon and Glen Canyon. In recent decades there has been national concern about increased visibility pollution which sometimes obliterates views of vistas and nearby landmarks. Over a century ago the haze was due largely to wind swept dust and lightning caused forest fires. Recent studies identified a variety of sources, including sulfur dioxide emitted from coal fired generating stations. Sulfur dioxide combines with moisture to form tiny, visible sulfate particles that discolor the air, contributing to the haze. Polluted air is sucked into Grand Canyon by cold air, which drains from the high plateaus and

settles in the canyon, impairing the spectacular views tourists travel thousands of miles to see.

The Navajo Generating Station, owned by the Salt River Project consortium, which includes the DWP, was identified as one source of the haze. It is located near Page, Arizona, south and east of the Glen Canyon National Park and at the northeast edge of Grand Canyon National Park, 80 miles from the main Grand Canyon visitor center. This coal fired facility was constructed in 1975, before sulfur dioxide scrubbers became available.

A series of studies were conducted (1987-89) to identify the sources of Grand Canyon haze. Chemical tracers used in a National Park Service study, partially funded by the consortium, identified some of the haze as originating from the Navajo plant. Based on the study, the Environmental Defense Fund sued the EPA for failing to enforce the visibility provision of the Clean Air Act. An EPA study concluded that in the winter, between November and March, haze reduced visibility at the Grand Canyon from 150 miles to under 10 miles and that the Navajo plant was a significant source. A verification study by the National Academy of Sciences found that the winter haze was caused primarily by automotive vehicle exhausts, that the Navajo plant "contributed significantly" and that ore smelters, pollution from near and distant urban areas (including Mexico) and other sources also contributed. Based on the study, the EPA (1989) contended that the Navajo plant contributed 40% of the introduced haze. It issued an order requiring the consortium to install scrubbers.

The consortium agreed (1991) to reduce visibility impacts by installing scrubbers designed to remove 90% of the sulfur dioxide emissions. These were in service by August 1999. The historic agreement marked the first time the EPA had enforced the Clean Air Act provisions requiring protection of visibility at national parks and wilderness areas. For the first time it acted solely to protect visibility and aesthetic values, not health quality. The scrubbers may improve visibility at the Grand Canyon by 7% on an average winter day. They are not expected to improve visibility during summer months when air pollution from the Los Angeles basin is the principal source of Colorado Plateau haze.

Another potential source of sulfur dioxide pollution affecting the Colorado Plateau region is the Mohave Generating Station in Laughlin, Nevada. The station is operated by the Southern California Edison Company and is partially owned by the DWP. It was constructed in 1971 and has partial emission controls. As a result of negotiations, which were concluded in 1999 to settle pending litigation, an agreement was reached requiring the station to install additional emission controls

by 2005, or to cease operation in its present form, e.g., coal fired facility.

Owens Lake and Owens Valley. City of Los Angeles and federal ownership of almost all the lands in the Owens Valley, including mountain slopes on both sides of the valley, has kept the area free from commercial development, providing an almost unbroken view from Highway 395 of the magnificent Sierra Nevada and White Mountains. Public ownership also has enabled public access for hiking, hunting, fishing and winter sports. But the city's diversion of the Owens River waters before they reach Owens Lake and tapping of underground valley water have contributed to impaired air quality and other impacts on the valley.

Owens Lake. The air quality issue associated with the drying of the lake, primarily due to water diversion, resulted in dust mitigation measures. These, in turn, resulted in side benefits to habitat and wildlife enhancement. The majority of Owens Lake (95%) is owned by the State of California and is under the authority of the State Lands Commission.

The lake is a remnant of a large prehistoric freshwater lake which at one time extended some 60 miles up and down Owens Valley, reaching a depth of 320 feet. By the time settlers entered the valley in the mid-19th century, Owens Lake had shrunk to a fraction of that size, to a shallow, salty desert sink. Dissolved minerals and salts, which had flowed into the lake for millennia, had become so concentrated by evaporation that only algae, brine shrimp, brine flies and other primitive life could survive.

By 1905, diversion of Owens River water by local farmers and an extended drought shrank the lake even more. Shrinkage was accelerated by the Los Angeles River Aqueduct. Completed in 1913, the aqueduct diverted most of the remaining river water before it reached the lake.

By the late 1920s, the lake had become a dry lake, one of the largest dry lakes in California. Its rapid shrinking had left shallow brine pools within the dry lake bed and springs and seeps around its edges. These wetlands supported remnants of the primitive marine ecosystem, some of which remain to this day.

Due to the accelerated drying of the lake caused by the aqueduct diversion, an alkaline crust of dissolved and crystallized minerals and salts was created over much of the lake bed. Winds and shifting sands lacerated the crust, resulting in dust becoming airborne during windy periods.

Passage of the federal Clean Air Act (1963), and its subsequent amendments, and formation (1979) of the Great Basin Unified Air Pollution Control District (APCD) lead to efforts to implement federal clean air standards. In 1983, legislation (California Health and Safety Code Section 42316) was enacted which allowed Los Angeles to continue exercising its water rights in the Owens Valley, providing it complied with state and federal air quality standards by mitigating documented air quality impacts resulting from the city's water withdrawals from the valley.

In 1990 an amendment to the federal Clean Air Act identified the area as a "non-attainment" area in meeting clean air standards for particulate matter. It required attainment by 2001, with a five-year extension option. The 1997 State Implementation Plan (SIP) for achieving attainment required Los Angeles to use specified measures to mitigate the dust relative to Owens Lake. Because the measures had not been fully tested in the Owens Lake environment and conditions of the lake crust varied from site to site and with changes in the climate, Los Angeles challenged the plan. It was concerned about being required to expend money and effort implementing measures that might not work. To assess the situation, Mayor Richard Riordan and other Los Angeles officials toured the valley and met with APCD officials in August 1997. Riordan was the first Los Angeles mayor to officially visit Owens Valley since the first aqueduct was completed.

In response to the city's challenge, the California Air Resources Board directed it and the APCD to work out a compromise. The negotiations resulted (1998) in a memorandum of agreement (MOA). Provisions of the MOA were incorporated into the revised SIP (1998) and approved by the federal Environmental Protection Agency (1999) for attainment of air quality standards by a new date, 2006.

The MOA addresses dust abatement and allows phased and flexible implementation. It requires that ten square miles of the 110-square mile lake bed be treated by the end of 2001, an additional 3.5 square miles in the year 2002 and three more in 2003. At least two square miles per year are to be treated each year, or until the APCD deems that the federal standards have been met. The plan will be reviewed in 2003 to determine if the pace should be quickened to achieve the air quality standards by 2006. The DWP may use a variety of strategies, including shallow flooding, planting of vegetation, covering areas with gravel.

The lake will not be refilled. Instead, sections will be treated with water or vegetation, or covered with gravel to control dust. Initially, ten square miles will be flooded with a few inches of water, permanently covering or saturating sections of the lake bed crust, a

measure that, as a side benefit to air quality improvement, will contribute to habitat restoration and enhancement. In June and July of each year, additional water will be provided to specified locations for maintenance of food and water sources suitable for sustaining nesting and fledgling shorebirds. Native and other designated plant species will be encouraged in designated areas. Incompatible species, e.g., salt cedar, will be removed. Berm and access roads will be provided with snowy plover crossings to allow free movement of adult and chick plovers. To protect human health, a mosquito abatement program will be implemented.

The DWP estimates that the initial shallow flooding phase will cost $100 million to implement. The total project will result in an estimated loss of 40,000 acre feet of aqueduct water per year (equal to service to 80,000 households), which will be replaced through water purchases and other means.

Owens Valley. Vegetation protection evolved out of the Owens Valley groundwater pumping issue. The protections relate to those sections of the valley that are owned by the City of Los Angeles, roughly between Lone Pine and Bishop, not including Owens Lake.

The city's plan for a second aqueduct and enactment of the California Environmental Quality Act of 1970 (CEQA) prompted a suit (1972) by Inyo County to restrict the city's groundwater pumping in Owens Valley. Inyo alleged that the city's plan to increase flows for the second aqueduct by pumping additional ground water violated CEQA. After a decade of suits, counter suits and negotiations, the city and Inyo agreed to jointly prepare an environmental impact report (EIR) that would address existing and potential impacts associated with the pumping. Completed in 1991, the EIR identified two separate time periods (1970-90 and 1990 onward) of mitigation measures for implementation by the DWP. The measures related to impacts associated with prior pumping (1970-90) and to potential impacts associated with planned future pumping.

Challenges to the EIR, its process and authority resulted in the court inviting testimony from interested parties. Subsequently, Los Angeles and Inyo entered into a memorandum of understanding (MOU) which affirmed the EIR and included additional mitigation measures. Based on the MOU, the court ruled (1997) that the EIR met legal requirements.

The EIR contains mitigation measures, goals for vegetation protection and procedures for preparation of annual plans to address future potential vegetation impacts. Mitigation measures include transfer of town water systems to local control and annual payment by the city to Inyo County of funds for local programs and services, including park

acquisition and maintenance, salt cedar plant nuisance abatement and for county water department environmental programs.

Mono Lake. In 1940 the DWP extended its aqueduct system to Mono Basin, diverting snow melt waters from Lee Vining, Walker, Parker and Rush creeks, the main sources that feed Mono Lake. The 65 square mile salty, alkaline lake lies 6,000 feet above sea level in the high desert of the eastern Sierra, below the Tioga Pass entry to Yosemite National Park. More than 250,000 people a year from all over the world arrive by road, foot or on skis to enjoy the eerie volcanic beauty and magnificent views. The lake is believed to be a million year old remnant of an inland sea. Minerals carried by waters that flow through volcanic and geologic formations maintain the high saline content of the lake, which provides a unique ecosystem that supports millions of rare brine shrimp and other organisms. The organisms provide food for migratory birds and are harvested commercially. Two large volcanic islands (Paoha and Negit) provide migratory stop-over and nesting sites for thousands of ocean feeding birds, including phalaropes, which arrive in midsummer on their way from the arctic to nesting grounds in Baja, California. An estimated 90% (50,000 birds) of the California and 20% of the world sea gull population nest on the islands.

Diversion by the DWP of as much as 95,000 acre feet of water annually, along with Owens Valley resources, provides Los Angeles with its least expensive and purest sources of water. But diversion has severely impacted the Mono Basin, causing the lake to drop as much as 40 feet since 1941. The drop exposed 21 square miles of lake bed. This resulted in a doubling of the water's salinity (three times saltier than the ocean) and left a residue of dry salt and mineral crystals, similar to that of Owens Lake, that was stirred into dust clouds by high winds.

In the late 1970s, continued low snowfall in the eastern Sierra, combined with the DWP's diversion of stream water caused the level of the lake to drop significantly, exposing land bridges to Negit Island. Coyotes traversed the exposed land, destroying a colony of nesting gulls (1978). The Audubon Society and the Mono Lake Committee petitioned the court to prohibit the diversion of creek waters, contending it was causing irreversible ecological damage.

Heavy snowfall during the winters of 1983 and 1984 led to another court action. The abundant snow melt following the heavy snowfalls caused the two DWP dams to overflow, sending water and trout down the dry stream beds that fed the lake. When the DWP resumed its stream diversion, California Trout, Inc., a sport fishing organization, and the Mono Lake Committee filed suit requesting enforcement of a state fisheries law that prohibits killing of fisheries to supply water to an aqueduct.

After a decade of litigation and negotiation, the state Water Resources Control Board (1994) issued Decision No. 1631, which establishes a schedule of stream flows; fixes the amount of water the DWP can divert from the basin, based on the elevation of the lake; and requires preparation of a stream and waterfowl habitat restoration plan. Following a settlement agreement between Los Angeles and interested parties concerning the monitoring program, the board (1998) approved the stream and waterfowl habitat plan.

The plan permits the DWP to export 16,000 acre feet of water a year from the basin. This figure will increase to 30,000 acre feet per year when Mono Lake reaches an elevation of 6,391 feet. The lake had risen to 6,385 feet by 2000, sufficiently covering the land bridges between Negit Island to ward off coyotes. It is anticipated that it will take approximately 20 years for the 6,391 level to be achieved.

To assist Los Angeles in replacing aqueduct water due to the reduced diversion, the state legislature (1994) approved a bill allocating $36 million for water projects in Los Angeles, primarily for the East Valley Reclamation Project in the San Fernando Valley. The East Valley Project will provide an estimated one-third of the amount of Mono Lake water lost as a result of the settlement. The DWP will supply remaining water needs by purchase and from other sources.

Conclusion. The city is responsible, in whole or in part, for management of facilities and properties it owns or operates outside its borders. Its stewardship includes consideration of potential impacts on and management of natural areas and scenic resources.

Continuing issues:

N Meeting the city's water, power and other needs while at the same time striving to be a good steward of natural resources and to minimize impacts on the environment.

N Compliance with environmental protection legal agreements involving City owned or operated facilities which are located beyond the city's borders.

Habitats and scenic areas outside the city objective, policies and programs:

Objective: protect important natural habitats and scenic sites outside the city which are owned by the city or are impacted by city facilities.

Policy 1: continue striving to meet the city's water, power and other needs while at the same time striving to be a good steward of natural resources and minimizing impacts on the environment.

Program: City facility and property management programs.

Responsibility: departments of *Airports, *Public Works and *Water and Power.

Policy 2: continue striving to meet legal mandates to avoid, mitigate or abate potential significant environmental impacts associated with city facilities that are located outside the city's borders.

Program: operating agency facility and property management programs.

Responsibility: departments of *Airports, *Public Works, *Recreation and Parks, and *Water and Power.

For related information see:

N "Infrastructure Systems Element" (including water and power facilities and systems), Los Angeles City General Plan (under preparation) and

N "Public Facilities and Services Element" (parks and other city facilities), Los Angeles City General Plan (under preparation).

SECTION 14: HAZARDOUS MATERIALS

The general plan Safety Element addresses hazardous materials. However, after the element was drafted, several important changes took place that warrant mentioning. These involve the state Unified Program and landfill, brownfields and NPDES programs.

Unified Program. In an effort to streamline hazardous materials management the state adopted the Unified Hazardous Waste and Materials Management Regulatory Program (aka Unified Program). The program (California Health and Safety Code, Division 20 and Code of Regulations, Titles 19, 22, 24 and 27) consolidates and makes six existing state hazardous waste and materials management programs consistent with each other and mandates their coordination. The Los Angeles City Fire Department applied for and was designated the Certified Unified Program Agency (CUPA) for the city (1997), making it the single point contact for Unified Program activities. As the city's CUPA, the Fire Department accepts applications from regulated facilities, issues permits, performs inspections, coordinates with

other regulatory agencies, enforces regulations within its jurisdiction and provides information regarding hazardous materials regulations and management. The Fire Department, as described in the Safety Element, already was performing many of the tasks assigned by state legislation.

In 1995 the non-regulatory Hazardous and Toxic Materials Office was transferred from the Department of Public Works to the Environmental Affairs Department (EAD). The office works primarily with businesses and city agencies, disseminating information, providing technical assistance and coordinating city efforts to promote proper hazardous materials management and prevention of hazardous materials pollution.

Landfill regulation. Pursuant to state law (Public Resources Code Division 30 and Code of Regulations Titles 14 and 27) cities and counties are authorized to enforce solid waste management regulations at all landfill, transfer station and composting facilities. In 1993, the city established (Ordinance No. 168,508) a local enforcement agency (LEA) within EAD. The LEA monitors approximately 100 solid waste facilities, including open and closed disposal sites and potential former disposal sites that have been identified by the California State Integrated Waste Management Board (IWMB). The disposal sites are located throughout the city. Most were established prior to government landfill siting regulations. Some may have been established in the 19th century. Landfill sites deemed to have existing or potential health or safety problems are inspected by the LEA. Redevelopment of a site requires LEA approval prior to issuance of a building permit. The LEA evaluates proposed plans and the site. It can require soils reports and may impose conditions to abate any potential health or safety problems. Sites deemed not to have been a landfill or to have no health or safety problems are recommended by the LEA to the IWMB for removal from the site inspection list.

Brownfields. The U.S. Environmental Protection Agency (EPA) defines brownfields as abandoned, inactive or underutilized industrial and commercial properties where expansion or redevelopment is complicated by real or perceived environmental contamination. The EPA provides funds for site assessment and revitalization of sites that are contaminated with hazardous materials.

The city's brownfields program is a collaborative approach to redevelopment of individual or groups of old industrial parcels. Soil contamination often is a major deterrent to redevelopment because owners lack the funds to cleanup the contaminants which are impeding property sale or improvement. Most of the sites are located within communities which grew up around industries, some of which were established before World War I. The goal of the city program is to assist property owners in resolving contamination related problems

(e.g., legal, financial, bureaucratic) so that contaminated properties cleaned up and redeveloped, thereby providing a catalyst for community revitalization.

Primary agencies involved in the city's brownfields program are the Community Redevelopment Agency (CRA), the EAD, Community Development Department, the Mayor's Office of Economic Development and City Council offices of districts in which the projects are located. Other agencies join to provide technical expertise, help secure funding, coordinate infrastructure improvements and assist in site redevelopment.

One of the city's first brownfields demonstration projects was the Goodyear Tract, a 208-acre, multi-ownership industrial area located in South Central Los Angeles near the Alameda rail corridor. For over a decade the area was the focus of debate regarding the appropriate mechanism to achieve neighborhood-compatible reuse. The mechanism selected was designation of the area, including the Goodyear Tract, as a redevelopment project area, under the administration of the CRA. The Goodyear Tract portion will be redeveloped primarily with industrial uses.

Another project is the former Crown Coach site, a 20-acre vacant contaminated parcel that is owned by the State of California and is located less than three miles from the Los Angeles civic center. Under agreement with the state, Los Angeles conducted a site assessment. It subsequently completed soil cleanup and has issued a request for proposal for site development which will maximize community and economic benefit of the site. The developer will collaborate with the state to accomplish groundwater cleanup.

The innovative collaborative approach and success of the Goodyear Tract and other brownfields projects helped the city win selection as one of 16 communities around the nation to be designated (1998) by the federal government as Brownfields Showcase Communities. The designation made the city eligible for special funding and technical assistance from federal agencies which have joined to address brownfields issues in Los Angeles. The city's program provides direct technical and other assistance to over 30 sites throughout the city (2000).

NPDES. The Bureau of Sanitation has regulatory authority over discharge of hazardous and non-hazardous materials into sewer and stormwater systems. In 1998 responsibility for coordination of the city's compliance with the National Pollutant Discharge Elimination System (NPDES) municipal stormwater permit was transferred from the engineering to the sanitation bureau.

Conclusion. The city has a primary regulatory, informational and catalytic role in hazardous materials management, cleanup and brownfields site revitalization.

Continuing issues:

- Reduce the amount of release of toxic waste into air, land and water.

- Existing contaminated sites that pose a threat to public or environmental health, or discourage site redevelopment.

- Improper use, storage, transport or disposal of hazardous materials.

- Accidental release of hazardous materials.

Hazardous materials goals, objectives, policies and programs: see the Safety Element. The new information identified in this element is covered by the objectives and policies of the Safety Element.

For related information see:

- "Infrastructure Systems Element" (wastewater, solid waste and water resources management), Los Angeles City General Plan (under preparation);

- Ocean Section (NPDES permit); and

- "Safety Element" (hazardous materials), Los Angeles City General Plan, Los Angeles Department of City Planning, 1996.

SECTION 15: LAND FORM AND SCENIC VISTAS

The city encompasses 467 square miles of land area, including approximately 214 square miles of hills and mountains. The San Gabriel and Santa Susana Mountains bound the city on the north, the Santa Monica Mountains extend across the middle of the city, and the Palos Verdes Hills and Pacific Ocean are on the south and west. The topography rises from sea level to 5,074 feet (Sister Elsie station in the San Gabriel Mountain foothills in Tujunga). The Santa Monica Mountains are the most visible feature from many areas of the city. They are 60 miles long and stretch from Elysian and Griffith parks in Los Angeles to Point Mugu State Park in Ventura County. The Los Angeles River and its associated tributaries and flood plains also are prominent topographic features.

Land form protection. Several sections of the Los Angeles Municipal Code (LAMC) are specifically intended to encourage retention of

existing land forms. These include the residential planned development supplemental district (LAMC Section 13.04), which encourages clustering of development in order to reduce grading and preserve existing natural terrain; the slope-density regulations (LAMC Section 17.50-E), which restrict density on the basis of the calculated average of the ungraded slopes at selected contours within a parcel that is proposed for divisions of land; the hillside overlay zone (LAMC 12.21-A.17) within which restricted densities and other requirements for neighborhood and environmental compatibility apply; and the Specific Plan For The Management of Flood Hazards (Ordinance 172,081), which contains hazard protection requirements. In addition, some community plans contain land form protection provisions. Under the California Environmental Quality Act, project design adjustments may be required to mitigate potential significant impacts on landform and unique site features. The California Coastal Act requires minimization of natural landform alteration by new development projects within the coastal zone, including minimization of activities that would contribute to erosion and geologic instability. Flood plain management is addressed by the general plan Safety Element.

Scenic features protection. Scenic views or vistas are the panoramic public view access to natural features, including views of the ocean, striking or unusual natural terrain, or unique urban or historic features. Public access to these views is from park lands, private and publicly owned sites and public rights-of-way.

The Transportation Element contains provisions regulating scenic highways which are not regulated by specific plans. The element contains a map of the designated scenic highways and guidelines for protection of natural scenic features and for aesthetic enhancement of the highways. Scenic protection provisions also are contained in the community plans. The LAMC contains provisions which potentially protect views. These include height limits and building setback requirements. Some scenic highways, including the Mulholland Drive Scenic Parkway, are regulated by specific plan ordinances that contain design provisions intended to protect natural ridge tops, neighborhood visual ambience, public views and other features.

The California Environmental Quality Act mandates identification and protection of scenic resources. Identified resources include trees, historic buildings, rock outcroppings and similar features that are located within a designated state scenic highway. Under CEQA and the LAMC, decision makers have been able to require retention and protection of scenic features.

Conclusion. Through acquisition, park development and land use planning and development requirements the city has a major role in protecting

land forms and scenic features and in making scenic features accessible to the public.

Continuing issues:

N Loss of natural features of the terrain, especially in mountain and hillside areas.

N Loss of scenic features.

N Loss of visual or physical accessibility to view corridors, scenic features and areas.

Land form and scenic vistas objective, policy and programs:

Objective: protect and reinforce natural and scenic vistas as irreplaceable resources and for the aesthetic enjoyment of present and future generations.

Policy: continue to encourage and/or require property owners to develop their properties in a manner that will, to the greatest extent practical, retain significant existing land forms (e.g., ridge lines, bluffs, unique geologic features) and unique scenic features (historic, ocean, mountains, unique natural features) and/or make possible public view or other access to unique features or scenic views.

Program 1: permit processing, enforcement and periodic revision, especially environmental review, grading, large lot zoning, clustering of structures, building height limits and other project design and construction methods for protecting natural terrain and features and protecting public view access.

Responsibility: departments of *Building and Safety, *City Planning and *Public Works and other agencies involved in city development permit review and/or processing.

Program 2: planning and construction of roads, utilities and other public projects, especially projects that are within or impact natural terrain and/or scenic areas.

Responsibility: *Bureau of Engineering and/or the *agency that owns or manages the land and/or is responsible for project implementation.

For related information see:

N "Historic Preservation and Cultural Resources Element," Los Angeles City General Plan (to be prepared) and

N "Transportation Element" (scenic highway provisions), Los Angeles City General Plan, Los Angeles Department of City Planning, 1999.

SECTION 16: OCEAN

The Pacific Ocean bounds portions of the city to the west (Santa Monica Bay) and South (San Pedro Bay). The San Pedro Bay contains the Long Beach and Los Angeles harbors. The bays are rich in plant and animal life. They and their associated beaches are among the most important recreational and tourist resources in the region. Commercial and recreational fishing also occur in the bays, especially in the Santa Monica Bay. Damage to the ecology of the bays has a direct effect on the environment and the economy of the city and region. Many factors affect the local marine ecology including natural storm runoff, waste discharge and construction of harbor, flood control and other structures.

Ocean protection. The state has jurisdiction over waters, tidelands and off-shore lands to a point three miles from shore. The federal government has jurisdiction over lands and waters that lie beyond the three-mile limit. The city has land management jurisdiction on shore and is responsible for managing discharges into the ocean from land based sources and systems.

Clean Water Act/NPDES permits. The primary legislation affecting water quality, including the quality of ocean waters, is the federal Clean Water Act. It was amended in 1972 to establish regulations and requirements for implementation by state and local governments "to restore and maintain the chemical, physical, and biological integrity of the nation's water" (Pollution Control Act, Section 101). The amendments made it unlawful to discharge waterborne pollutants into any navigable waters of the United States from any point source, except as allowed by a National Pollutant Discharge Elimination System (NPDES) permit. A "point source" is any identifiable source of discharge, such as a sewage discharge or a leaking pipe or storage container. "Navigable waters" relative to the city means the Pacific Ocean and the Los Angeles River. A "non-point" source is water runoff that contains pollutants from a source that is not readily identifiable, e.g., pollutants that accumulate on streets.

The U.S. Environmental Protection Agency (EPA) issues interpretive guidelines for implementation of the Clean Water Act. The regulatory mechanism for compliance with the guidelines are the NPDES permits which must be filed by local jurisdictions. The state Water Resources

Control Board administers the Clean Water Act in California. It delegates authority to regional water quality control boards. The Los Angeles Regional Water Quality Control Board (RWQCB) administers the Los Angeles county NPDES permits.

The Clean Water Act was amended (1987) to require reduction in the discharge of pollutants into the stormwater system. However, the EPA, recognizing the difficulty in assessing non-point source pollution and the need for further study, postponed compliance by Los Angeles county with stormwater runoff requirements.

Point pollution sources. The major city controlled point source was identified as wastewater and sludge (waste solids) discharge. The primary source of sludge dumping in the Santa Monica Bay was the city's Hyperion Wastewater Treatment Plant.

The Hyperion plant serves an area of 514 square miles, including 83 square miles of contractual area outside of the city's boundaries. It is the largest wastewater treatment facility in the city. The plant processes sludge from the Hyperion, Donald C. Tillman and Los Angeles-Glendale wastewater treatment plants. The sludge is used to create methane gas or is reduced to powder, both of which are used to create electrical energy. It also is used for fertilizer for non-food crops, landfill cover and other purposes. The ash produced during sludge reprocessing is reused in copper smelting in Arizona. An outfall pipe discharges treated wastewater five miles off shore.

In compliance with a federal ninth circuit court consent decree, Hyperion stopped dumping sludge into the bay in 1987. By that time, sludge from the plant had spread over an estimated two square mile area of the ocean floor from several decades of dumping. Five years after the dumping ceased, marine life was regenerating and pollution of beaches had declined to almost no posting of health hazard warnings. Full operation of the Hyperion energy recovery system sludge processing facilities began in 1989. Interim effluent limits were instituted to coincide with phased improvements at the plant. Full secondary treatment was achieved by December 31, 1998, enabling the city to meet the federal Clean Water Act standards. The plant can provide secondary treatment for 450 million gallons of wastewater per day and its new equipment has reduced the plant's air polluting emissions by 80 percent. Facilities are being constructed to expand plant capacity to meet the city's projected wastewater treatment needs to the year 2010.

The first Los Angeles County municipal NPDES permit was approved by the RWQCB in 1990. It was a five-year permit requiring specific compliance with point source pollution measures. The Hyperion, Donald C. Tillman and Los Angeles-Glendale wastewater treatment plants were major point

sources that underwent facility upgrades to achieve compliance with the permit.

Non-point pollution sources. With effective monitoring and control of point sources, storm related, non-point source pollution became the major source of bay pollution. Bacterial, trash and other water borne pollution is the greatest during the first heavy storms of the rainy season. Debris and sediments from air pollution and other sources that accumulate during the dry season on roofs, vegetation and other surfaces are flushed by storms into the drainage systems and then into the bays. Overflow or damage to wastewater systems is most likely to occur during heavy storms.

The Clean Water Act was clarified (1990) concerning non-point sources and general stormwater runoff. Requirements are being implemented by the second County of Los Angeles municipal NPDES municipal stormwater permit (1996). The goal of the second permit is to reduce pollutants in storm water and urban runoff in order to achieve compliance with federal standards and improve the water quality of the bays. The county is the principal permittee, the 86 cities within the county are co-permittees. Identified potential pollution sources, ranging from restaurants to harbors, must use "best management practices" (BMPs) to the maximum extent practicable to reduce or eliminate water borne pollutants.

The permit BMPs are any programs or technology used to reduce or eliminate water borne pollutants associated with stormwater runoff. City of Los Angeles BMPs include installation of systems to capture, divert and/or clean the water; installation of drainage systems to divert rain water from gutters to other beneficial uses (e.g., irrigation); and increased stormwater diversion (e.g., expansion of water spreading grounds). Municipal code amendments (adopted 1999), modification of city procedures and new guidelines were prepared by the Bureau of Sanitation, the city's lead agency for NPDES compliance, in coordination with other city agencies.

In January 1999, the EPA directed the RWQCB to establish more stringent standards for eliminating contaminants (trash, chemicals, metals) that are carried by stormwater into local creeks, rivers and drainage systems and are discharged into the ocean. The RWQCB was instructed by the EPA to establish standards for targeted water bodies, including the Los Angeles River, Ballona Creek and Santa Monica Bay.

The current phase of water cleanup includes assessment of "total maximum daily loads" (TMDL) of particular contaminants for specific water bodies. A TMDL is the maximum amount of a pollutant that a water body can tolerate and still maintain the designated beneficial uses.

Beneficial uses include drinking water sources, fishing, habitat maintenance, recreation. The first TMDL program selected by the RWQCB that affects the city is trash pollution of the bays.

Chemical pollution. For over a century, oil, raw sewage and chemical waste have been discharged into the ocean from land sources and ocean vessels. Sometimes contamination has been so bad that it has resulted in injury to wildlife and quarantine of beaches. Chemical contamination of coastal waters and sediments can have long term detrimental effects on plant and animal life. Harmful chemical compounds are carried through the food chain from silt feeding creatures to fish, then to birds and land animals, including humans, that eat fish. Contamination has caused genetic mutations and reduced the numbers plants and animals in some areas, especially near sewer outfalls and chemical concentrations. Some contaminants, like DDT, if ingested can cause cancer, respiratory problems and other illnesses in humans and may contaminate ocean sediments for decades.

The Clean Water Act prohibits dumping of chemicals into water bodies. The Bureau of Sanitation monitors the city's drainage systems, investigates illegal dumping and cites identified offenders. However, existing toxic deposits still threaten human health and the ecological systems of the bays. It will take years for some sediment communities to recover. Some bottom feeding fish continue to carry contaminants at concentration levels that are considered hazardous for human consumption.

The main source of chemical contaminants is from chemicals deposited on the Palos Verdes Shelf between 1949 and 1971 when chemical companies dumped DDT and other toxic chemical waste into the sewer system. The 110 tons of DDT, the world's largest known deposit, is spread over a 17 square mile area of the Palos Verdes Shelf. The dumping was discovered after seals and other marine life began to be affected by chemical poisoning. Commercial fishing of the white croaker has been banned since 1990 from the near shore waters of the shelf, including the Los Angeles harbor, due to high levels of hazardous chemicals in its tissues.

Systematic cleanup of the shelf began in 1998 when the Los Angeles County Sanitation Districts and 155 municipalities agreed to a court settlement. They will pay $45.7 million to a "superfund" operated by the EPA for the cleanup. During the summer of 2000, the EPA began covering 180 acres of the shelf near the White's Point sewer outfall with sand and silt. The controversial experimental program is intended to abate the contamination impacts of the chemical pollutants. The EPA will increase enforcement of the no-fishing zone around the shelf and will expand public information and warnings to consumers, urging them

not to eat white croakers caught off the Palos Verdes Peninsula. Federal and state lawsuits have been filed to recover damage, abatement and restoration costs from companies that allegedly dumped the wastes.

Trash pollution. Trash is a major part of stormwater pollution. In anticipation of major storms, the county erects trash fences or nets at flood control channel outlets to capture debris before it can disperse into the ocean. Some 13 tons of trash was captured at the Ballona Creek outlet during a single heavy early season storm in the fall of 1997. The most common debris is plastic, probably due to the effectiveness of recycling of glass and metal, the common use of plastics and limited plastic recycling programs. The NPDES permit requires improvement of street cleaning to keep debris from ending up in storm drains and improvement of public information programs in the schools and elsewhere to encourage appropriate trash disposal and recycling. The city's NPDES public information program informs people about the damage debris can cause to marine life and encourages use of trash containers. Abatement measures will be expanded under the TMDL related program.

California Environmental Quality Act (CEQA). CEQA requires that potential runoff associated with proposed development projects be evaluated. Stormwater questions are included in the CEQA initial studies checklist in order to assure evaluation of potential impacts, consistent with the 1996 NPDES permit. If potentially significant impacts are identified, imposition of mitigation measures is required to reduce the volume of water that will flow into drainage and flood control systems and bodies of water, to assure maintenance of water quality and to protect against or mitigate potential negative changes in the surface water flow. City CEQA procedures also require evaluation for diversion and capture of water runoff, as required by the NPDES permit.

Santa Monica Bay cleanup. The bay stretches from Point Dume (west of Malibu) to Point Fermin (San Pedro). The federal Water Quality Act designated the bay an "estuary of national significance" (1987). The Santa Monica Bay Restoration Project (SMBRP), a partnership of governmental officials, environmentalists, scientists and representatives of the industrial sector, was established by the state and federal government to prepare a plan for protection and management of the bay. The plan was approved in 1995. Propositions 12 and 13, approved by California voters in March 2000, include funding for plan implementation.

The SMBRP report "Taking the Pulse of the Bay - State of the Bay 1998," assessed the effectiveness of cleanup actions and issues. It estimated that, since the early 1970s, pollution from heavy metals decreased by 67 to 99 percent and pollution from suspended solids decreased by 83

percent (from 250,000 to 43,000 metric tons), in spite of a 25 percent increase in the population of the metropolitan area. Between 1988 and 1997 the annual number of beach closures due to wastewater spills decreased from 46 to 6 events. Even the unusually heavy January and February 1998 storms resulted in spills that closed the beaches for only 27 days. The SMBRP report concluded that overall improvement of the bay was due primarily to cessation of sludge dumping from the city's Hyperion wastewater treatment plant, improved city and county wastewater treatment and efficiency and cessation of chemical dumping.

During the 20-year period there has been a regeneration of plant and animal life along the entire Los Angeles coast. Of particular significance is the regeneration of kelp beds. Kelp attaches to rocky ocean bottoms off Malibu and the Palos Verdes Peninsula. The beds are considered the rain forest of the southern California marine environment. They support over 800 species of fish and invertebrates, some of which live only in kelp communities. The beds were reduced significantly from 1940 to 1974, primarily due to wastewater discharge, sea urchin grazing and oceanographic conditions. With cleaner water and sediments and the replanting of kelp, the beds regenerated and enlarged. Kelp growth leveled off in 1990, possibly due to ocean warming and increased sea urchin grazing. The increase in fish and invertebrate populations associated with the beds contributed to increases in the marine animal populations of the bay, including sea lions, which numbered 150 animals in the mid-1980s and now are estimated to number over 700 animals.

No major changes occurred in the intertidal communities, i.e., the beaches and rocky areas that are exposed by low tides. Invertebrate colonies remained stable, except for black abalone which virtually disappeared from the bay and California coast, probably due to over harvesting and disease. In 1997 the state legislature enacted a 10-year ban on abalone fishing south of San Francisco Bay.

In short, the general health of the Santa Monica Bay improved over the past 20 years but continuing cleanup of contaminated sediments and discharges into the bay is needed. The goal of NPDES and related programs is to reduce contaminants at their source or to capture or divert contaminants before they reach the bay.

San Pedro Bay cleanup. The same type of measures that improved the Santa Monica Bay contributed to cleanup of the San Pedro Bay. The Terminal Island wastewater treatment plant and county outfall system were upgraded (1980s). The Los Angeles and Long Beach harbor authorities enforce dumping and contain spills from sites and facilities over which they have authority. The U.S. Coast Guard is

responsible for management of tanker spills, other spills and ocean vessel discharge incidents within the harbors.

Conclusion. Although the city does not have primary authority over ocean waters, it has a major responsibility in protecting the ocean from water borne contamination from land-based sources.

Continuing issues:

N Contamination of the Santa Monica and San Pedro bays.

N Restoration of the bays.

Ocean objective, policies and programs.

Objective: protect and enhance the diversity and sustainability of the natural ecologies of the Santa Monica and San Pedro bays, including the bay fishery populations.

Policy 1: continue to reduce pollutant discharge into the bays from both natural and human sources.

Program 1: National Pollution Discharge Elimination System (NPDES) permit implementation.

Coordinating agency: *Bureau of Sanitation, with the assistance of all other city agencies.

Program 2: compliance with laws prohibiting discharge of contaminants into the bays and their tributaries.

Responsibility: *Bureau of Sanitation.

Program 3: research and experimentation with methods to upgrade and improve the efficiency of wastewater processing facilities in maintaining high water quality standards.

Responsibility: *Bureau of Sanitation.

Program 4: management of the Los Angeles Harbor in an ecologically sensitive manner.

Responsibility: *Harbor Department.

Policy 2: continue to support legislation and to seek funding and legislation intended for bay and coastal protection, enhancement and habitat restoration.

Program: City legislative program.

Responsibility: *Mayor and *City Council (and City Legislative Analyst).

Policy 3: continue to support and/or participate in programs to clean bay sediments and/or mitigate potentially harmful effects of contaminants in the sediments and waters of the bays.

Program: Palos Verdes shelf cleanup and other programs.

Responsibility: *As appropriate to or designated by the program.

For related information see:

- Erosion Section (beaches);
- Fisheries Section;
- Habitats Section (wetlands);
- "Infrastructure Systems Element" (wastewater discharge into the ocean), Los Angeles City General Plan (under preparation);
- "Port of Los Angeles Plan, an Element of the Los Angeles City General Plan," Los Angeles Department of City Planning, 1982;
- Resource Management Section: Oil; and
- Safety Element (harbor spillage management, hazardous materials, flooding, drainage) of the General Plan, Los Angeles Department of City Planning, 1996.

SECTION 17: OPEN SPACE/PARKS

It is important to conserve natural open space lands and enhance urban open spaces. "Open space" is a broad term that can include virtually anything from a sidewalk or lawn to the mountains and ocean. It is defined by the California general plan law (Government Code Section 65560) as "any parcel or area of land or water that essentially is unimproved and devoted to an open-space use," whether for preservation and protection of natural resources or for human activity. Virtually every section of this element includes some aspect of open space protection, conservation or enhancement. The general plan Open Space Element will discuss the open space aspects of the city, including park sites and urbanized spaces, e.g., streets. The Public Facilities

Element will address the human use aspects of city park sites. The Conservation Element primarily addresses conservation aspects of the natural open spaces that are addressed by the various subjects contained in this element.

SECTION 18: RESOURCE MANAGEMENT: MINERAL RESOURCES (SAND AND GRAVEL)

Natural mineral deposits are nonrenewable resources that cannot be replaced once they are depleted. The primary mineral resources within the city are rock, gravel and sand deposits. Sand and gravel deposits follow the Los Angeles River flood plain, coastal plain and other water bodies and courses. Significant potential deposit sites have been identified by the state geologist. They lie along the flood plain from the San Fernando Valley through the downtown (Exhibit A). Much of the area identified has been developed with structures and is inaccessible for mining extraction.

Mining of sand and gravel began in Los Angeles around 1900 when concrete became popular as a building material. Extraction began in the Arroyo Seco and the Big Tujunga Wash. From 1920 to the present, the demand for sand and gravel has been spurred by construction associated with growth in California and the southwestern United States. The only currently available deposit site in the city is the Tujunga alluvial fan, which is rich in accumulations of high quality sand and gravel washed from the adjacent mountains.

No on- or off-shore mining of beach or ocean sand is permitted by the State of California within the coastal zone or adjoining ocean of the southern California area. This is to protect the beaches and coastline within the region.

Resource protection/extraction regulation. Authority over mining is divided between state and local jurisdictions. The California Lands Commission has permitting authority over mining relative to off-shore lands and inland lands associated with navigable bodies of water. The California Coastal Commission has permitting authority relative to on- and off-shore lands within the coastal zone (extending inland 1,000 yards from the mean high tide line of the Pacific Ocean). The federal Surface Mining Control and Reclamation Act of 1977 is less comprehensive and less restrictive than the state act. Therefore, the California act is the primary regulator of surface mining within the state. However, mine operators must comply with federal, state and local regulations.

California Surface Mining and Reclamation Act of 1975 (SMARA). SMARA (Public Resources Code Section 2710 et seq.; subsequently amended) is the primary regulator of on-shore surface mining in the state. It

delegates specific regulatory authority to local jurisdictions. The act requires the state geologist (Division of Mines and Geology) to identify all mineral deposits within the state and to classify them as: (1) containing little or no mineral deposits, (2) significant deposits or (3) deposits identified but further evaluation needed. Local jurisdictions are required to enact specific plan procedures to guide mineral conservation and extraction at particular sites and to incorporate mineral resource management policies into their general plans. A particular concern of the state legislators in enacting SMARA was premature loss of minerals and protection of sites threatened by development practices which might preclude future mineral extraction.

In 1979 the state Board of Mining and Geology adopted guidelines for the management of mineral resources and preparation of local plans. The guidelines require local general plans to reference the state-identified mineral deposits and sites that are identified by the state geologist for conservation and/or future mineral extraction. Subsequently the board identified urbanized areas where irreversible land uses precluded mineral extraction. Much of Los Angeles was deemed urbanized and, therefore, exempt from SMARA.

The state geologist classified Mineral Resources Zone-2 (MRZ-2) sites within the city (Exhibit A). MRZ-2 sites contain potentially significant sand and gravel deposits which are to be conserved. Any proposed development plan must consider access to the deposits for purposes of extraction. Much of the area within the MRZ-2 sites in Los Angeles was developed with structures prior to the MRZ-2 classification and, therefore, are unavailable for extraction.

California Environmental Quality Act (CEQA). CEQA requires that impacts on non-renewable mineral resources be evaluated relative to proposed development projects. Where significant mineral deposits are known or are believed to exist, evaluation must be made concerning whether the proposed project will preclude extraction activity and whether the project will cause permanent loss of the mineral resource. If a potential negative impact is identified, measures must be considered for mitigation of the impact.

City regulation/management. To comply with SMARA, Los Angeles adopted (1975) the 'G' Surface Mining supplemental use provisions (LAMC Section 13.03). Subsequent amendments have brought the city's provisions into consistency with new state requirements. The 'G' provisions are land use, not mineral conservation regulations. They regulate the establishment of sand and gravel districts, extraction operations, mitigation of potential noise, dust, traffic and other potential impacts, as well as post-extraction site restoration. Other conditions may be imposed by the city if deemed appropriate.

General plan references. SMARA requires that the general plan identify the MRZ-2 sites and contain resource management provisions. In addition to this element (Exhibit A), MRZ-2 sites are identified in two community plan elements of the city's general plan, the Sun Valley and the Sunland-Tujunga-Lake View Terrace-Shadow Hills-East La Tuna Canyon community plans. All three elements contain resource management provisions.

Conservation. It is the city's policy that construction materials, such as concrete and rock, be recycled to reduce the amount of solid waste that goes into local landfills, thereby extending the life of the landfills. Recycling has a secondary benefit of reducing the demand for sand and gravel and produces recycled materials, which can be substituted for the natural materials.

Conclusion. The city is responsible for implementing the California Surface Mining and Reclamation Act requirements, as they apply to Los Angeles. It does so primarily through land use controls and permit issuance and monitoring.

Continuing issues:

N Loss of remaining, accessible sand and gravel deposits.

N Potential future temporary or permanent loss of important ecological sites, especially in the Tujunga Wash, due to mining.

N Environmental and neighborhood compatible extraction and site reclamation.

Resource management - mineral resources (sand and gravel) objective, policies and programs:

Objective: conserve sand and gravel resources and enable appropriate, environmentally sensitive extraction of sand and gravel deposits.

Policy 1: continue to implement the provisions of the California Surface Mining and Reclamation Act (Public Resources Code Section 2710 et seq.) so as to establish extraction operations at appropriate sites; to minimize operation impacts on adjacent uses, ecologically important areas (e.g., the Tujunga Wash) and ground water; to protect the public health and safety; and to require appropriate restoration, reclamation and reuse of closed sites.

Program 1: administration and periodic updating of the 'G' Surface Mining District overlay zone provisions (LAMC 13.03).

Responsibility: departments of Building and Safety and *City Planning.

Program 2: community plan identification of state designated Mineral Resources Zone-2 sites and including of related resource management provisions.

Responsibility: *Department of City Planning.

Policy 2: continue to encourage the reuse of sand and gravel products, such as concrete, and of alternative materials use in order to reduce the demand for extraction of natural sand and gravel.

Program: recycling of construction materials.

Responsibility: *Bureau of Sanitation and city agencies that conduct or oversee construction projects.

For related information see:

N "Infrastructure Systems Element" (landfills), Los Angeles City General Plan (under preparation) and

N Sun Valley and Sunland-Tujunga-Lake View Terrace-Shadow Hills-East La Tuna Canyon community plan elements of the Los Angeles City General Plan, Los Angeles Department of City Planning.

SECTION 19: RESOURCE MANAGEMENT (FOSSIL FUELS): OIL

In 1769 a Spanish expedition led by Captain Gaspar de Portolá explored the area now known as Los Angeles. The men discovered "pitch" bubbling from the earth. The pitch was oil tar which still bubbles to the surface in the vicinity of the Los Angeles County Museum of Art and La Brea Tar Pits. Native Indians used the tar as glue and a waterproofing agency. Early settlers and ranchers mined it for a variety of purposes, including for road surfacing. Oil (petroleum) extraction began in 1892 after E.L. Doheny discovered oil near what is now Glendale Boulevard and Second Street. Petroleum extraction and refining continue to be important industries in Los Angeles. Deposits (Exhibit A) underlie portions of downtown and west Los Angeles, the harbor area and the Santa Monica and San Pedro bays. Twenty producing oil fields lie wholly or partially within the city. The Wilmington field is one of the largest in the state. Its 1,332 wells produce 54,612 barrels of oil per day (1996).

Since the early days of oil rigs and open gushers, technology has made drilling, extraction and refining operations safer, more compatible

with surrounding communities and more efficient. Slant drilling and extraction from multiple lines can be accomplished from a single relatively unobtrusive site. For decades the sites have been camouflaged within buildings or behind walls that are designed to make them look like houses, office buildings or other neighborhood compatible structures. State and local regulations protect surrounding neighborhoods from potential odors, noise, hazardous spills, explosions and fires.

Resource protection/extraction regulation.

Federal. The federal government owns submerged lands extending seaward beyond the three-mile state land limit. In 1981 the U.S. Congress began issuing moratoria on expenditure of funds for processing leases within designated offshore tracts (3-mile quadrants). This effectively prohibited issuance of new oil drilling leases by the U.S. Department of Interior within the tracts. In 1984, the moratorium was expanded to include the Santa Monica Bay. All of the southern California shoreline was added in 1985. The ban currently applies to all unleased tracts off the entire west coast, the east coast and parts of Florida and Bristol Bay in Alaska. It is renewed annually by Congress. Various bills were under discussion (1999) to modify the Outer Continental Shelf Lands Act, including modifying or lifting the moratorium.

President George Bush issued an executive order prohibiting the Department of Interior from offering unleased tracts for lease in the same general areas as the expenditure ban. The order expires in 2002. Any President may change a presidential order.

State. The state has regulatory authority over inland lands and owns tidelands and submerged lands extending seaward three miles from the shoreline. Oil and gas deposits within the three-mile limit and on-shore are under the authority of the California Department of Conservation's Division of Oil and Gas. The division regulates extraction of oil and gas, extraction operations and management of oil, gas and geothermal reserves. Drilling permits and off-shore leases are issued by the California Lands Commission.

Consolidated Coastal Sanctuary Act. To protect the coastal ecology, the state legislature (1994) enacted the Consolidated California Coastal Sanctuary Act (Public Resources Code 6240 et seq.). The act consolidated previous coastal protection regulations that had temporarily prohibited issuance of oil drilling leases along individual sections of the California coast. It prohibits offshore drilling within California coastal waters and lands, which were not already leased for drilling. The ban has applied to the Santa Monica Bay since the 1950s. Exceptions allow the commission to issue leases related to national

emergencies and to any company that has a federal lease on adjoining lands, if drilling within the leased three-mile federal quadrant could result in draining an oil reserve that extends into state owned lands.

Coastal Act. The California Coastal Act initiative was approved by state voters (1976) to protect the coastal environment and ensure equitable public access to the beaches and ocean. It invests the California Coastal Commission with the authority of overseeing the coastal zone. The zone is depicted on maps on file with the commission and the city. It extends seaward to the city's outer limit jurisdiction and inland 1,000 yards from the mean high tide line, or further where significant habitats, recreational areas or estuaries exist. The commission establishes policies, standards and procedures for coastal development. It reviews and issues permits for proposed development, including drilling and extraction, within the zone. It can impose conditions on projects or deny permits for projects that are not consistent with the city's local coastal plans (community plans) or that would harm or would interfere with public enjoyment of the coastal environment.

California Environmental Quality Act (CEQA). CEQA requires consideration of potential impacts (e.g., oil spills) of proposed land development projects on the environment. For a project to proceed, potentially negative impacts must be avoided or mitigated to a level of insignificance.

City. For several decades the city has supported the ban on off-shore oil drilling. Its position is due to concern about potential oil spills that could damage the beaches and ecology of the bays.

The city has regulatory authority over on-shore land use within its borders, including issuance of drilling permits, protection of underground water supplies (wells and aquifers), safety considerations relative to hazardous materials management and construction of facilities, consistent with state and federal law. The issue of safety relative to hazardous materials management is addressed in the general plan Safety Element.

The 'O' Oil Drilling supplemental use district provisions of the Municipal Code (Section 13.01) were initially enacted in 1953. They delineate the boundaries within which surface operations for drilling, deepening or operation of an oil well or related facilities are permitted, subject to conditions and requirements set forth in the code and by a Department of City Planning zoning administrator, the Fire Department and city's petroleum administrator of the Office of Administrative and Research Services. The conditions protect surrounding neighborhoods and the environment from potential impacts,

e.g., noise, hazard, spills and visual blight. In addition, the Department of Water and Power monitors drilling operations to assure protection of water wells and aquifers. Property owners, including the city, receive oil production royalties from lands (e.g., city streets) that lie within oil drilling districts (Exhibit A).

Conservation. Petroleum is a non-renewable resource. Many fields in the city already are depleted and extraction from them has been discontinued. Measures related to energy conservation and reducing the city's reliance on oil are addressed by the general plan Infrastructure Systems Element. The city also is experimenting with electric battery vehicles, operates a food container (petroleum product) recycling program and is exploring other ways to reduce reliance on oil and oil products and, thereby, to slow the depletion of petroleum resources.

Other considerations.

Air quality. Oil extracted from the Los Angeles area is heavy in sulfur and other materials that contribute to air pollution. Therefore, Los Angeles oil generally is exported because it is unsuitable for automotive and other local uses, due to potential air quality impacts. Air quality impacts, including petroleum refining operations, are regulated under state and federal law.

Safety issues are addressed by the general plan Safety Element.

Conclusion. The city has primary authority over the issuance and monitoring of land use permits for drilling and drill site restoration. It has an important role to play in lobbying for state and federal concerning permitting and activities that are outside the regulatory authority of the city.

Continuing issues:

N Protection of the Santa Monica and San Pedro bays and inland neighborhoods from potential spills and other hazards potentially associated with oil drilling, production and transport.

N Safe use, storage, transmission and transport.

N Drilling, extraction and site restoration that is compatible with surrounding neighborhoods.

N Depletion of nonrenewable petroleum reserves.

N Reliance on imported oil for electrical energy generation, vehicles and other use which makes the city vulnerable to changes in the international petroleum markets.

N Subsidence.

Resource management (fossil fuels) - petroleum (oil and gas) objective, policies and programs: For storage, accidental release and containment of hazardous materials see the Safety Element and the Hazardous Materials Section of this chapter.

Objective: conserve petroleum resources and enable appropriate, environmentally sensitive extraction of petroleum deposits located within the city's jurisdiction so as to protect the petroleum resources for the use of future generations and to reduce the city's dependency on imported petroleum and petroleum products.

Policy 1: continue to encourage energy conservation and petroleum product reuse.

Program 1: public information and energy conservation incentives programs.

Responsibility: *Department of Water and Power and city agencies that own and/or operate energy generated equipment.

Program 2: petroleum products recycling.

Responsibility: *Bureau of Sanitation and city agencies that use petroleum fueled and lubricated vehicles and equipment.

Program 3: alternative fuel and energy sources research and use.

Responsibility: *Department of Water and Power in cooperation with other agencies that produce alternate energy (e.g., Bureau of Sanitation) and/or operate facilities that have the capability of being converted to alternative energy use.

Policy 2: continue to support state and federal bans on drilling in the Santa Monica Bay and on new drilling along the California coast in order to protect the San Pedro and Santa Monica bays from potential spills associated with drilling, extraction and transport operations.

Program: City legislative program.

Responsibility: *Mayor and *City Council (and City Legislative Analyst).

Policy 3: continue to protect neighborhoods from potential accidents and subsidence associated with drilling, extraction and transport operations, consistent with California Department of Conservation, Division of Oil and Gas requirements.

Program: administer and periodically update the city's 'O' Oil Drilling District provisions.

Responsibility: Office of Administrative and Research Services and departments of *City Planning, Building and Safety, Fire and Water and Power.

For related information see:

N Hazardous Materials Section (site cleanup);

N "Infrastructure Systems Element" (fuel conservation), City of the Los Angeles General Plan (under preparation);

N Ocean Section (ocean ecology, contamination and cleanup);

N Resource Management Section: Gas; and

N "Safety Element" (hazardous materials and safety), Los Angeles City General Plan, Los Angeles Department of City Planning, 1996.

SECTION 20: RESOURCE MANAGEMENT (FOSSIL FUELS): GAS

The Southern California Gas Company supplies gas for the city. The city does not distribute or regulate natural gas, apart from petroleum extraction activities and gas generated at its landfills, sewage treatment plants and similar facilities. The same regulatory provisions that apply to oil generally apply to gas drilling and extraction, with the city's authority limited to land use and safety. The Department of Water and Power (DWP) purchases gas for electrical generation, but does not sell gas to its customers. Through its electrical energy conservation program it encourages efficient use of natural gas which is one of its fuel resources for production of electricity. Energy efficiency results not only in reducing use demand to protect nonrenewable natural gas resources but reduces energy costs and contributes to improvement of air quality. The issue of safety relative to hazardous materials management is addressed by the Hazardous Materials Section and the general plan Safety Element.

Secondary local sources of gas. In addition to the potential and known sources associated with oil deposits, a minor local source of methane gas is landfills, including city operated landfills. Landfill gas is generated during the fill decomposition process. Due to the hot, dry local climate, it takes an estimated 40 years for decomposition to be completed sufficiently for landfill sites to be converted to public uses. In the interim, the city recovers the gas and either burns it off at the site or converts it to electrical energy for sale to electrical utilities. Methane gas also is produced during the city's sewage treatment process. It is used to generate electrical energy for the treatment plants.

Primary distributor/supplies. The Southern California Gas Company (SCGC) is the largest distributor of natural gas in the nation. It supplies gas to 4.7 million customers, including 4.5 million residential customers within the approximately 32,000 square mile area of southern and central California. The SCGC provides over 937.7 billion cubic feet (Bcf) of natural gas to its southern California customers. At the present rate of usage, average temperature and anticipated growth of population and business, the SCGC projects an increase in demand to 1,033.8 Bcf by the year 2010. An estimated 237 million cubic feet (Mcf) per year will be for Los Angeles city customers, compared to 155 Mcf feet in 1990. The highest demand occurs in colder winter months, usually peaking for residential users in January. Economic and political situations, such as the 1970s oil embargo, also can affect supply and demand.

Most of the SCGC gas comes from on- and off-shore production in California, the San Juan Basin in northwestern New Mexico and southwestern Colorado, the Rocky Mountain region of southwestern Wyoming and from western Canada (primarily the Province of Alberta). The Permian Basin of southeastern New Mexico and west Texas and the Anadarko Basin in western Oklahoma and the Texas panhandle provide alternative sources. The gas is distributed through a network of underground pipelines.

Conservation. Conservation is encouraged by all levels of government. The California Code of Regulations Title 24 requires energy conservation measures in new development projects. The California Environmental Quality Act requires that impacts on nonrenewable energy resources be considered and that potential significant negative impacts be mitigated to a level of insignificance. Mitigation measures typically require development projects to include gas conservation measures to the satisfaction of the SCGC.

Air quality requirements continue to affect the demand for natural gas. New federal automotive gasoline fuel specifications (1995) resulted in

an increase in refinery production. State and federal requirements for reduction in air pollutants have spurred the development of alternative low emission fuels for automotive vehicles including development of vehicles fueled by natural gas and powered by electrical systems. The first natural gas vehicles were introduced into southern California in 1992. As natural gas vehicles become more reliable, versatile, cost-efficient, readily available and less expensive to buy and maintain, demand for natural gas fuel is anticipated to increase significantly.

To encourage efficient use of gas, SCGC provides free information and consultation to its customers. It provides analyses of homes and facilities concerning how to reduce energy costs through efficient use of electrical and natural gas systems, including selection and financing of energy efficient equipment, building materials and project design. To low income households SCGC offers to install basic weatherization measures at no cost.

Industry deregulation. Deregulation of the gas industry has resulted in an increase in gas providers who compete with the SCGC. It is anticipated that deregulation of the California electric industry will result in increased demand for gas used in generation of electrical energy and will impact gas recovery approaches. For example, enhanced oil recovery (injection of steam into oil-bearing geologic areas to enhance extraction by lowering oil viscosity), which has been a declining technology, is anticipated to continue declining due to restructuring, resulting in alternate, less costly, fuel sources for the southern California market.

Conclusion. The city has little regulatory authority over gas production and distribution, except relative to land use (e.g., drilling), safety issues (e.g., storage facilities) and gas that is produced at wastewater processing facilities and city landfill sites. It works cooperatively with the SCGC to provide information to the public regarding energy conservation and safety.

Continuing issues:

N Depletion of nonrenewable natural gas resources.

N Safe use, storage, transmission and transport of gas.

Resource management (fossil fuels) - petroleum (oil and gas) objectives, policies and programs: see prior section (oil).

For related information see:

- "Infrastructure Systems Element" (electrical and other city managed energy resources and conservation), Los Angeles City General Plan (under preparation);

- Hazardous Materials Section;

- Resource Management Section: Oil; and

- "Safety Element" (hazardous materials), City of the Los Angeles General Plan, Los Angeles Department of City Planning, 1996.

Caveat Exhibit B: the exhibit identifies Open Space Zone (OS) sites that are of sufficient size, scale or linear extension to qualify as features of city wide significance. Along with parks they are provided for purposes of showing the relationship of the sites to Significant Ecological Areas and other conservation resource areas. The OS Zone only applies to publicly owned open space.

Exhibit sources and explanatory notes:

1. Note: only significantly large parcels or geographic areas that are classified on the Los Angeles City Comprehensive Zoning Ordinance as 'OS' Open Space Zone, 'O' Oil Drilling District, 'G' Surface Mining District or 'K' Equinekeeping District are shown on these exhibits.

2. Source: "Farmland Mapping and Monitoring Program," California Department of Conservation, 1998.

   Note: the site identified is a portion of Pierce College. "Unique Farmland" is denoted by the state as "Lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the two update cycles prior to the mapping date."

   Other lands identified by the Department of Conservation but not depicted on this exhibit are "Urban and Built Up Land," i.e., land which is occupied by structures of at least one unit to 1.5 acres or approximately six structures to a 10-acre parcel and is no longer primarily in farming use.

3. Source: "Los Angeles County General Plan Conservation and Open Space Element," Los Angeles County Regional Planning Department, 1980 (currently under revision).

4. Source: "The Thomas Guide: Los Angeles County Street Guide and Directory, 1997 Edition," Thomas Brothers Maps, Los Angeles, California, 1997.

   Note: only significantly large parks are shown.

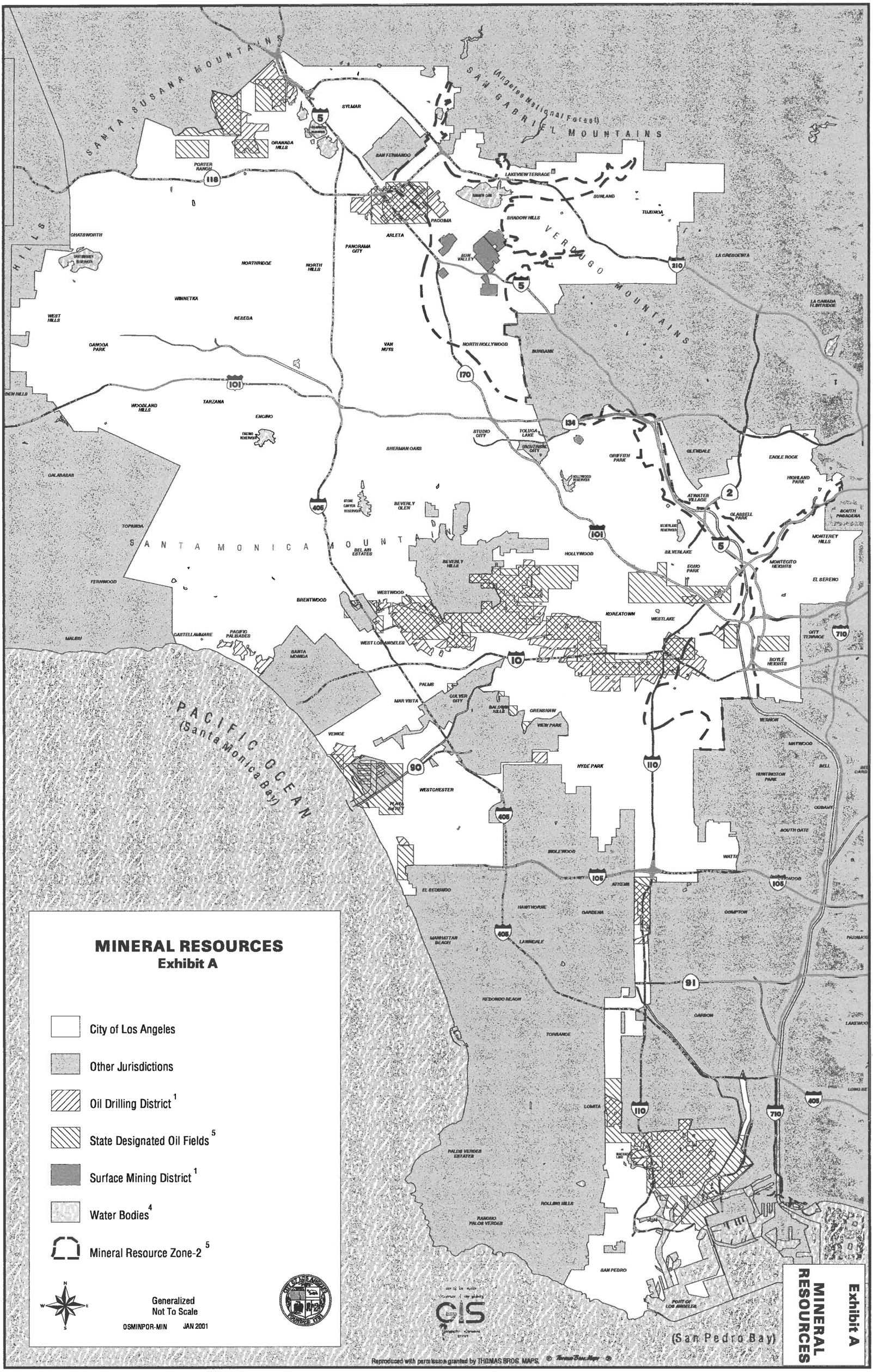
5. Source: "The Los Angeles General Plan Framework: Draft Environmental Impact Report," City of Los Angeles Planning Department, January 19, 1996.

   Note: relative to "Mineral Resource Zone-2," the MRZ-2 "zone" is a California State Geologist classification. It denotes an area in which deposits, in this case sand and gravel, are of significance to the state.

6. Source: "Transportation Element of the General Plan," City of Los Angeles Planning Department, 1999.

   Note: the 1999 plan supersedes previously adopted community plans. Therefore, scenic highways on the 1999 element may differ from those shown on previously adopted community plans.

[Exhibits A and B, attached.]



MINERAL RESOURCES
Exhibit A

- City of Los Angeles
- Other Jurisdictions
- Oil Drilling District [1]
- State Designated Oil Fields [5]
- Surface Mining District [1]
- Water Bodies [4]
- Mineral Resource Zone-2 [5]

Generalized
Not To Scale

OSMINPOR-MIN JAN 2001

GIS

Exhibit A
MINERAL RESOURCES

Exhibit B1

SEAs and Other Resources

- City of Los Angeles
- Other Jurisdictions
- Open Space Zone [1]
- County of Los Angeles [3] Significant Ecological Area (SEAs)
- Water Bodies [4]
- City Park [4]
- Equinekeeping District [1]
- Unique Farmland [2]
- Scenic Highway [6]

GIS

Generalized
Not To Scale
OSCVAL-CON
JAN 2001

Exhibit B2

SEAs and Other Resources

- City of Los Angeles
- Other Jurisdictions
- Open Space Zone [1]
- County of Los Angeles [3] Significant Ecological Area (SEAs)
- Water Bodies [4]
- City Park [4]
- Equinekeeping District [1]
- Unique Farmland [2]
- Scenic Highway [6]

Generalized
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JAN 2001

Exhibit B3

SEAs and Other Resources

City of Los Angeles

Other Jurisdictions

Open Space Zone[1]

County of Los Angeles[3] Significant Ecological Area (SEAs)

Water Bodies[4]

City Park[4]

Equinekeeping District[1]

Unique Farmland[2]

Scenic Highway[6]

Generalized
Not To Scale
OSCHAR-CON
JAN 2001