species and their habitats unless otherwise agreed to by the wildlife agencies at the time the parcel is conserved."

Surface mining is regulated pursuant to SMARA, as implemented by the City through its recently adopted Surface Mining Operations Ordinance. As with the state and the San Diego region, the most valuable mineral resource in Chula Vista is construction aggregate. If an area containing such resources is developed prior to accessing these resources, it may result in the permanent loss of minerals that are of local and regional significance. Rock Mountain is a valuable asset for the City and the region; the continued mining of this resource is anticipated for the near future. However, the mining of resources within the City beyond Rock Mountain is anticipated to be very limited in the near-term and either very limited or nonexistent in the long-term. Furthermore, in the long-term, no mining is envisioned to occur at all within the Chula Vista MSCP Preserve.

Objective - E 5

Efficiently extract regionally significant mineral resources in accordance with the Chula Vista MSCP Subarea Plan and require the appropriate reclamation of mined areas for suitable future development, recreation, open space, and/or habitat restoration.

Policies

E 5.1 Ensure that permit applications for proposed mineral resource extraction are consistent with the Chula Vista MSCP Subarea Plan.

E 5.2 Consider and minimize impacts from mining operations to existing and future surrounding land uses.

E 5.3 Ensure that approved mining reclamation plans fully comply with requirements of the Chula Vista MSCP Subarea Plan; Chula Vista Greenbelt Master Plan; Otay Valley Regional Park Concept Plan; and all other applicable plans regarding the restoration of biological habitats and the creation of trails and parkland.

3.1.6 Promoting Clean Air

Both the federal government and the State of California have enacted legislation designed to improve air quality, including the 1970 Federal Clean Air Act and the California Clean Air Act of 1988. Attainment areas are in compliance with the national and/or California ambient air quality standards for a given pollutant; whereas, non-attainment areas are not. San Diego County's federal and state designations for each of the criteria pollutants as of December 2004 are as follows:

TABLE 9-1
San Diego County's Federal and State Designations for Criteria Pollutants as of December 2004

Criteria Pollutant	Federal Designation	State Designation
Ozone (one hour)	Attainment	Nonattainment
Ozone (eight hour)	Nonattainment	(no state standard)
Carbon Monoxide	Attainment	Attainment
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	(no federal standard)	Attainment
Hydrogen Sulfide	(no federal standard)	Unclassified
Visibility	(no federal standard)	Unclassified
PM 10[1]	Unclassifiable	Nonattainment
PM 2.5[2]	(to be designated)	(to be designated)

[1]particulate matter of 10 microns or less in diameter
[2]particulate matter of 25 microns or less in diameter

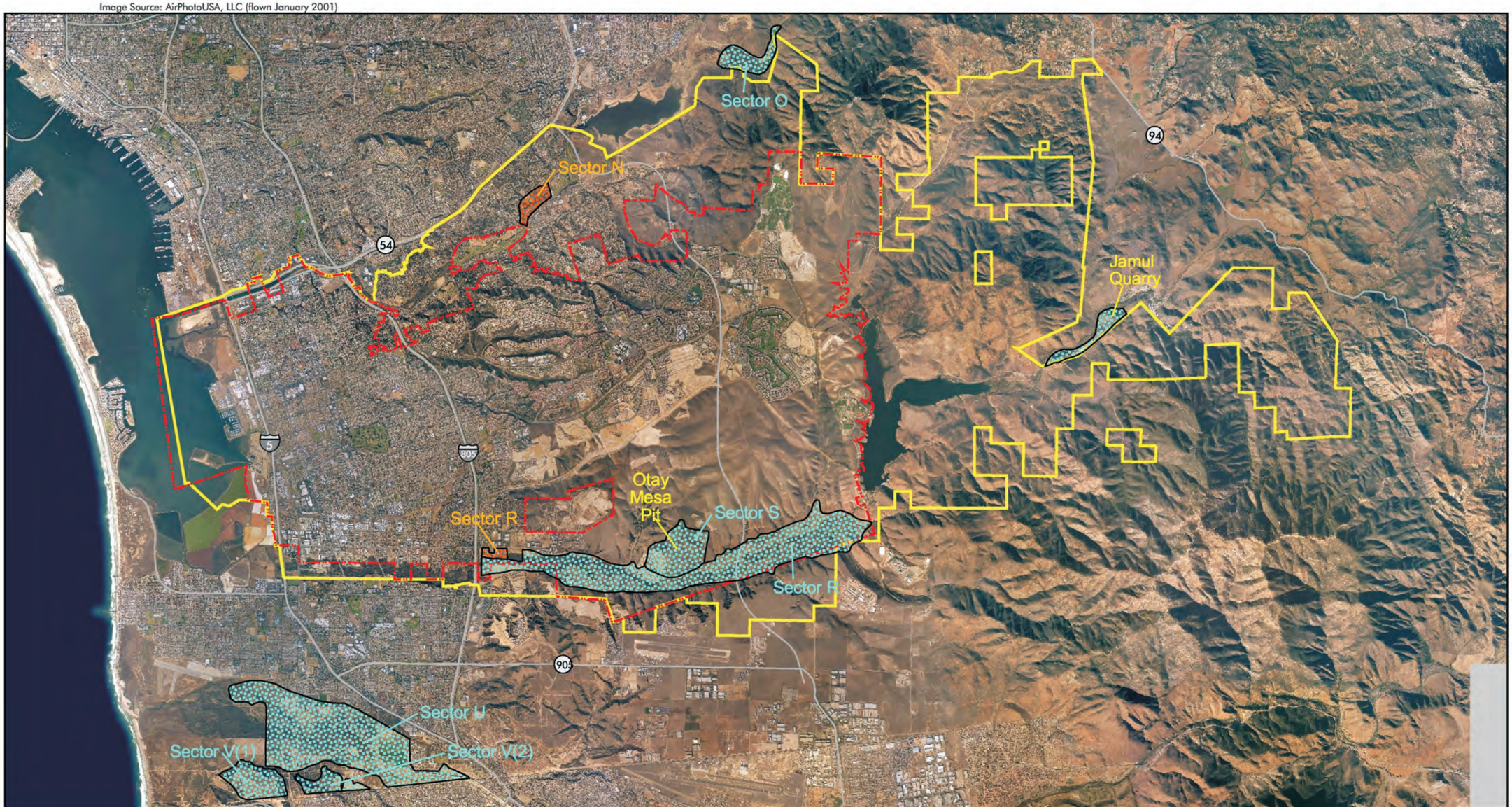
Source: County of San Diego Air Pollution Control District and U. S. Environmental Protection Agency

Unlike particulate matter and toxic air emissions that can be emitted directly from a vehicle's tailpipe, smog forms in the atmosphere from the photochemical reaction of volatile organic compounds and oxides of nitrogen, both of which are emitted by motor vehicles. Cars, trucks, and other motor vehicles produce about half of the smog-forming emissions in San Diego County. In addition, motor vehicles emit toxic air contaminants, contribute significantly to particulate matter levels, and in areas where substantial vehicular congestion occurs, can result in carbon monoxide (CO) "hot spots".

A toxic air contaminant is an air pollutant that may increase a person's risk of developing cancer and/or other serious health effects. Since 1990, the San Diego County Air Pollution Control District (APCD) has operated toxic sampling sites in El Cajon and Chula Vista. Data from these sites has consistently shown a significant downward trend in concentrations of several known carcinogens. Overall, emissions of air toxics are declining, with an 80 percent reduction in estimated industrial toxic air emissions since the early 1990's.

MRZ-2 Area Map

Image Source: AirPhotoUSA, LLC (flown January 2001)



Chula Vista municipal boundary

Chula Vista general plan area

"Regionally Significant" MRZ-2 Aggregate Resource Area

"Regionally Significant" MRZ-2 Aggregate Resource Area - Urbanized

0 Miles 1.2 N

Figure 9-4

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The California Air Toxics "Hot Spots" Information and Assessment Act requires facilities emitting toxic substances to provide local air pollution control districts with information that will facilitate an assessment of the air toxics problem; identification of air toxics emission sources; location of resulting "hot spots"; notification of the public exposed to significant risk; and development of effective strategies to reduce potential risks to the public over a period of five years. The APCD is the implementing agency for approximately 1,600 facilities required to comply with the Act within San Diego County.

The Chula Vista Carbon Dioxide Reduction Plan contains twenty action measures aimed at reducing greenhouse gas emissions, improving air quality, and encouraging energy conservation.

At the state level, the California Air Resources Board continues to implement an ongoing program to identify toxic air contaminants, assess their public health risks, and develop air toxics control measures to reduce toxic emissions from specific source categories statewide. Local air districts then must adopt and implement the state-approved emission reduction measures. The APCD has adopted statewide air toxics control measures (or is directly implementing measures) requiring actions, including: emissions controls for chrome plating operations; medical and commercial sterilizers; medical waste incinerators; dry cleaning operations; metal melting operations; and automotive maintenance and repair activities. APCD Rule 1200 (Toxic Air Contaminants New Source Review), adopted in 1996, requires evaluation of potential health risks for any new, relocated, or modified emission unit that may increase emissions of one or more toxic air contaminants. The rule requires projects with an increase in cancer risk between 1 and 10 in one million to install toxics best available control technology. Additionally, projects with an increase in cancer risk between 10 and 100 in one million must meet significantly more stringent requirements to mitigate risks before they can be approved.

Energy conservation and a transition from fossil fuel based electricity generation and heating to non-fossil fueled alternatives will reduce the amount of local, regional, and global air pollution produced and result in improved air quality. The City of Chula Vista has developed a number of plans and strategies that focus on improving air quality and energy conservation. The Chula Vista (Carbon Dioxide) Reduction Plan, adopted in November of 2000, contains twenty action measures aimed at reducing greenhouse gas emissions, improving air quality, and encouraging energy conservation. The City requires the preparation of an Air Quality Improvement Plan (AQIP) for all major development projects. The focus of an AQIP is to provide for energy conservation and air quality improvements through improved project design and participation in energy efficient building programs.

Land use and transportation have the greatest impact on air quality in Chula Vista. While progress has been made at the regional level there is still much that can be done locally. Safeguarding public health is the focus of federal and state activities with regard to air quality programs. The impact of air quality on the health of the residents of Chula Vista is an important

issue. Energy conservation and a transition to renewable, non-fossil fuel based energy are an important means to reduce emissions caused by the generation of electricity. As growth and redevelopment continues in Chula Vista, air quality will remain an important factor to the quality of life desired by the community.

Objective - E 6

Improve local air quality by minimizing the production and emission of air pollutants and toxic air contaminants and limit the exposure of people to such pollutants.

Policies

E 6.1 Encourage compact development featuring a mix of uses that locate residential areas within reasonable walking distance to jobs, services, and transit.

E 6.2 Promote and facilitate transit system improvements in order to increase transit use and reduce dependency on the automobile.

E 6.3 Ensure that operational procedures of the City promote clean air by maximizing the use of low-and zero-emissions equipment and vehicles.

E 6.4 Do not site new or re-powered fossil-fueled baseload or peaking-type Electric Generating Facilities and other major toxic emitters within 1,000 feet of sensitive receptors, or site sensitive receptors within 1,000 feet of such facilities.

E 6.5 Ensure that plans developed to meet the City's energy demand use the least polluting strategies, wherever practical. Conservation, clean renewables, and clean distributed generation should be considered as part of the City's energy plan, along with larger natural gas-fired plants.

E 6.6 Explore incentives to promote voluntary air pollutant reductions, including incentives for developers who go above and beyond applicable requirements and for facilities and operations that are not otherwise regulated.

E 6.7 Encourage innovative energy conservation practices and air quality improvements in new development and redevelopment projects consistent with the City's Air Quality Improvement Plan Guidelines or its equivalent, pursuant to the City's Growth Management Program.

E 6.8 Support the use of alternative fuel transit, City fleet and private vehicles in Chula Vista.

E 6.9 Discourage the use of landscaping equipment powered by two-stroke gasoline engines within the City and promote less-polluting alternatives to their use.

E 6.10 The siting of new sensitive receivers within 500 feet of highways resulting from development or redevelopment projects shall require the preparation of a health risk assessment as part of the CEQA review of the project. Attendant health risks identified in the Health Risk Assessment (HRA) shall be feasibly mitigated to the maximum extent practicable, in accordance with CEQA, in order to help ensure that applicable federal and state standards are not exceeded.

E 6.11 Develop strategies to minimize CO hot spots that address all modes of transportation.

E 6.12 Promote clean fuel sources that help reduce the exposure of sensitive uses to pollutants.

E 6.13 Encourage programs and infrastructure to increase the availability and usage of energy-efficient vehicles, such as hybrid electric vehicles, electric vehicles, or those that run on alternative fuels.

E 6.14 The City will implement a clean vehicle/alternative fuel program for City vehicles (except safety vehicles and equipment, when not feasible) and promote the development of infrastructure to support their use.

E 6.15 Site industries: and other stationary emitters in a way that minimizes the potential impacts of poor air quality on homes, schools, hospitals, and other land uses where people congregate.

Objective - E 6A

Explore opportunities for improving indoor air quality.

Policies

E6.A.1 Continue to limit exposure to secondhand smoke by encouraging the creation of smoke free spaces and facilities at all workplaces and multi unit housing.

E6.A.2 Work with outside partners such as the local school districts and other community stakeholders to educate the public about
The dangers of mold growth
and establish programs to assist in its reductions.

E6.A.3 Encourage programs to prevent insect and rodent infestation.

E6.A.4 Support lead abatement programs.

3.1.7 Creating A Sustainable Energy Future

The focus of this section is energy conservation. (The Public Facilities and Services Element addresses energy demand, supply, and infrastructure.) Energy is essential to maintaining the existing quality of life and economic development and sustainability of the region. The primary sources of energy in San Diego County are electricity and natural gas. At present, the region is heavily dependent upon the importation of natural gas to produce electricity locally, as well as the importation of electricity produced outside of the region.

Since 1990... Chula Vista has implemented a number of measures to improve the energy efficiency of City operations and facilities and transition to alternative clean energy sources.

Reducing demand for electricity and natural gas is an important step to help meet the growing energy needs of the region and meeting the intent and spirit of the City's environmental goals. Plans and programs currently implemented by regional and local agencies to conserve energy and natural gas are helping to reduce demand.

In 1994, SANDAG adopted the San Diego Regional Energy Plan that identified energy issues and specific measures to improve the efficiency of energy use and develop distributive power generation. As a result of the Regional Energy Plan, the San Diego Regional Energy Office (SDREO) was formed to provide information on energy issues for the region. In 2002, SDREO prepared the San Diego Regional Energy Infrastructure Study that provides an inventory and evaluation of energy supply and infrastructure necessary to meet regional needs through 2030. This study was used to develop the 2003 Regional Energy Strategy, a comprehensive plan that addresses electricity and natural gas supply and demand. It contains a broad vision of how energy challenges should be addressed and how energy will be produced and consumed throughout the region through 2030.

The City of Chula Vista Energy Strategy and Action Plan (Energy Strategy) has nine strategy actions. The strategy actions are grouped into categories based on risk factors and payoff timeframes, ranging from continued or expanded conservation and education programs to the formation of a municipal utility to provide energy services. In addition to the Energy Strategy, a broad range of energy efficiency programs are implemented by the federal and state governments and utility providers that provide incentives to energy users to promote the use of energy efficient equipment and appliances and to builders that design and construct energy efficient buildings. Chula Vista has implemented a number of measures to improve the energy efficiency of City operations and facilities and transition to alternative clean energy sources, including, but not limited to, the purchase of alternative fuel buses; the use of biodiesel, energy efficiency upgrades for traffic signals and buildings; and the installation of photovoltaic systems on City facilities

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Meeting the future energy needs of Chula Vista and the region will require an integrated approach, including: increased development of, and reliance, on renewable energy sources; decreased dependence on non-renewable energy sources; and the expansion and promotion of energy conservation programs and measures. The development of renewable sources of energy within Chula Vista and the region will facilitate the ability to meet energy needs in an environmentally sensitive manner and reduce dependency upon imported energy.

Objective - E 7

Promote energy conservation through the efficient use of energy and through the development of local, non-fossil fuel-based renewable sources of energy.

Policies

E 7.1 Promote development of regulations and building design standards that maximize energy efficiency through appropriate site and building design and through the use of energy-efficient materials, equipment, and appliances.

E 7.2 Encourage and support the local research, development, generation, and use of non-fossil, fuel-based renewable sources of energy, including wind and solar resources, that meet local energy needs in an environmentally sensitive manner and reduce dependence on imported energy.

E 7.3 Develop and provide pertinent information about the benefits of energy conservation and available energy conservation incentive programs to all segments of the community.

E 7.4 Pursue and encourage the expansion of local energy conservation, energy efficiency, and related incentive programs.

E 7.5 Pursue 40% City-wide electricity supply from clean, renewable resources by 2017.

E.7.6 Encourage the construction and operation of green buildings, considering such programs as the Leadership in Energy and Environmental Design (LEED™) Green Building Rating System.

E 7.7 Support tree planting programs that will be implemented to reduce energy needs.

E 7.8 Ensure that residential and non-residential construction complies with all applicable City of Chula Vista energy efficiency measures and other green building measures that are in effect at the time of discretionary permit review and Approval or building permit issuance, whichever is applicable

3.1.8 Promoting Solid Waste Reduction Strategies

While the Public Facilities and Services Element addresses current and future solid waste disposal facility needs, this section of the Environmental Element addresses recycling and waste reduction efforts.

Recycling and solid waste reduction programs have been in place in Chula Vista since 1990 to meet the State goal of diverting or reducing 50 percent of the solid waste generated by all residential, commercial, and industrial uses. A City-wide residential curbside collection program for recyclable items has been in place since 1991. The preparation of a solid waste management plan is required as part of the permit approval process for new development and redevelopment projects; the plan must address the pre-construction, construction, and operational phases of the project. As a result of these efforts, Chula Vista has reduced or diverted more than 50 percent of the solid waste generated within the City, thereby achieving the State goal.

Chula Vista has reduced or diverted more than 50 percent of the solid waste generated within the City.

Chula Vista's household hazardous waste (HHW) program, designed to provide a means to safely collect; recycle; treat; and dispose of HHW, was implemented in 1997. HHW collected at the City's facility is sent to various locations throughout the United States for treatment and/or recycling. Section 3.4.2 of this element, Managing Household Hazardous Waste, further addresses the management of HHW. Public education and awareness programs, including programs for school-age children, support the recycling program and contribute to high participation rates. In

addition to recycling, Chula Vista's solid waste management strategies include source reduction and composting. The City is working towards the goal of establishing a permanent compost site at the Otay Landfill.

The current and future demand for solid waste disposal requires Chula Vista to take an aggressive approach to source reduction. Continued efforts to educate the public about recycling, proper disposal of household hazardous waste, and composting will be critical to meeting the future solid waste disposal needs of the General Plan area.

Objective - E 8

Minimize the amount of solid waste generated within the General Plan area that requires landfill disposal.

Policies

E 8.1 Promote efforts to reduce waste, minimize the need for additional landfills, and provide economically and environmentally sound resource recovery, management, and disposal facilities.

E 8.2 Support the development of composting programs for commercial and residential development.

E 8.3 Implement source reduction strategies, including curbside recycling, use of small collection facilities for recycling, and composting.

E 8.4 Provide information about applicable solid waste reduction programs to all segments of the community, including other governmental institutions.

E 8.5 Encourage the reduction of household hazardous waste generation and disposal by promoting the use of safe substitutes, and by promoting and facilitating recycling of household hazardous waste.

E 8.6 Permit recycling operations and businesses that utilize recyclable materials within industrial zones in close proximity to Otay Landfill, subject to conformance with applicable SPA Plan-level policies and zoning regulations.

3.1.9 Protecting Chula Vista's Cultural Resources

Cultural resources consist of: buildings; structures; objects; archaeological sites; districts; landscapes; places; traditional cultural properties; manuscripts; and other resources deemed to be historically significant or significant from an architectural; engineering; scientific; economic; agricultural; educational; social; political; military; or cultural standpoint at the local, state, or national level. A cultural resource may: be the location of a prehistoric or historic occupation or activity; be a locale that has been, and often continues to be, of religious, mythological; cultural, economic, and/or social importance to an identifiable ethnic group; be associated with events that have made a significant contribution to history or cultural heritage; be associated with the lives of important persons; embody the distinctive characteristics of a type, period, region, or method of construction; represent the work of an important creative individual; possess high artistic values; or yield information important in prehistory or history.

Cultural resources that reflect the history of a community, from descendants of the earliest Native Americans to later explorers, settlers, and immigrants, are important to the community and, therefore, warrant protection by the City.

Cultural resources may be listed in a local register of historical resources, in the California Register of Historical Resources, and in the National Register of Historic Places. The Chula Vista List of Designated Historic Sites constitutes the City of Chula Vista's local register of historical resources. On September 30, 2003, the City Council accepted the Ad Hoc Historic Preservation Committee's report, entitled "An Evaluation of Historic Preservation in Chula Vista." Policies addressing the implementation of the report's recommendations are contained in Section 7.6 of the Land Use and Transportation Element. Due to the relationship between historic buildings, community character, and urban design, the specific issues pertaining to historic buildings are addressed in the Land Use and Transportation Element. The focus of this section is on the remaining types of cultural resources.

Native American presence in San Diego County is known to extend back approximately 9,000 years from today. Approximately 600 prehistoric archaeological sites have been recorded within the Chula Vista General Plan area, many of which remain in part or in total, suggesting the likelihood that additional unrecorded sites are present within undeveloped, as well as some previously developed, portions of the General Plan area.

Spanish contact in the region in 1769 marked the end of the prehistoric era and the beginning of the historic era. The Chula Vista area was part of a Spanish land grant known as Rancho del Rey, the King's Ranch. Under Mexican rule in 1821, this ranch, encompassing National City, Chula Vista, Bonita, Sunnyside, and the Sweetwater River Valley, was known as Rancho de la Nacion. The United States military occupied the region in 1846 and assumed formal control with the Treaty of Guadalupe-Hidalgo in 1848. In 1850, the California State Legislature formally organized San Diego County. The Santa Fe Railroad was brought to southern California in 1885, with its first terminus in National City. Subsequently, the Sweetwater Dam was built to bring water to Chula Vista and a railroad was built connecting Chula Vista and Otay Mesa with National City and San Diego. In time, Chula Vista became the largest lemon-growing center in the world.

The City of Chula Vista was incorporated in 1911, with a population of 550. After its incorporation, Chula Vista continued to be a leading lemon-growing center; other important crops produced in Chula Vista included tomatoes and celery. Chula Vista was also home to several other significant industries. The Salt Works has been operating on the Chula Vista bayfront since the end of the nineteenth century, and Rohr Aircraft Company was established on the Chula Vista bayfront during the 1940s.

Chula Vista assesses and mitigates the potential impacts of private development and public facilities and infrastructure to significant cultural resources pursuant to the provisions of the California Environmental Quality Act (CEQA). Sections 15064.5 and 15126.4 of the State CEQA Guidelines define historical resources (i.e., cultural resources) and address, in general terms, mitigation requirements for significant and potentially significant impacts to such resources. Pursuant to the State CEQA Guidelines, historical resources are not limited to officially listed resources, but also include resources found to be eligible for listing at the local, state, and federal levels. Cultural resources that reflect the history of a community, from descendants of the earliest Native Americans to later explorers, settlers, and immigrants, are important to the community and, therefore, warrant protection by the City. Furthermore, the accessibility of important cultural resources to the public for educational, religious, cultural, scientific and other purposes should be supported and encouraged by the City.

Objective - E 9

Protect Chula Vista's important cultural resources and support and encourage their accessibility to the public.

Policies

E 9.1 Continue to assess and mitigate the potential impacts of private development and public facilities and infrastructure to cultural resources, in accordance with the California Environmental Quality Act.

E 9.2 Support and encourage the accessibility of Chula Vista's important cultural resources to the public for educational; religious; cultural; scientific; and other purposes, including the establishment of museums and facilities accessible to the public, where such resources can be appropriately studied, exhibited, curated, etc.

E 9.3 Discourage disruption, demolition, and other negative impacts to historic cultural Resources.

3.1.10 Protecting Paleontological Resources

Paleontological resources, or fossils, are the remains and/or traces of prehistoric (i.e., older than approximately 10,000 years) plant and animal life. Fossils provide us with direct evidence of ancient organisms and document the patterns of organic evolution and extinction that have characterized the history of life over the past 3.4 billion years. Paleontological resources, like archaeological resources, represent a limited, non-renewable, and sensitive scientific and educational resource. In California, impacts to paleontological resources are addressed through the environmental review process pursuant to CEQA.

Negative impacts to paleontological resources generally take the form of physical destruction of fossil remains by excavation operations.

Fossil remains, such as bones, teeth, shells, and wood are found in the geologic deposits (sedimentary rock formations) within which they were originally buried. In the sense of being buried, paleontological resources are like archaeological resources. However, archaeological resources are typically found in shallow surficial soils and colluvium, while paleontological resources are found in deeper bedrock layers of sandstone, mudstone, or shale.

Paleontological resources can be thought of as including not only actual fossil remains, but also the localities where those fossils are collected, and the geologic formations (rock units) containing the localities. This direct relationship between fossils and the geologic formations within which they are entombed is important for planning purposes. Knowledge of the geology of a particular area and the paleontological resource sensitivity (i.e., fossil productivity) of particular geologic formations makes it possible to predict where fossils may (or may not) be encountered. A number of distinct geologic formations that record portions of the past 140 million years of Earth history are present within the General Plan area; however, the record is most complete for only the past 42 million years. The geologic formations present within the General Plan area consist of: Mission Valley Formation; Otay Formation; San Diego Formation; Sweetwater Formation; Bay Point Formation; Unnamed nearshore marine sandstone; Lindavista Formation; Unnamed river terrace deposits; Later Quaternary alluvium; and Santiago Peak Volcanics. The paleontological resource sensitivity of these formations ranges from marginal to high.

Deciphering this geological and biological record is an ongoing process and each year brings new discoveries. This is especially the case in the City of Chula Vista, where continued growth and development presents potential impacts to local paleontological resources. Over the past 20-plus years, mitigation of these impacts has resulted in the recovery and conservation of thousands of significant fossils, including many that represent species new to science.

Negative impacts to paleontological resources generally take the form of physical destruction of fossil remains by excavation operations. Burial of paleontological resources is not considered to represent a significant impact, since the resources are not destroyed. Significant impacts to sensitive paleontological resources can be mitigated through a mitigation program. Typically, mitigation occurs during construction, consisting of monitoring during excavation operations and the recovery of significant resources. Recovered resources are then curated at an appropriate institution, where they are available for immediate and future paleontological study and can be displayed for public viewing.

Chula Vista assesses and mitigates the potential impacts of private development and public facilities and infrastructure to paleontological resources pursuant to the provisions of CEQA. Pursuant to Section 15065 of the State CEQA Guidelines, a lead agency must find that a project may have a significant effect on the environment where the project has the potential to eliminate important examples of the major periods of California prehistory, which includes the destruction of significant paleontological resources.

Objective - E 10

Protect important paleontological resources and support and encourage public education and awareness of such resources.

Policies

E 10.1 Continue to assess and mitigate the potential impacts of private development and public facilities and infrastructure to paleontological resources in accordance with the California Environmental Quality Act.

E 10.2 Support and encourage public education and awareness of local paleontological resources, including the establishment of museums and educational opportunities accessible to the public.

3.2 Open Space

Open space provides for the preservation of natural resources, such as: wildlife and their habitats; scenic vistas; unique natural conditions; sensitive vegetation; agricultural uses; and productive soils. Open space also can provide a break in the urban structure, creating visual relief; diversity; texture; pattern; and continuity to the overall pattern of development. Additionally, open space can be used to limit or restrict development in areas exposed to significant hazards, such as: earthquakes; landslides; fires; floods; and erosion, and as a buffer to protect sensitive uses from noise.

The Chula Vista Greenbelt incorporates developed and un-developed open space and potential new open space linkages to form a continuous 28-mile open space and park system around the perimeter of the City.

The following four open space land use designations have been established to address the different types and functions of open space areas throughout the General Plan area: Open Space; Open Space Preserve; Open Space - Active Recreation; and Parks and Recreation. These specific designations apply to areas that have an abundance of natural resources; visual resources; recreational value; and/or public safety concerns, among other attributes. The Land Use and Transportation Element describes the open space land use

designations and their locations throughout the City. The aforementioned four open space land use designations are depicted on Figure 9-5 as a composite open space network.

The Chula Vista Greenbelt incorporates developed and undeveloped open space and potential new open space linkages to form a continuous 28-mile open space and park system around the perimeter of the City, serving as a limit to the City's urban development (Figure 9-6). The Chula Vista Greenbelt Master Plan addresses a variety of issues and challenges, including: existing and potential trail locations; development standards for future trails and parking/staging areas; management and maintenance responsibilities; and the establishment of an open space network that connects parks and activity areas throughout the City.

The Chula Vista Parks and Recreation Master Plan's inventory includes existing parks and recreation facilities, a needs assessment, and policies to implement the General Plan. It also discusses open space areas and trails.

The Otay Ranch General Development Plan (GDP) governs the development of the 23,000-acre Otay Ranch. As a part of the Otay Ranch GDP, a large regional trail system linked to paseos and public parks will provide for a variety of recreational options. An 11,000-acre open space preserve has been established to protect most of the natural resource areas within Otay Ranch. The Otay Ranch GDP and Otay Ranch Resource Management Plan recognize the importance of environmental and landform preservation, and the need to design environmentally sensitive communities.

The Otay Valley Regional Park Concept Plan addresses the planned 8,700-acre, multi-jurisdictional regional open space system extending through the Otay River Valley from San Diego Bay to the Otay Lakes (Figure 9-6). Opportunities exist for the park to contain substantial preserve area, as well as active and passive recreation areas and equestrian, hiking, and biking trails.

The Multiple Species Conservation Program (MSCP) is a comprehensive program for the preservation of numerous sensitive plant and animal species in the region. The Chula Vista MSCP Subarea Plan anticipates the development of active recreation uses within portions of the Otay River Valley and limited opportunities for trails and passive recreation within portions of the MSCP Preserve. (See Section 3.1.1 if this element for more information on the MSCP.)

3.2.1 Connecting and Improving Chula Vista's Open Space and Trails Network

Chula Vista has significant open space areas with a variety of natural resources. The City has taken a multi-track approach to the conservation and management of its open space resources, including the preservation of critical landforms and requirements for open space dedication in master planned communities. There are currently several thousand acres of undeveloped land throughout the General Plan area. Although some of this land will remain as permanent open space and is designated as such through the General Plan, much of it will be developed in the future.

The primary open space network in the City of Chula Vista and south San Diego County is the Chula Vista Greenbelt (Figure 9-6). As the backbone of an open space and park system that extends throughout Chula Vista and beyond, the Greenbelt encircles urban areas, providing visual relief; recreational opportunities; resource protection; and a unique identity for the City.

In master planned communities, the City requires dedication of open space to preserve natural resources and to create visual relief, diversity, and texture for the community. Some of the open space created in this manner is within the Chula Vista Greenbelt, while the remainder is internal to the communities. The City has other small open space areas outside of master planned communities, including utility corridors, unimproved drainage courses, and undeveloped canyon areas. Parks are considered a component of the City's open space network, in light of the visual relief that they provide from the built environment. Park and recreation needs of the community are addressed in the Public Facilities and Services Element.

The developed portions of western Chula Vista include limited amounts of trails and open space. With increased residential densities and intensity of development in this portion of the City, there will be a corresponding increase in demand for all forms of open space. Open space areas in newer developments often lie disconnected from the Greenbelt. There are opportunities to provide internal trail connections, especially within existing utility corridors and along important roadways.

Trails are defined as paths used for walking, bicycling, horseback riding, or other forms of recreation or transportation. The Greenbelt Master Plan envisions two types of trails within the Greenbelt: multi-use trails and rural trails. Multi-use trails are designed for a variety of users, such as: bicyclists; equestrians; pedestrians; joggers; and other non-motorized activities; and may be improved with a variety of trail surfaces. Rural trails provide access to open space areas and are

General Plan Area Open Space Map

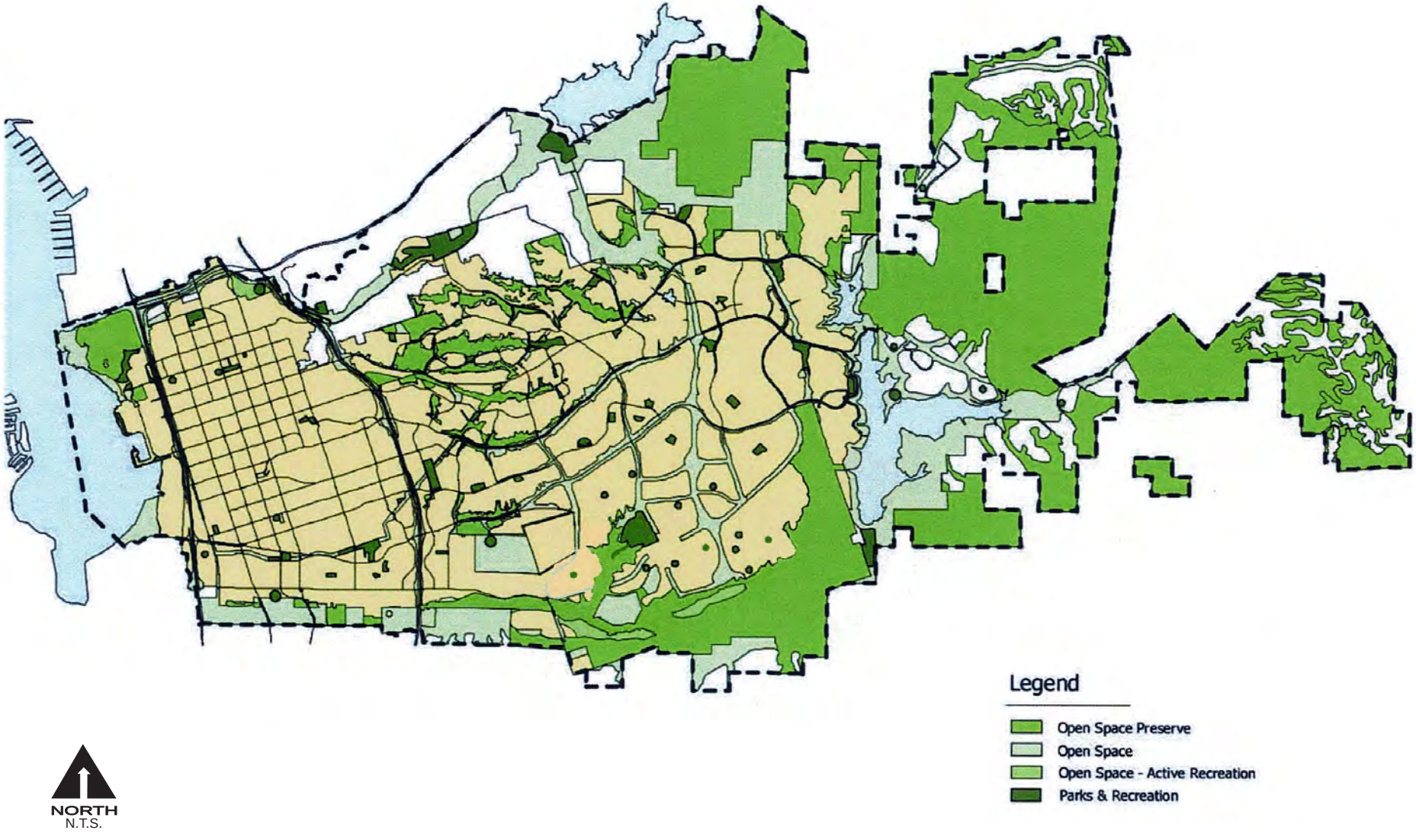

Figure 9-5

CITY OF CHULA VISTA

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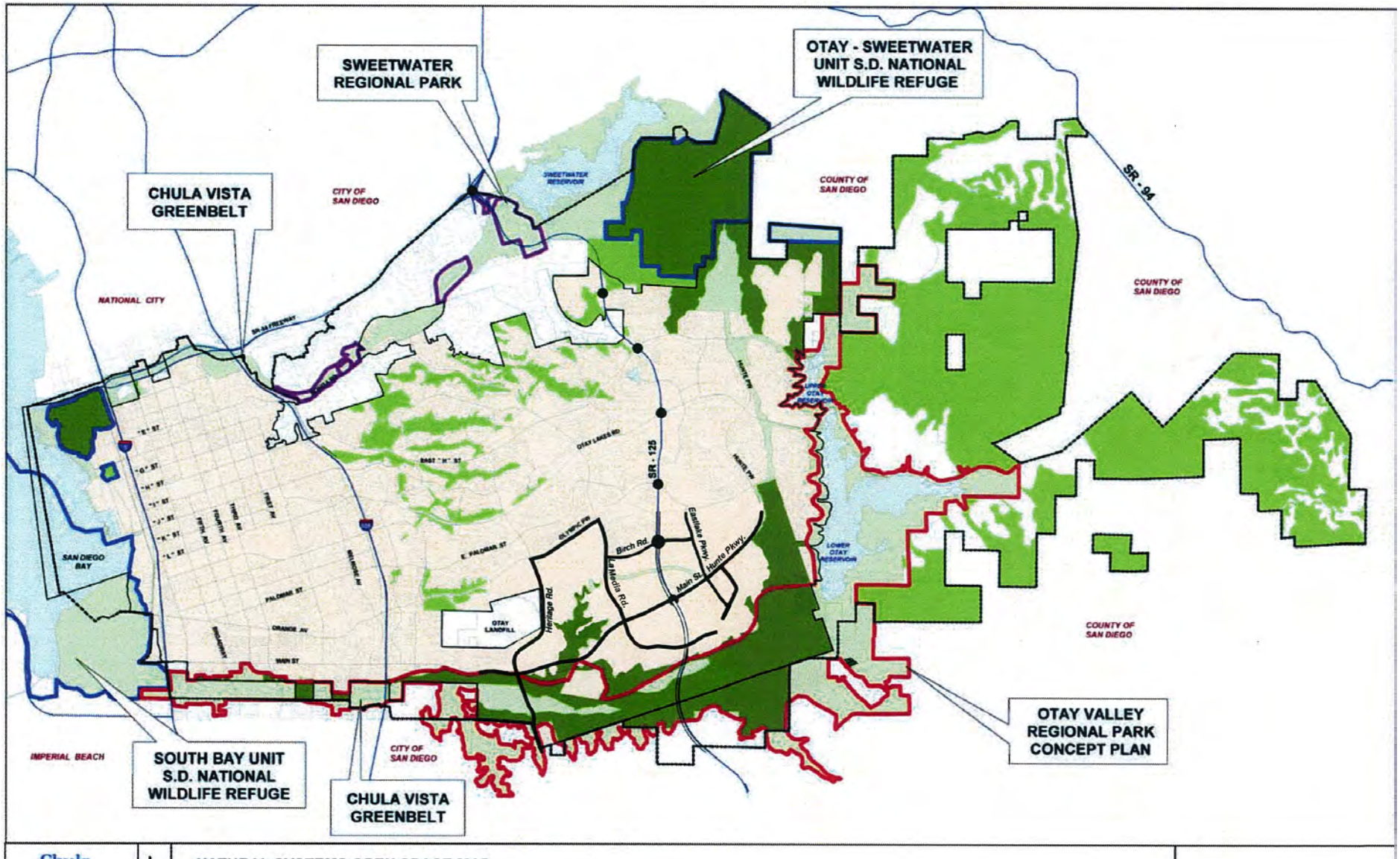
Natural Systems Open Space Map



Chula Vista Vision 2020

LEGEND

NATURAL SYSTEMS OPEN SPACE MAP

- MSCP PRESERVE
- GREENBELT
- GREENBELT AND MSCP PRESERVE
- OTAY VALLEY REGIONAL PARK CONCEPT PLAN
- SAN DIEGO NATIONAL WILDLIFE REFUGE
- SWEETWATER REGIONAL PARK
- WATER FEATURES
- CITY BOUNDARY
- GENERAL PLAN BOUNDARY

Figure 9-6

CITY OF CHULA VISTA

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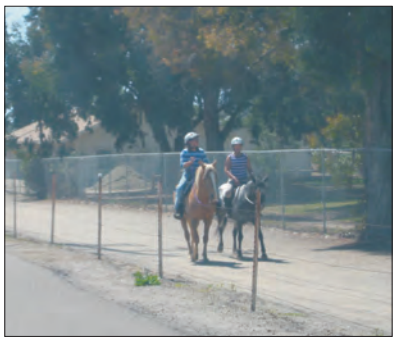
designed to minimize impacts to natural resources, limit access to maintenance and emergency vehicles, and may limit the type of users, depending on permitted uses in these resource areas. Limited opportunities exist for trails within portions of the Chula Vista MSCP Preserve (Figures 9-2 and 9-6). The provision of future trails should not only consider those within the Greenbelt and the MSCP Preserve, but also landscape promenades, paseos, or other urban trails/paths that connect community features or activity areas, or that connect the core area of the City to the Greenbelt and MSCP Preserve.



As development and population growth in Chula Vista continues, improvement of the City's open space and trails network, including the provision of additional internal connections between the various elements of the network, will become increasingly important. The preparation of a City-wide Trails Master Plan is needed, and the creation of connected paseos and trails between community activity areas should be encouraged. The provision of sufficient open space areas is needed within the remaining development areas of the City's master planned communities and within other large-scale developments, such as on the Bayfront. Urban community-based "green" infrastructure that is distinct from habitat conservation should be expanded upon and encouraged. The retention and utilization of open space areas, including undeveloped natural areas, utility corridors, and key scenic corridors, should be encouraged, where feasible.

Objective - E 11

Improve Chula Vista's open space and trails network, including the provision of additional internal connections between the various elements of the network.

Policies

E 11.1 Provide an integrated network of open space areas, as needed, throughout the City to serve residents, as well as to serve as a regional asset and attractor of visitors (e.g., on the bayfront and within the Otay River Valley).

E 11.2 Plan for the long-term preservation and enhancement of open space within the Chula Vista Greenbelt.

E 11.3 Conserve open space within the Chula Vista Greenbelt through public acquisition of private property and other acceptable conservation methods.

E 11.4 Prepare and implement a City-wide Trails Master Plan that defines staging and access areas, trail types, standards, and siting criteria, consistent with the Greenbelt Master Plan and the Chula Vista MSCP Subarea Plan, including the placement of appropriate limitations on public access outside of designated trails and staging and access areas.

E 11.5 Encourage the creation of connected paseos and trails between community activity areas and enhance with kiosks and rest stations.

E 11.6 The Sweetwater River corridor should be restored and enhanced as an environmental and recreational resource for the community.

E 11.7 Expand upon and encourage urban community-based "green" infrastructure that is distinct from habitat conservation (e.g., community, neighborhood, and pocket parks, disturbed canyons, community and roof gardens, and vegetated drainages) and ensure that such facilities are integrated into new development and redevelopment in western Chula Vista.

E 11.8 Develop a greenbelt park and/or open space system through the Bayfront Planning Area to link the Sweetwater and Otay rivers and to buffer sensitive natural resources from development within the planning area.

E 11.9 Work with utility owners and operators to promote the use of utility easements and corridors as open space and trail corridors.

E 11.10 Encourage the retention of open space areas, including undeveloped natural areas and utility corridors, wildlife corridors, and key scenic corridors.

3.2.2 Providing Connections to the Regional Open Space and Trails Network

Chula Vista's open space and trail network abuts other regional open space areas and trails, including: the Bayshore Bikeway; California Riding and Hiking Trail; Sweetwater Valley trail system; future Otay Valley Regional Park trail system; and the open space preserve in the unincorporated eastern portion of Otay Ranch. Some connections between the City's open space and trails network and the regional network exist today; others are planned; and additional opportunities will likely become evident as future regional open space and trails plans are formulated and implemented.

Future connections between the City's open space and trails network and the regional network will serve Chula Vista residents and visitors, as well as surrounding communities. Providing such connections will require careful collaboration with the applicable agencies responsible for planning, implementing, and managing the various components of the regional open space and trails network. In addition, opportunities for connections to the regional open space and trails network through developments adjacent to the network should be explored as the City processes development proposals.

Objective - E 12

Provide connections between Chula Vista's open space and trails network and the regional network.

Policies

E 12.1 Collaborate with San Diego County, the City of San Diego, and other applicable agencies to provide connections between Chula Vista's open space and trails network and the regional network, in accordance with the Chula Vista MSCP Subarea Plan and Otay Valley Regional Park Concept Plan.

E 12.2 Explore opportunities for connections to the regional open space and trails network through developments within the City adjacent to the network as development proposals are reviewed and processed, and work with project proponents and applicable agencies to plan, develop, and manage such connections.

3.2.3 Exploring Ecotourism Opportunities

Chula Vista and the south San Diego County subregion possess a multitude of natural resources and ecologically-oriented recreational amenities, including: the San Diego National Wildlife Refuge Complex; San Diego Bay; Pacific Ocean; Sweetwater Valley Regional Park; planned Otay Valley Regional Park; Otay Lakes; Bayshore Bikeway; California Riding and Hiking Trail; and a portion of the Peninsular Ranges. San Diego County has over 200 plant and animal species that are federally and/or state listed as endangered, threatened, or rare; proposed or candidates for listing; or otherwise are considered sensitive, many of which occur in the subregion. These and many other species of plants; fish; amphibians; reptiles; birds (including migratory species); and mammals reside within the vast array of upland and wetland habitats of the subregion's coastal, inland, and mountain areas. The natural resources and ecologically-oriented recreational amenities of the subregion are presently enjoyed by local residents as well as visitors from throughout the southern California/northern Baja California binational region and beyond.

Ecotourism promotes the conservation of natural resources and contributes to the diversification and health of the local economy.

The International Ecotoursim Society defines ecotourism as "responsible travel to natural areas that conserves the environment and improves the well-being of local people." Chula Vista and the south San Diego County subregion possess unique and varied natural resources and ecologically-oriented recreational amenities. Ecotourism also promotes the conservation of natural resources and contributes to the diversification and health of the local economy. Given the ecological and economic benefits that could be derived from ecotourism in Chula Vista and the subregion, its potential viability is worthy of exploration.

Objective - E 13

Acknowledge the uniqueness of the natural resources and ecologically-oriented recreational amenities in Chula Vista and the south San Diego County subregion and the potential viability of ecotourism to enhance economic and environmental sustainability.

Policies

E 13.1 Collaborate with other jurisdictions and agencies within Chula Vista and in the south San Diego County subregion to explore the potential viability of near-term and long-term ecotourism opportunities, and to promote such opportunities.

3.3 Natural Hazards

Natural hazards in Chula Vista are associated with earthquakes; landslides; slope instability; flooding; dam inundation; and wildland fires. This section identifies the environmental safety hazards facing existing and new development in Chula Vista and includes general hazard and risk reduction strategies and policies, such as the mitigation of hazards through avoidance in new development and redevelopment.

3.3.1 Identifying and Limiting Geologic Hazards

Seismic Hazards

Chula Vista's General Plan area is situated within seismically active southern California. While no known Alquist-Priolo Earthquake Fault Zones or active faults (i.e., faults that exhibit evidence of ground displacement during the last 11,000 years) traverse Chula Vista, traces of the potentially active La Nacion fault zone are known to cross the City in a generally north-south direction within the central portion of the City (Figure 9-7). The greatest magnitude earthquake expected on the La Nacion fault is estimated to be 6.0. The nearest active faults are the Rose Canyon fault, located approximately 14 miles northwest of the City, and the Coronado Bank fault, located approximately 30 miles from the City. Other active faults in the region are located more than 60 miles from the City.

Planning for a safe community requires consideration of geologic hazards. Incorporating proper geotechnical engineering techniques in development projects can reduce the risks associated with geologic hazards to an acceptable level.

In general, hazards associated with seismic activity include: strong ground motion; ground surface rupture; liquefaction; and seismically induced settlement. Ground surface rupture is not considered likely to occur in the City's General Plan area, due to the absence of any known active faults. Lurching or cracking of the ground surface as a result of nearby or distant seismic events is also considered unlikely. Strong vibrations due to earthquakes can cause liquefaction of certain soil types. Areas of Chula

Vista in close proximity to San Diego Bay and the Sweewater and Otay River Valley (Figure 9-7) have shallow groundwater tables and poorly consolidated granular sediments potentially subject to seismically-induced liquefaction. Seismic activity within the region can cause structures to fail, resulting in significant property damage, business disruptions, injuries and even loss of life.

Landslides and Slope Instability

Areas of known landslides, or areas generally susceptible to landsliding, within the General Plan area have been identified (see Figure 9-7). The potential for earthquake-induced landsliding in hillside terrain is also present. Slopes steeper than 25 degrees (approximately 2:1) are potentially subject to instability. Such areas may be prone to hazards such as: surficial failures; earthflows; debris flow; mudslides; rock falls; soil creep; and erosion. Failures of man-made slopes could also occur in some of the previously developed areas of the City.

Planning for a safe community requires consideration of geologic hazards. Incorporating proper geotechnical engineering techniques in development projects can reduce the risks associated with geologic hazards to an acceptable level.

The State Historical Building Code is a tool that is available to the City to ensure reasonable safety of historically significant buildings from geologic hazards while facilitating the maintenance of the historical integrity of such buildings.

Objective - E 14

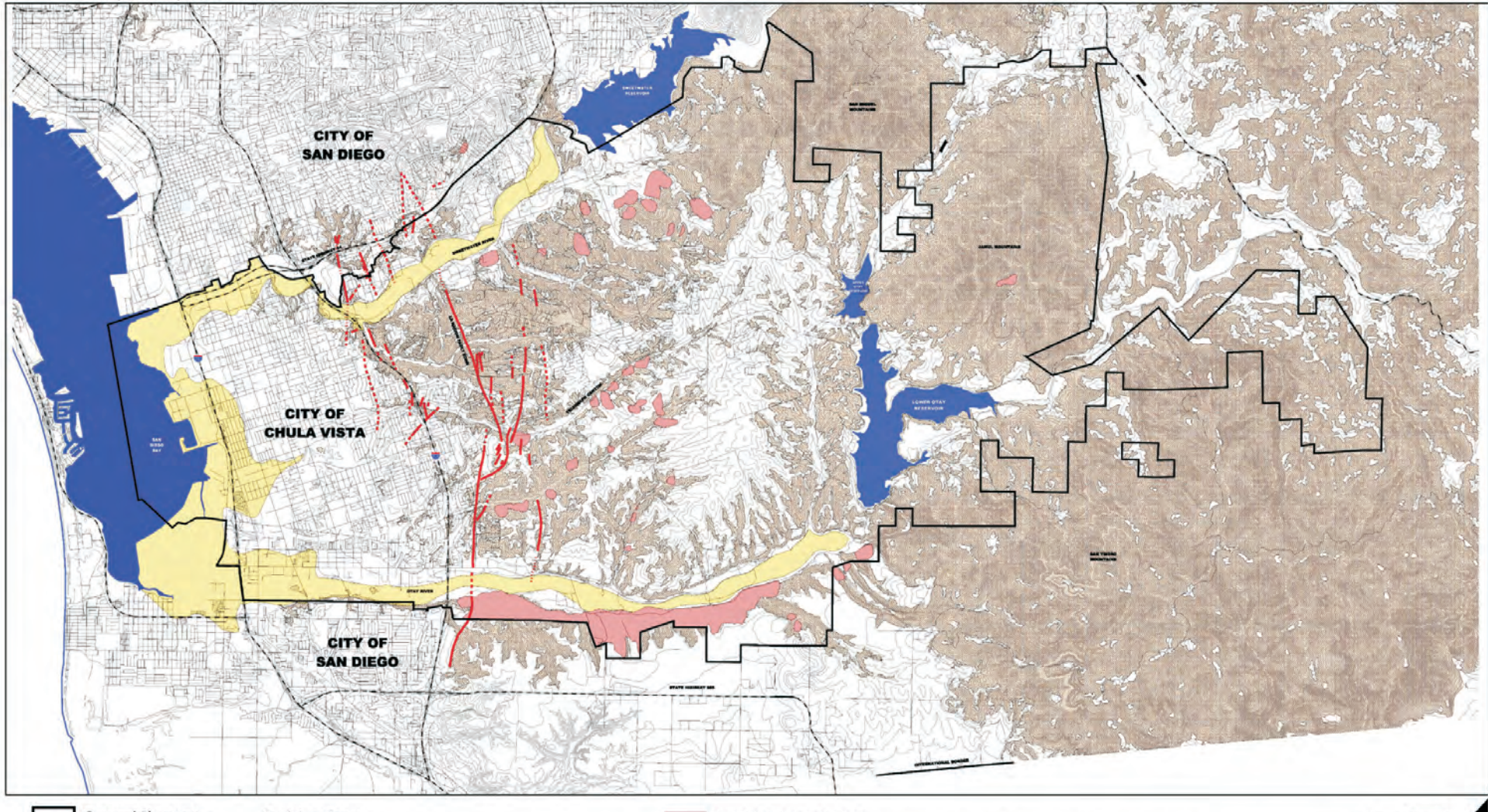
Minimize the risk of injury, loss of life, and property damage associated with geologic hazards.

Policies

E 14.1 To the maximum extent practicable, protect against injury, loss of life, and major property damage through engineering analyses of potential seismic hazards, appropriate engineering design, and the stringent enforcement of all applicable regulations and standards.

Geologic Hazards Map

Map Source: Ninyo & Moore, 2003



General Plan Area

Water bodies

Fault locations*

Fault trace

Approximate or inferred fault

Concealed fault

*Mapped fault locations have been compiled from those presented in Farrand (1977), Kennedy and Tan (1977), Trelman (1984), and from information provided by the City of Chula Vista. The La Nacion fault zone is considered potentially active by the criteria of the State of California.

Landslide hazard areas

Areas containing active landslide-prone terrain. Such areas typically contain incompetent sedimentary rocks, slopes generally steeper than 25 degrees, and factors of safety less than 1.5.

Steep slope areas

Areas with slopes 25 degrees or steeper. Such areas may be prone to hazards such as slope instability, debris flow, rock falls, erosion, and slope creep.

Liquefaction hazard areas

Areas with shallow groundwater tables and poorly consolidated granular sediments potentially subject to hazards associated with seismically-induced liquefaction. Detailed geotechnical liquefaction analysis is encouraged.

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Figure 9-7

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E 14.2 Prohibit the subdivision, grading, or development of lands subject to potential geologic hazards in the absence of adequate evidence demonstrating that such development would not be adversely affected by such hazards and would not adversely affect surrounding properties.

E 14.3 Require site-specific geotechnical investigations for proposals within areas subject to potential geologic hazards; and ensure implementation of all measures deemed necessary by the City Engineer and/or Building Official to avoid or adequately mitigate such hazards.

E 14.4 Promote programs to identify un-reinforced masonry buildings and other buildings and structures that would be at risk during seismic events; and promote strengthening of these buildings and structures, where appropriate.

E 14.5 Wherever feasible, land uses, buildings, and other structures determined to be unsafe from geologic hazards shall be discontinued, removed, or relocated.

3.3.2 Identifying and Limiting Flood Hazards

During severe rain seasons, low-lying areas along the floodplains of the Sweetwater and Otay Rivers and several of their tributaries, including Telegraph Canyon Creek, Poggi Channel, Salt Creek, and Jamul (Dulzura) Creek, as well as certain drainage facilities, may experience flooding. Dams, levees, reservoirs and drainage channels have been constructed to control the drainage of much of the watershed for the General Plan area, thereby reducing the potential for hazardous flooding of developed areas. The Federal Emergency Management Agency (FEMA) has delineated inundation areas for 100-and 500-year floods. Areas designated to be within the 100-year flood zone are shown on Figure 9-8.

Figure 9-8 also depicts areas subject to flood inundation in the event of failure of the Sweetwater, Upper Otay, or Savage (Lower Otay) Dams. Dams typically fail due to overtopping by reservoir water during heavy rainfall episodes, structural damage, and earthquake-related hazards such as landsliding, ground shaking, and seiches, which are waves in an enclosed or semi-enclosed body of water, such as a lake or bay.

Tsunamis, long wavelength seismic sea waves generated by sudden movements of the ocean bottom during submarine earthquakes, landslides, or volcanic activity, conceivably could have adverse effects on the coastal areas of Chula Vista. However, because the City is adjacent to a relatively protected part of the San Diego Bay, the potential for significant wave damage is considered low. In the unlikely event of the development of noticeable seiches, it is conceivable that local areas adjacent to the Otay Lakes and the San Diego Bay could be impacted by wave activity.

Flooding associated with heavy rainfall episodes, as well as dam failure, pose a significant hazard to people and property. Although much less likely to occur, tsunamis and seiches also represent potential flood hazards in portions of Chula Vista in proximity to the San Diego Bay and the Otay Lakes. Furthermore, flooding can result in costly damage to private and public property and infrastructure and by damaging roadways and creating unsafe driving conditions, flooding impedes traffic and disrupts business operations.

Objective - E 15

Minimize the risk of injury and property damage associated with flood hazards.

Policies

E 15.1 Prohibit proposals to subdivide, grade, or develop lands that are subject to potential flood hazards, unless adequate evidence is provided that demonstrates that such proposals would not be adversely affected by potential flood hazards and that such proposals would not adversely affect surrounding properties. Require site-specific hydrological investigations for proposals within areas subject to potential flood hazards; and implement all measures deemed necessary by the City Engineer to avoid or adequately mitigate potential flood hazards.

E 15.2 Wherever feasible, land uses, buildings, and other structures determined to be unsafe from flood hazards shall be discontinued, removed, or relocated.