VENTURA COUNTY GENERAL PLAN

RESOURCES APPENDIX

Last Amended by the Ventura County Board of Supervisors
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RESOURCES APPENDIX

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1. RESOURCES APPENDIX

1.1 Introduction

The Resources Appendix is intended to complement and support the Resources Chapter of the General Plan Goals, Policies and Programs by providing background information regarding resources and resource management. Where appropriate, a section has been written to inventory, (i.e., quantify or qualify) the resources of Ventura County, to discuss the relative value of the resource, to discuss applicable State and Federal laws, to discuss issues regarding the depletion, degradation or loss of the resource, and to present conclusions regarding *conservation*, *preservation* or development and utilization of the resource.

This appendix acknowledges the various Federal and State plans and programs which already address particular resource issues. This Appendix is intended to be an overview sufficient to illustrate the considerations which led to formulation of the Resources Chapter of the General Plan Goals, Policies and Programs.

This appendix is an integral part of the General Plan. As such, resource issues are interrelated with land use, hazards, and public facilities and services.

The words shown in *italics* within this Resources Appendix are defined in the Goals, Policies and Programs document's Glossary.

1.2 Air Quality

The following sections discuss the extent and characteristics of the County's air pollution problem, the provisions of Federal law pertaining to air quality, and the process of local air quality management. The majority of this section has been extracted from the 1987 Air Quality Management Plan.

1.2.1 Problem

Air pollution is hazardous to health, diminishes the production and quality of many agricultural crops, reduces visibility, degrades or soils materials, and damages native vegetation. To combat the problem, the Federal Clean Air Act was approved by Congress in 1970. As a result of the Clean Air Act, the Federal Government through the Environmental Protection Agency (EPA) has established air quality standards. These National Ambient Air Quality Standards (NAAQS) define the levels of air quality that are necessary, with an adequate margin of safety, to protect the public health.

The Federal Clean Air Act Amendments of 1977 required that primary (health based) standards be attained by December 31, 1982. However, the 1977 Amendments provided for an extension under certain conditions until December 31, 1987 for attainment of the ozone (and carbon monoxide) standards. Ventura County was granted an extension, but like many other areas of the country, failed to attain the standards by the statutory deadline.

In response to the nonattainment problem, the Federal Clean Air Act was amended again in November 1990. For the pollutant ozone, the new law establishes nonattainment area classifications ranked according to the severity of the area's air pollution problem. These classifications are marginal, moderate, serious, severe and extreme. The Environmental Protection Agency assigns each nonattainment area one of these categories, thus triggering varying requirements the area must comply with in order to meet the ozone standard. The more severe an area's problem is, the more time the area is allowed to meet the standard.

State standards apply to the same pollutants as the Federal standards except for the addition of air quality standards for hydrogen sulfide, sulfates, vinyl chloride, and visibility reducing particulates. The state standards for ozone and particulate matter are more stringent than the federal standards.

The California Clean Air Act of 1988 established new requirements to bring areas into compliance with state air quality standards. Much like the new Federal Clean Air Act, California law classifies areas according to the severity of the air pollution problem and sets forth different requirements depending on the area's classification.

Ozone, the primary constituent of smog, is formed in the atmosphere through complex chemical reactions involving reactive organic compounds (ROC) and nitrogen oxides (NOx) with ultraviolet energy from the sun. In Ventura County, the primary sources of ROC are motor vehicles, organic solvents, the petroleum industry, and pesticides. The primary sources of NOx are motor vehicles, the petroleum industry and power plants.

Ozone, in relatively low concentrations, can cause such effects as damage to vegetation and cracking of rubber. At higher concentrations, ozone can impact public health by directly affecting the lungs, causing respiratory irritation and changes in lung function. Ozone is a strong irritant that attacks the respiratory system, leading to lung tissue damage. Asthma, bronchitis, and other respiratory ailments, as well as cardiovascular disease, are aggravated by exposure to ozone. When ozone levels are high, people with respiratory and cardiac difficulties, the elderly, and children are advised to remain indoors. Outdoor exercise by healthy adults also is discouraged since strenuous activity may cause shortness of breath and chest pains. Healthy people exposed to high ozone concentrations may become nauseated or dizzy, may develop headaches or coughs, or may experience a burning sensation in the chest. Other constituents of photochemical smog also may pose a threat to health; however, their effects are not fully understood.

Ozone interferes with photosynthesis, thereby damaging ornamental plants, natural vegetation, and agricultural crops. With many crops, ozone stunts growth, reduces yields or causes aesthetic damage which lowers the market value. According to a recent report prepared by the California Air Resources Board (ARB), ozone causes more than $300 million worth of annual crop losses in California. Culminating years of study, the ARB has concluded that ozone pollution cost farmers and consumers $332.9 million in 1984 in reduced harvests for 15 commercial crops.

Atmospheric particulate matter is comprised of finely divided solids or liquids such as dust, soot, aerosols, fumes and mists. The particles of primary concern are those less than ten microns in diameter. These are the particles which have the greatest likelihood of being inhaled deep into the lungs. Human generated particulate matter results from a variety of activities including agricultural operations, industrial processes, combustion of fossil fuels, construction and demolition operations, and entrainment of road dust into the atmosphere. Natural sources of particulate matter include wind blown dust, wildfires, and salt from sea spray.

An area is in *nonattainment* of the national ozone standard if a maximum hourly concentration exceeds the health-based standard of 0.12 parts per million (12 parts per hundred million) on more than three days in the past three years. A concentration greater than 0.12 parts per million is called an "adverse level." All stations monitoring ozone in Ventura County have experienced adverse levels annually.

Ventura County exceeds the National Ambient Air Quality Standards for ozone. Areas of the County south of the southern border of the Los Padres National Forest have been designated nonattainment for ozone. In general, the ozone problem is worst in inland valleys, decreasing as one moves toward the coast (See Figures 1.2.3 and 1.2.4).

Although smog producing chemicals and other pollutants are found throughout the year, special meteorological conditions exist in Ventura County during the smog season, typically May-October. Daytime westerly surface winds (winds from the west) are common during smog season. While these sea breezes move inland carrying and picking up new emissions, photochemical reactions are occurring in the atmosphere. Normally, the warm air masses cool and disperse as they rise. But, under certain atmospheric conditions common to the smog season, a layer of warm air fails to cool and disperse at the usual rate. Air rising from below which cannot penetrate this layer becomes trapped and stagnates. This condition is called an "inversion."

Air pollutants are trapped under the inversion, and they accumulate unless the inversion breaks up, or winds are strong enough to disperse the pollutants horizontally. Inversions commonly occur at 800 to 1,000 feet above sea level during smog season. On occasion, however, afternoon inversions may be as low as 200 feet.

The County's air quality is also affected by transport of pollutants from outside the County. Sources of this pollution have been identified as Los Angeles County, Santa Barbara County, and Outer Continental Shelf (OCS) oil production and exploration activity.

In most cases, the sources listed above add to existing air quality problems in the County. The contribution of Los Angeles emissions in most case studies remains unquantifiable. Los Angeles transport is generally observed during southeasterly or easterly flow aloft; however, surface west winds also transport "local emissions" from Ventura County coastal areas during this meteorological regime. This is evidenced by the high frequency of westerly surface winds during hours when ozone levels exceed standards in Ventura County.

1.2.2 Air Quality Management

The EPA is the primary agency for the administration of the Clean Air Act passed by Congress in 1970. The California Air Resources Board is the lead agency for the State and retains control over mobile sources. According to the Clean Air Act, it is the responsibility of the State and local governmental agencies to provide a plan which will assure that Federal standards are achieved and maintained. If any state fails to provide an implementation plan which assures that the ambient air quality standard will be met, the EPA will then be responsible for providing such a plan in accordance with the Clean Air Act.

The Air Pollution Control Program for the County is directed by the Ventura County *Air Pollution Control District (APCD)* in coordination with, and as part of, the Federal, State and regional air pollution control efforts. The APCD is organizationally within the Resource Management Agency and is governed by the Air Pollution Control Board (Board of Supervisors). At the regional level, Ventura County is part of the South Central Coast Air Basin.

In accordance with the Clean Air Act requirements, the APCD adopted the Air Quality Management Plan (AQMP) in 1979 and subsequently updated the AQMP in 1982. The 1987 AQMP was adopted by the Air Pollution Control Board on July 26, 1988. In addition to analyzing Ventura County's air pollution problems, this plan contains control strategies for reducing air pollutant emissions. These strategies have been successful in substantially reducing emissions in Ventura County.

Long range control strategies focus on improvement of current stationary source controls and transportation control measures. Stationary source controls are typically implemented through the APCD permit process, as well as through processing of discretionary entitlements. Transportation control measures (TCM) are most typically implemented through processing of discretionary entitlements and include the following:

- Ridesharing Programs
- Traffic Flow Improvements
- Parking Management Strategies
- Public Transit
- Non-motorized Transportation Strategies
- Telecommunications
- Methanol Fuel Use
- Land Use Strategies

Implementation of multiple TCMs can often best be coordinated and integrated by development of a Transportation Demand Management Program for *development* projects.

The APCD's Trip Reduction Rule 210, requires large employers in the County to develop and implement trip reduction plans. These plans are designed to reduce the number of solo drivers commuting to work.

The Land Use Strategies TCM includes both site design elements and regional land use planning elements. The regional planning measures include a jobs/housing balance strategy to reduce commuting and Population Forecast Consistency Programs. The population forecasts of the Countywide Planning Program were used as the basis for forecasting air emissions in the AQMP. These same population forecasts are used in formulating the Land Use Chapter (of the General Plan) and appear in the Land Use Technical Appendix. As a TCM, the policies prohibiting development which is inconsistent with these population forecasts will reduce air quality degradation and maintain the effectiveness of the AQMP.

Another avenue of implementation of emission control measures is through the environmental review process (a standard step in the processing of discretionary entitlements). The APCD has adopted the Guidelines for Preparation of Air Quality Analyses to enhance the effectiveness of the environmental review process. Adherence to the Guidelines will assist emission control efforts.

Although the short term prospects for improved air quality are good, the long term outlook remains questionable. Many of the gains made in recent years may be lost if population growth and development continue to accelerate in Ventura County. The 1991 AQMP predicts that ozone precursor levels will decline through 2000, then begin to turn upwards as increased urban development overtakes emission control measures. Attainment of the NAAQS for ozone is not anticipated to occur in the foreseeable future.

1.2.3 Conclusions

Ventura County air quality does not meet State and Federal standards for ozone. The adopted strategies and methods for enhancing the County's air quality are listed in the AQMP. These measures should be implemented through conditions of approval of discretionary entitlements and the goals, policies and programs of the General Plan. New means of air quality enhancement should be researched and implemented as is feasible.

Figure 1.2.1
Ambient Air Quality Standards Chart

Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [4,7]
Ozone	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	0.12 ppm (235 µg/m^3)	Same as Primary Std.	Ethylene Chemiluminescence
Carbon Monoxide	8 Hour	9.0 ppm (10 µg/m^3)	Non-dispersive Infrared Spectroscopy (NDIR)	9.0 ppm (10 µg/m^3)	Same as Primary Stds.	Non-dispersive Infrared Spectroscopy (NDIR)
	1 Hour	20 ppm (23 µg/m^3)		35 ppm (40 mg/m^3)		
Nitrogen Dioxide	Annual Average	–	Gas Phase Chemiluminescence	0.053 ppm (100 mg/m^3)	Same as Primary Std.	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 µg/m^3)		–		
Sulfur Dioxide	Annual Average	–	Ultraviolet Fluorescence	80 mg/m^3 (0.03 ppm)	–	Pararosoaniline
	24 Hour	0.05 ppm [8] (131 µg/m^3)		365 mg/m^3 (0.14 ppm)	–	
	3 Hour	–		–	1300 mg/m^3 (0.5 ppm)	
	1 Hour	0.25 ppm (655 µg/m^3)		–	–	
Suspended Particulate Matter (PM_{10})	Annual Geometric Mean	30 mg/m^3	Size Selective Inlet High Volume Sampler and Gravimetric Analysis	–	–	–
	24 Hour	50 mg/m^3		150 mg/m^3	Same as Primary Stds.	Initial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	–	–	50 mg/m^3		
Sulfates	24 Hour	25 mg/m^3	Turbidimetric Barium Sulfate	–	–	–
Lead	30 Day Average	1.5 mg/m^3	Atomic Absorption	–	–	Atomic Absorption
	Calendar Quarter	–		1.5 mg/m^3	Same as Primary Std.	
Hydrogen Sulfide	1 Hour	0.03 ppm (42 mg/m^3)	Cadmium Hydroxide STRactan	–	–	–
Vinyl Chloride	24 Hour	0.010 ppm (26 mg/m^3)	Tedlar Bag Collection, Gas Chromatography	–	–	–
Visibility Reducing Particles	1 Observation	In sufficient amount to reduce the prevailing visibility[9] to less than 10 miles when the relative humidity is less than 70%.		–	–	–

Source: ARB Fact Sheet 38 (revised 7/88) R. 12/19/89

Figure 1.2.1 (cont'd.)

Notes:

1. California standards for ozone, carbon monoxide, sulfur dioxide (1 hour), nitrogen dioxide and particulate matter – PM10, are values that are not to be exceeded. The sulfates, lead, hydrogen sulfide, vinyl chloride, and visibility reducing particles standards are not to be equaled or exceeded.

2. National standards, other than ozone and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parenthesis are based upon a reference temperature of 25° C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent procedure which can be shown to the satisfaction of the Air Resources Board to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than three years after that state's implementation plan is approved by the Environmental Protection Agency.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse levels of a pollutant. Each state must attain the secondary standards within a "reasonable time" after the implementation plan is approved by the EPA.

7. Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

8. At locations where the state standards for ozone and/or suspended particulate matter are violated. National standards apply elsewhere.

9. Prevailing visibility is defined as the greatest visibility which is attained or surpassed around at least half of the horizon circle, but not necessarily in continuous sectors.

R. 12/19/89

Figure 1.2.2 (Deleted)

Figure 1.2.3
Ozone Non-Attainment Area Map

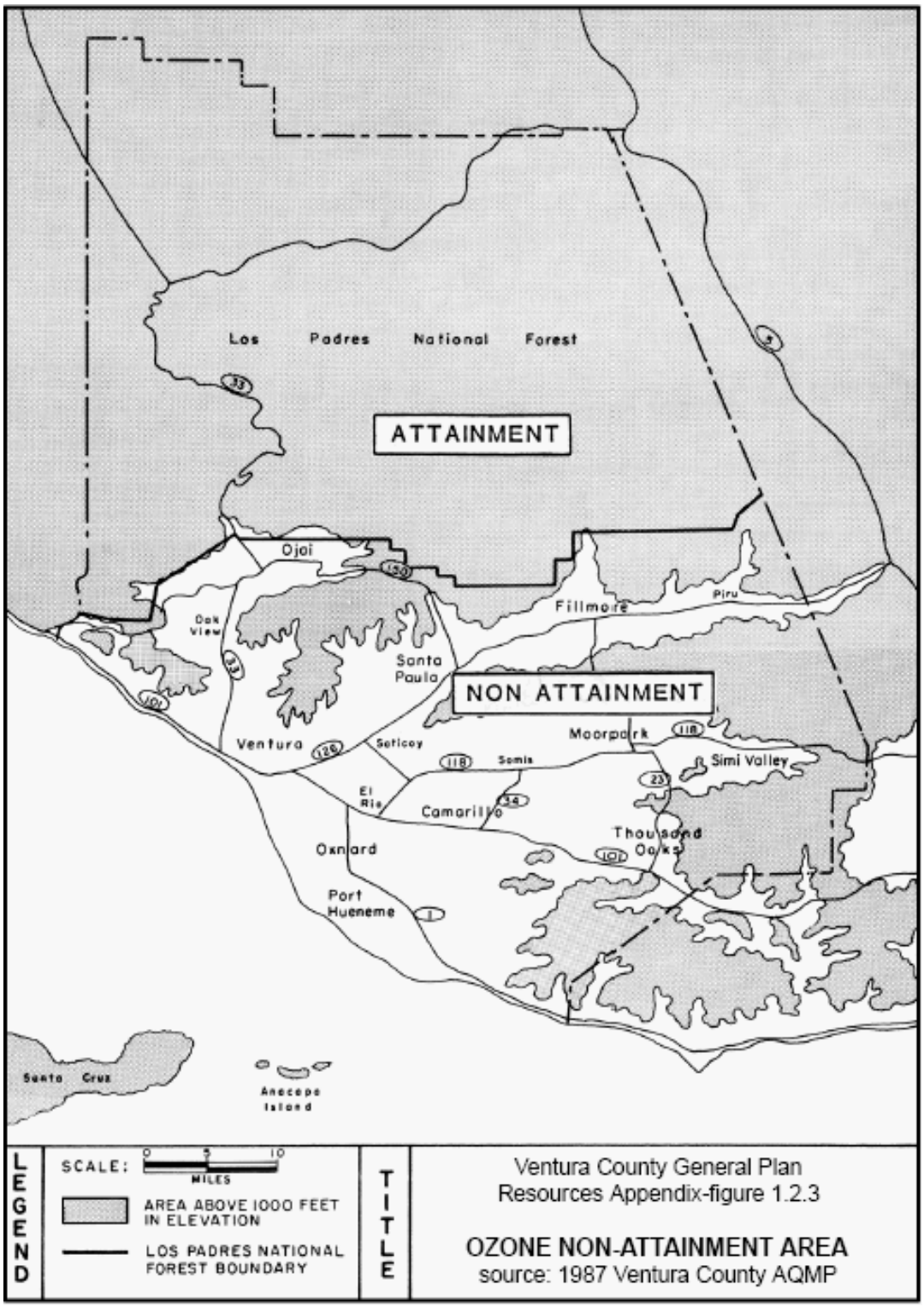
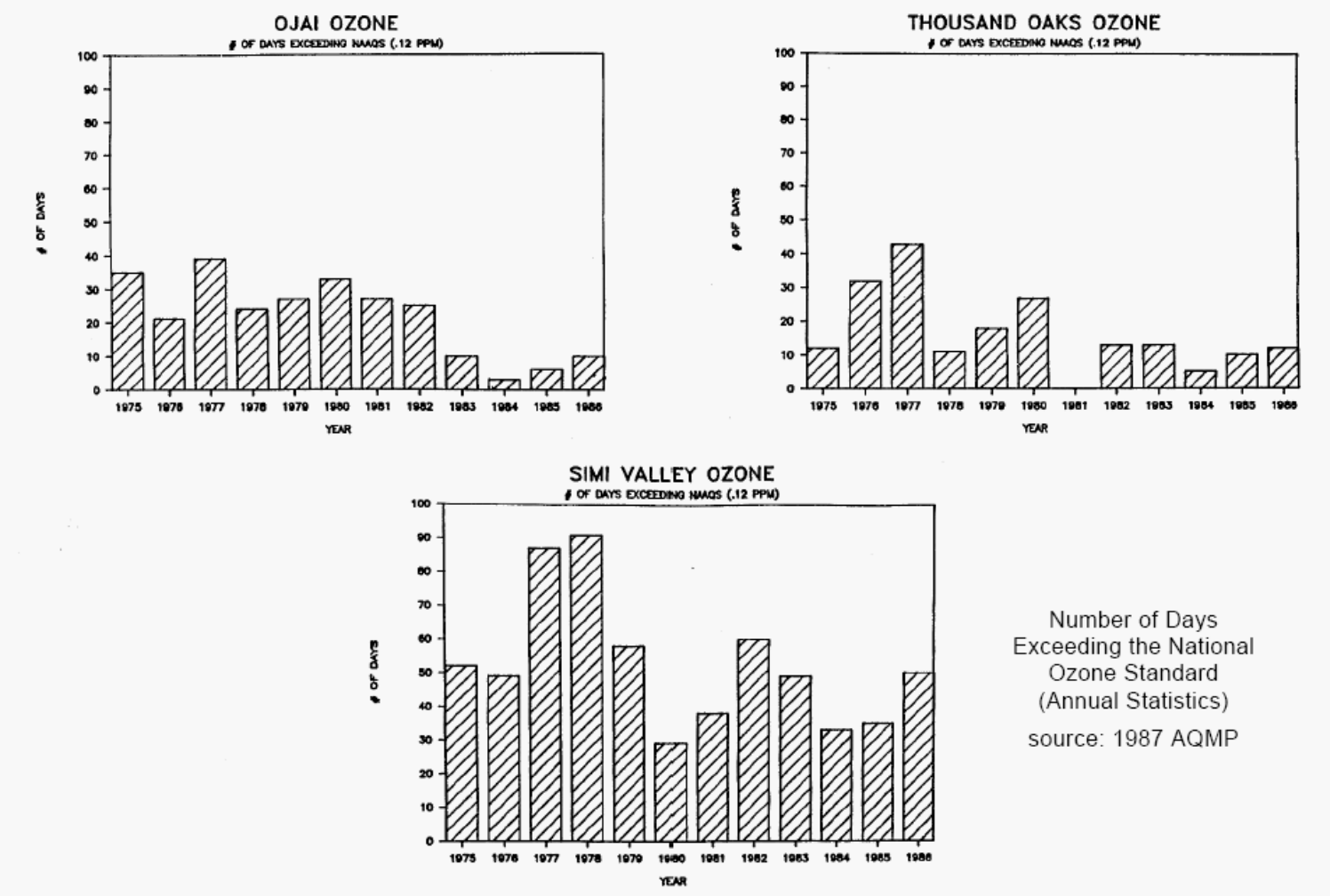


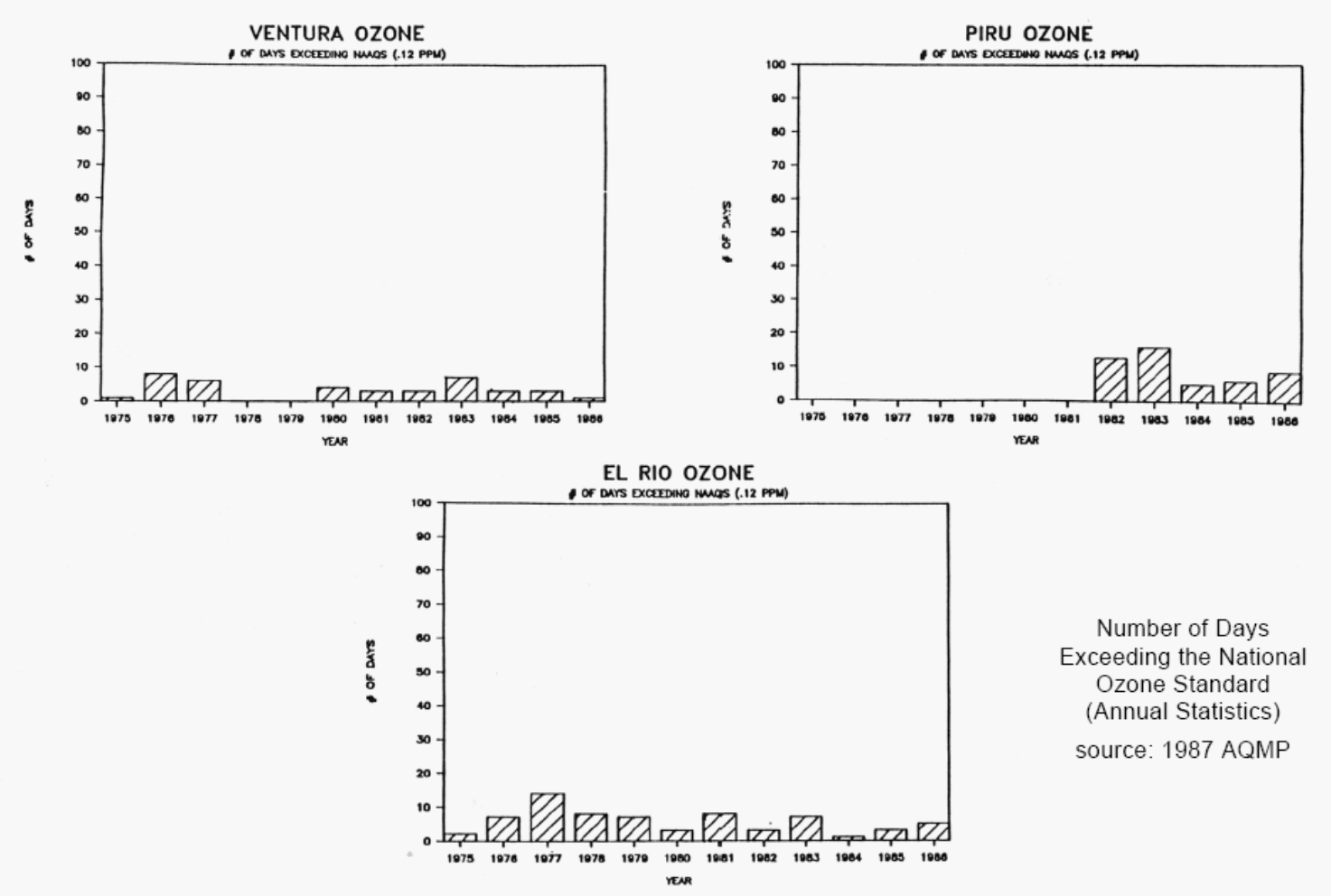
Figure 1.2.4a
Number Of Days Exceeding The National Ozone Standard For Ojai - Thousand Oaks - Simi Valley



Number of Days Exceeding the National Ozone Standard (Annual Statistics)

source: 1987 AQMP

Figure 1.2.4b
Number of Days Exceeding the Nanal Ozone Standard for Ventura – Piru - El Rio (Bar Graphs)



1.3 Water Resources

The primary focus of this section is on the quality and quantity of water resources within Ventura County. Those sources are local groundwater, surface water and to a lesser degree, reclaimed water. Subsections below address these local water resources. The ocean, harbors, lakes and rivers can also be viewed as local "water resources" because of their transportational and recreational uses. These last mentioned uses of "water resources" are addressed in the Transportation and the Recreation sections of the Public Facilities and Services Appendix, and therefore, are not discussed further in this section.

An important companion section to this section is the Water Supply Facilities section in the Public Facilities and Services Appendix. The Water Supply Facilities section emphasize the storage, delivery systems and the ultimate use of local ground and surface water, as well as imported water, for human needs (i.e., potable and agricultural).

1.3.1 Groundwater Resources

In 1991, 67% (285,000 acre feet [AF]), of the water that was consumed in the County came from local groundwater sources. Agricultural uses amounted to 86% (245,100 AF) of the groundwater that was utilized. Because it is estimated that the local groundwater basins can safely supply only about 242,000 AF/year countywide, water users are extracting at least 43,500 AF/year more than is being naturally and artificially replenished. Groundwater is pumped extensively by individual well owners as well as water purveyors who sell it through either retail sales to individuals or wholesale to other purveyors. Since more groundwater is used than is replaced, overall, the County's groundwater reserves are slowly decreasing.

The largest groundwater supplies in the county are contained within major water bearing aquifers which underlie most of the Oxnard Plain and Las Posas Valley. These are, in order of depth, the Oxnard, Mugu, Hueneme, Fox Canyon, and Grimes Canyon aquifer zones. These aquifers are most easily visualized as lying horizontally, often one on top of the other, with clay layers separating them (Figure 1.3.1). In contrast, groundwater basins may be considered vertical "columns" that run through several aquifers and which are capable of furnishing a substantial amount of water. The size of groundwater basins as measured by their surface area can range from small to as large as the Oxnard Plain (See Figure 1.3.2a).

Water feeds into groundwater basins from watersheds at ground level which often have surface areas which are much larger than that of the groundwater basin being supplied. Because the use of water within a watershed will dictate the amount of water ultimately reaching a groundwater basin, the watersheds serving the respective groundwater basins have been described on the Water Basins map (Figure 1.3.2a) rather than just the basin itself. Groundwater recharge areas and areas that may accommodate floodwaters for the purpose of groundwater recharge pursuant to Section 65302(d)(3) of the California Government Code are shown in general on Figure 1.3.4. When groundwater is pumped at a greater rate than water recharge to the basin, an overdraft situation is created. The most severe local overdraft occurs in areas of heavy agricultural usage.

Beneath the Oxnard Plain, the Oxnard Aquifer zone was overdrafted at the rate of about 26,500 AF/year from 1989 to 1990. This overdraft situation has resulted in more than 22 square miles of the Oxnard Aquifer being intruded by seawater (see Figure 1.3.3). The County Water Quality Management (the “208 Plan”) outlines the adopted solution to this problem. This project involves the 1991 Vern Freeman Diversion structure (which spans the Santa Clara River in the vicinity of Saticoy) that diverts surface flow into the newly constructed Pumping Trough Pipeline and into the United Water Conservation District's aquifer recharge basins. This water, together with water from five deep wells in the Fox Canyon Aquifer, is delivered to users in the Oxnard Plain who in turn stopped using shallow wells in the intruded Oxnard aquifer.

The Fox Canyon aquifer zone is being overdrafted at a rate of approximately 18,700 acre feet per year. There is very little recharge to this aquifer, therefore, any amount of use will result in overdraft. Water supplies in the Fox Canyon Aquifer are extensive and are expected to last for at

least 100 years, with the exception of the North Las Posas Valley area. Groundwater supplies in outlying portions of the North Las Posas basin are expected to be exhausted within the next thirty to fifty years. Overdraft in these outlying portions is currently occurring at a rate of about 10,000 acre feet per year. The Fairview area will be the first to experience a groundwater shortage. Total overdraft countywide is at least 43,500 AF/year.

The Fox Canyon Groundwater Management Agency (FCGMA) was formed in 1982 to help manage and protect the aquifers within several groundwater basins underlying the Oxnard Plain from Moorpark to the coast. The Agency's principle objective is to preserve groundwater resources for agricultural, municipal, and industrial uses in the best interest of the public and for the common benefit of all water users. About half the irrigated agricultural acreage in the County lies within the FCGMA boundary.

In the North Half, groundwater constitutes the principal developed water supply. The largest quantity of acceptable quality water occurs in recently deposited alluvial materials in and adjacent to present stream channels.

The major groundwater basins in the North Half are the Lockwood Valley and the Cuyama Valley Basins. Other less significant water-bearing areas, in terms of storage capacity, are Little Cuddy Valley, Hungry Valley, Mutau Flat and alluviated portions of Piru and Sespe Creeks. In addition, recent studies conducted by a private consultant on Pine Mountain indicate the occurrence of relatively large quantities of good quality groundwater. Initial information indicates that groundwater in the vicinity of Pine Mountain occurs in rocks which are much older than those normally considered water-bearing.

The North Half Area Hydrologic Balance Study, 1978, provides a detailed description of ground and surface waters of the North Half.

1.3.2 Surface Water Resources

Surface water provides 11% of the water used in Ventura County. Surface water resources in Ventura County are divided into two major hydrologic units (the Ventura River and Santa Clara-Calleguas Units) and into four other smaller hydrologic units (Rincon Creek, Cuyama, San Joaquin, and the Malibu Hydrologic Units). However, the major surface water source in the County is Lake Casitas.

The Casitas Municipal Water District (CMWD) has the primary responsibility for the development and delivery of water in the Ventura River drainage. Lake Casitas Reservoir has a capacity of 254,000 acre-feet of storage, with a "safe yield" of approximately 21,900 acre-feet per year. The CMWD is presently supplying this maximum yield (CMWD, 1990). Approximately 45% of the inflow to Casitas Reservoir comes from runoff from the 34-square-mile direct drainage area. The remainder is diverted to Casitas from the 74-square-mile Ventura River-Matilija Creek Watershed through the Robles-Casitas Canal. The City of Ventura diverts approximately 6,000 AF/year from the Ventura River by means of a surface diversion and wells near Foster Park.

The United Water Conservation District (UWCD) manages Lake Piru and is responsible for wholesale water distribution throughout most of the Santa Clara River Valley. Lake Piru is United's storage reservoir for water which is later released into underground aquifers for subsequent wholesale to various retail water purveyors and agricultural use. The capacity of Lake Piru is 88,000 acre-feet, with an annual safe yield of 15,000 acre-feet per year. UWCD also collects Santa Clara River water at the Freeman Diversion for aquifer recharge and direct delivery. UWCD delivers diverted Santa Clara River flows to the Pleasant Valley County Water District and areas of Oxnard plain for agricultural use.

Lake Piru also has extensive recreational facilities which are used to capacity for much of the year. The Piru Creek drainage above Lake Piru contains limited surface water, and provides some recreation. Future releases of water from the State Water Project through Pyramid Rock Reservoir in Los Angeles County will improve surface water conditions and recreational opportunities above

Lake Piru. Further discussion of recreation facilities in the County is contained in the Public Facilities and Services Appendix.

Surface water is also diverted for agricultural use by private individuals along the Ventura and Santa Clara Rivers. Several small mutual water companies use springs as their source.

Streams in Ventura County that generally flow for the entire year include Sespe Creek, Piru Creek, Reyes Creek, Matilija Creek, the North Fork of the Ventura River, and the Ventura River below Foster Park. These creeks plus other small tributaries have extensive riparian zones and provide habitat for a variety of vertebrates such as rainbow trout, and are discussed under "Biological Resources."

The Calleguas Municipal Water District is responsible for providing imported water to the southeastern portions of the County. Lake Bard serves as a terminal storage reservoir with a capacity of 10,500 acre-feet.

Other County lakes are: Lake Sherwood (a 154 acre private lake whose principal use is recreation), Lake Eleanor (a four acre lake owned by the Conejo Open Space Conservation Agency), and Matilija Lake (operated by the CMWD, recreational use not permitted).

Though not a source of potable or irrigation water at this time, the Pacific Ocean is an important water resource because it is a potential source for water desalination plants. Depletion of ocean water quantity is not an issue, however degradation of water quality is of concern particularly when unhealthful conditions arise at swimming beaches. The principal sources of contamination are urban and agricultural runoff and the ocean outfalls of wastewater treatment facilities. In addition, off-shore petroleum production facilities occasionally spill hazardous materials into the ocean. At present, no significant ongoing degradation of ocean water quality has been identified, however, periodic wastewater treatment facility upsets have resulted in temporary closure of County beaches.

1.3.3 Reclaimed Water

Water reclamation refers to the recycling or reuse of either treatment plant effluent (wastewater) or industrial process water. Reuse can occur onsite or be transferred to other uses offsite following treatment. The uses to which this reclaimed water can be put (e.g., irrigation, cooling) depend upon the quality of the used water and the quality required for subsequent uses.

In 1991, reclaimed water provided about 0.5% of the Countywide water supply. Three of the 16 sewage treatment plants in Ventura County currently reclaim a portion of their effluent. Over a third of the Camarillo County Sanitation District's effluent is used for agricultural, parks and golf courses and a portion is released for estuary enhancement. The Camrosa County Water District reclaims water for agricultural irrigation. The Las Virgenes Municipal Water District has implemented a water reclamation project for urban landscaping in Los Angeles County. The Las Virgenes MWD reclaimed water is also used in Ventura County for golf course irrigation at Lake Sherwood. Additionally, reclaimed water from Los Angeles County is being delivered to the Oak Park Area. In 1982, Camarillo Sanitary District completed an expansion of their existing reclamation for agricultural irrigation by increasing the capacity from 4.75 million gallons per day to 6 million gallons daily.

Several studies and proposals exist in the County for expanding existing reclamation or initiating new reclamation projects.

1. The City of Ventura is examining the possibility of increasing reclamation.
2. Two large scale reclamation projects were studied in 1981 under a Federal Clean Water (Section 201) grant. Both projects would supply agricultural irrigation water which has been treated at a tertiary level.
    - Simi Valley Sanitation District Treatment Plant: This project involves supplying the agricultural area in the Las Posas Valley with approximately 6,000 AF/year over the next 15-20 years. Farmers in the Las Posas Valley currently obtain their water from the Fox

Canyon Aquifer which is seriously overdrafted. As of 1987, the County was still seeking funding to construct the facilities for irrigation in the Las Posas Valley.

- Thousand Oaks Hill Canyon Treatment Plant: This project would result in the conveyance of about 7,000 AF/year of treated effluent to Oxnard Plain agricultural users, the largest agricultural area in the County. Use of this water would reduce demands on the Oxnard Plain's overdrafted aquifers.

The primary potential uses of reclaimed water in Ventura County are agricultural irrigation and irrigation of non-agricultural land such as parks and golf courses. The water quality standards which apply to these uses vary and are based on State and Federal Standards.

1.3.4 Water Quality

Water quality of the major *reservoirs* (Lake Casitas, Lake Piru and Bard Reservoir) has remained constant and is generally of good quality. However, during rainy periods, Lake Casitas exceeds the State domestic water turbidity maximum contaminant standard. Recent and upcoming revisions to State drinking water standards may also require additional treatment of the domestic waters of the County. Surface water quality of County rivers and streams fluctuates from season to season but is adequate in most areas for agricultural use.

Threats to surface and groundwater quality include; urban, industrial and agricultural runoff, septic system failure, hillside agricultural erosion, abandoned water wells, underground storage tanks and various point sources. The Water Quality Management Plan contains regional policies for protection of water quality and groundwater resources. Various assumptions of the Water Quality Management Plan are based upon the population/land use forecasts of the Countywide Planning Program. These same forecasts guide the Land Use Chapter (of the General Plan) and appear in the Land Use Appendix.

Groundwater resources are most susceptible to contamination at aquifer recharge areas (see Figure 1.3.4). Pursuant to Section 65302(d)(3) of the California Government Code, this generalized map shows areas of the County where groundwater recharge does, or may occur, and areas that may accommodate floodwaters for the purpose of groundwater recharge and stormwater management. Aquifer recharge areas generally have highly permeable soils which can readily pass surface (and subsurface) contamination to the groundwater. In addition, overcovering of aquifer recharge areas with nonpermeable surfaces interferes with recharge.

Mining operations in proximity to aquifer recharge areas can potentially degrade water quality. If mining is conducted below the present or projected high groundwater level, ground water may come in contact with surface contaminants. Mining or flood control operations in river channels can affect surface water quality including increasing turbidity. Return waters from mining operations, which re-enter the groundwater table after being exposed to evaporation, can increase TDS levels.

Improperly designed, installed and maintained septic systems could potentially contaminate groundwater and surface water supplies. Also, industrial and commercial developments on septic systems could potentially lead to degradation of groundwater supplies from intentional or unintentional discharges of hazardous wastes into these systems.

Potential threats to groundwater quality are also posed by solid waste disposal sites via leachate or gas transport. To date, no significant contamination of significant groundwater basins has been identified in conjunction with County landfills. However, the shallow semi-perched aquifer in the vicinity of the Coastal and Bailard landfills has been degraded, in part due to landfill leachate. All landfills are subject to ongoing monitoring in compliance with Title 23 of the California Administrative Code. Development of new or expanded landfill sites will be subject to CEQA review to ensure that potential impacts are mitigated (California Water Quality Control Board-Los Angeles Area, 9/1/87). The Public Facilities and Services Appendix maps waste disposal sites.

Numerous abandoned hazardous waste sites exist in the County, many of which have contaminated shallow groundwater to some degree. However, large-scale contamination of significant groundwater resources has not been identified (Environmental Health Division, 1987).

Groundwater quality can be estimated through the concentration of total dissolved solids (TDS). This value represents the concentration of all minerals and trace elements and is used as a general indication of quality. According to the Public Works Agency, TDS values which range from less than 200 to 700 mg/1 are considered excellent to good; values from 700 to 2,000 mg/1 are good to injurious, and values over 2,000 mg/1 are considered injurious to unsatisfactory for agricultural irrigation.

Concentration of TDS in groundwater within the County ranges from 300 mg/1 to over 3,000 mg/1. The best quality water is in portions of the Fox Canyon aquifer zones, while the worst is along the edges of the Santa Clara Valley and in seawater intruded portions of the Oxnard aquifer zones. Overall TDS concentrations for groundwater averaged 1,158 mg/1 in 1975. Degradation is occurring at a rate of about 1% per year. This will result in a TDS concentration of approximately 1,480 mg/1 by the year 2000, which places the water in the good to injurious category.

In some areas of the County, the use of septic systems along with agricultural fertilization intermittently degrade groundwater quality. The Regional Water Quality Control Board and the County Environmental Health Division, have identified areas where higher nitrate concentrations in local groundwater exceed State Drinking Water Standards. Those areas include the groundwater basins in the Santa Rosa and Tierra Rejada Valleys and in the El Rio/Nyeland Acres area. Ingestion of nitrate contaminated water by children less than one year old could result in methemoglobinemia (aka: "blue baby" syndrome), a sometimes fatal blood disease. State Drinking Water Standards limit nitrate NO_3 concentrations to 45 milligrams per liter in an effort to prevent the disease in infants.

The State has also established standards for: microbiological contaminants, organic contaminants, heavy metals, inorganic pollutants and radiological content.

Figure 1.3.5 summarizes the groundwater quality and quantity status of the various basins in the south half of the County. Figure 1.3.6 provides further refinement of the water quality of the various basins.

The County implements several programs to protect surface and groundwater quality. The Urban Runoff Program and Hillside Erosion Control Ordinance are administered by the Public Works Agency. The Environmental Health Department administers an underground storage tank program, septic system regulation and County Service Area 32-a program capable of contending with septic system problems.

Water conservation can forestall depletion of water resources and the need to construct costly new water facilities. The County and the three major water wholesalers jointly fund the Countywide Water Conservation Program. This program includes a full-time Water Conservation Coordinator, County Water Conservation Management Plan and various other program activities.

1.3.5 Conclusions

- Groundwater resources are being overdrafted and contaminated by seawater intrusion. The County can combat this problem by participation in the Fox Canyon Groundwater Management Agency, the Seawater Intrusion Abatement Program, the Countywide Water Conservation Program, and by seeking to develop new water sources such as reclaimed water.
- Depletion or degradation of water resources could be prevented by effective resource management. General Plan Goals, Policies and Programs should provide for monitoring and management of water resources.
- Contamination of surface and groundwater can occur due to mining, grading, faulty septic systems, wells and underground tanks, waste disposal sites, runoff, and various *point sources*. Groundwater resources are most susceptible to contamination at aquifer recharge areas. General Plan Goals, Policies and Programs should address the above.
- From all the water reclamation alternatives that were studied, two were recommended for further consideration. Both plans would supply reclaimed water to overdrafted groundwater

basins within the Fox Canyon Groundwater Management Agency. Financial feasibility will depend on issuance of a state grant and/or a low interest rate loan.

References:

Ventura County Planning Division, Ventura County General Plan, Conservation and Open Space Elements, 1986, with North Half Technical Appendix, 1986.

Ventura County Board of Supervisors, Ventura County 208 Areawide Water Quality Management Plan, 1979-1980

Ventura County Planning Division, Ventura County Water Conservation Management Plan, 1987

Ventura County Resource Management Agency, (Ventura) Countywide Wastewater Reuse Study, 1980

Ventura County Public Works Agency, Flood Control, Ventura County Quadrennial Report of Hydrologic Data, 1986

Ventura County Public Works Agency, Flood Control, Ventura County North Half Area Hydrologic Balance Study, 1978

Ventura County Public Works Agency, Flood Control, Fox Canyon Groundwater Management Agency Planning Study, March 1984

Ventura County Planning Division, Water Conservation Program, Our Water Resources (pamphlet, 1986)

Figure 1.3.1
Oxnard Plain - Schematic of Upper and Lower Aquifers
(Cross-Section)

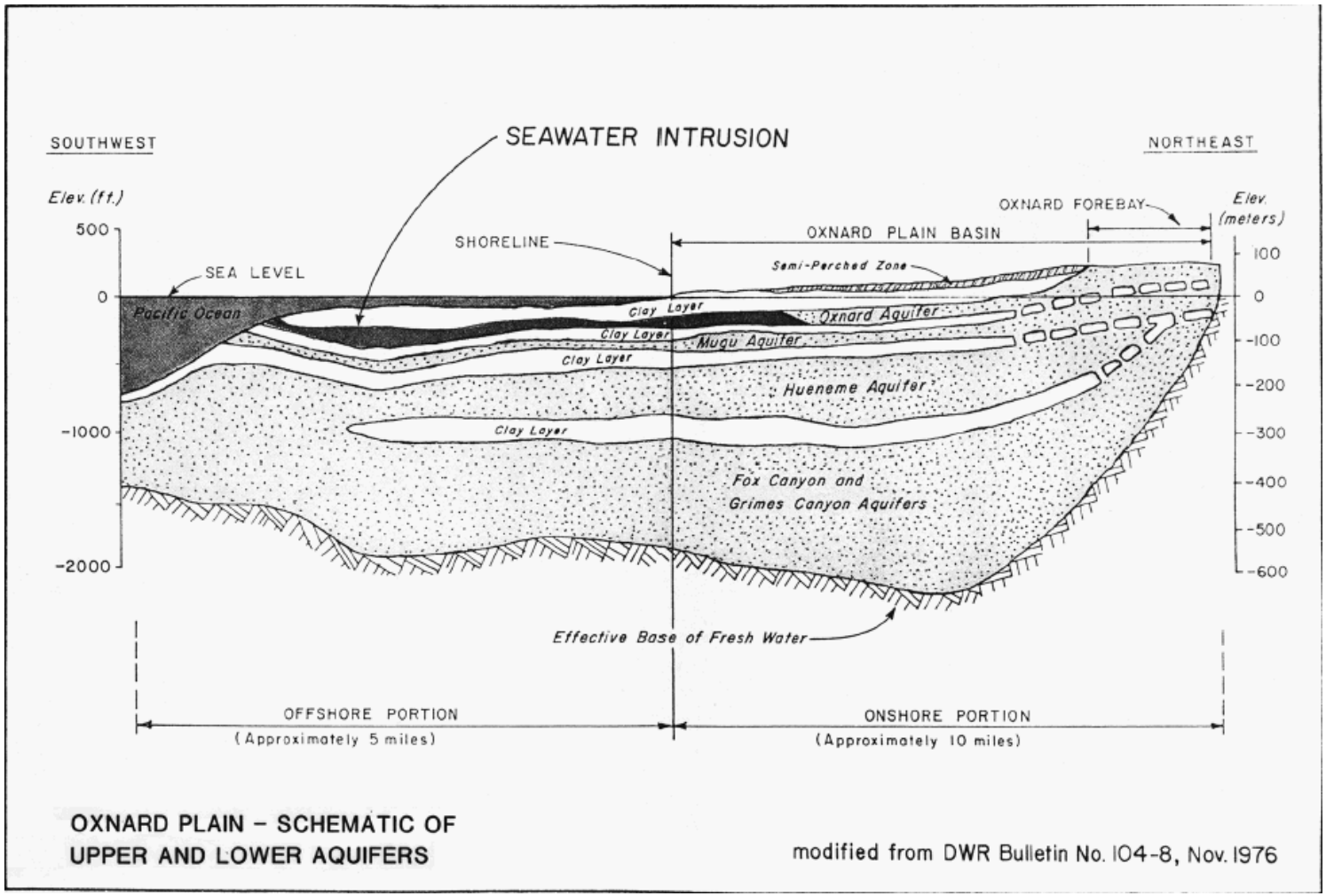


Figure 1.3.2a
Groundwater Basins Map

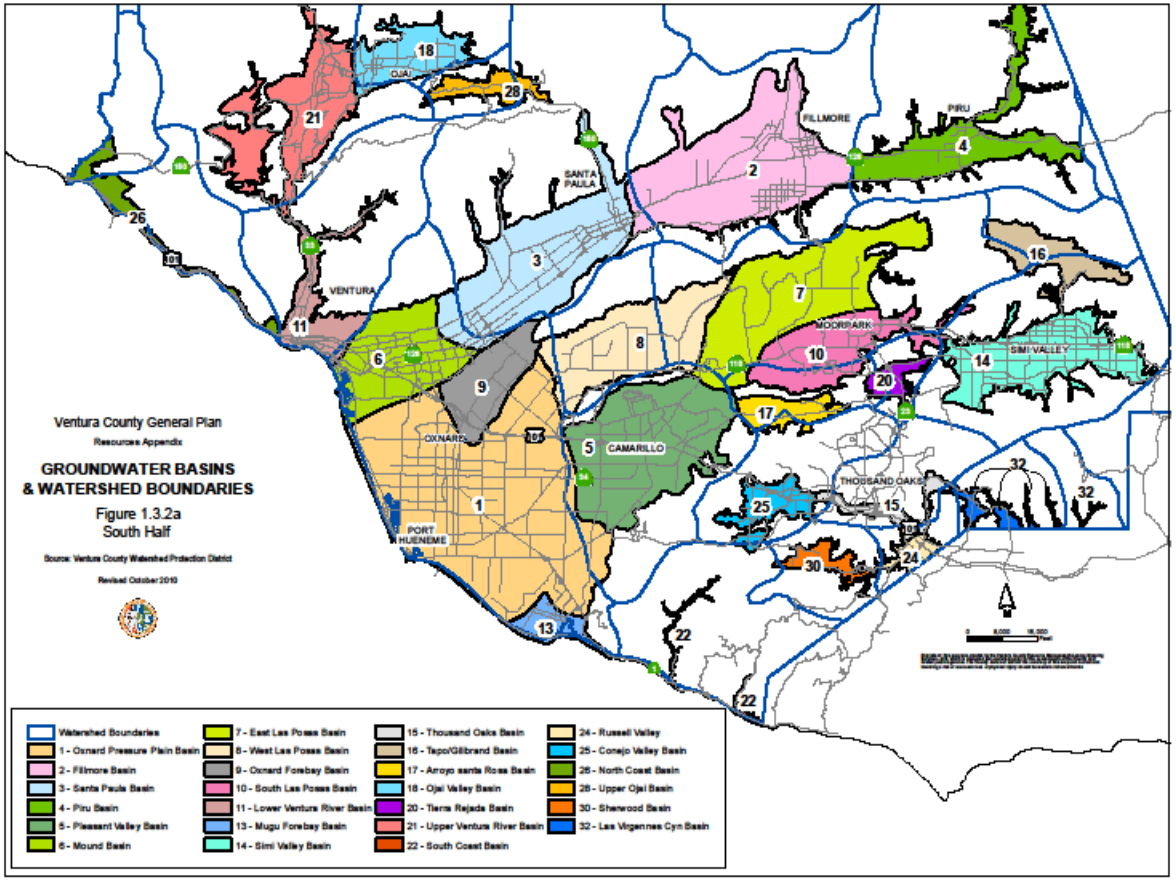


Figure 1.3.2b
North Half Water Sheds Map

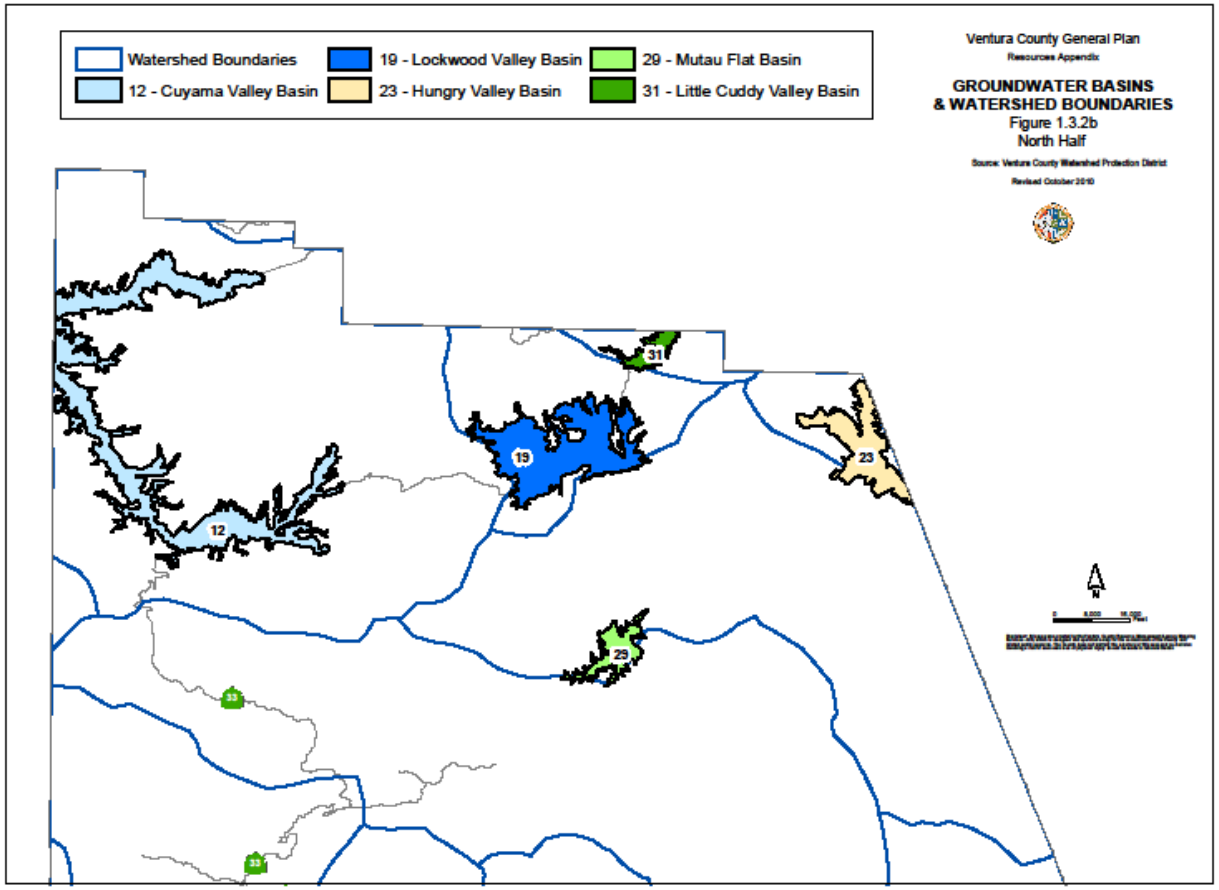


Figure 1.3.3
Existing Sea Water Intrusion in the Oxnard Aquifer Zone
(Map)

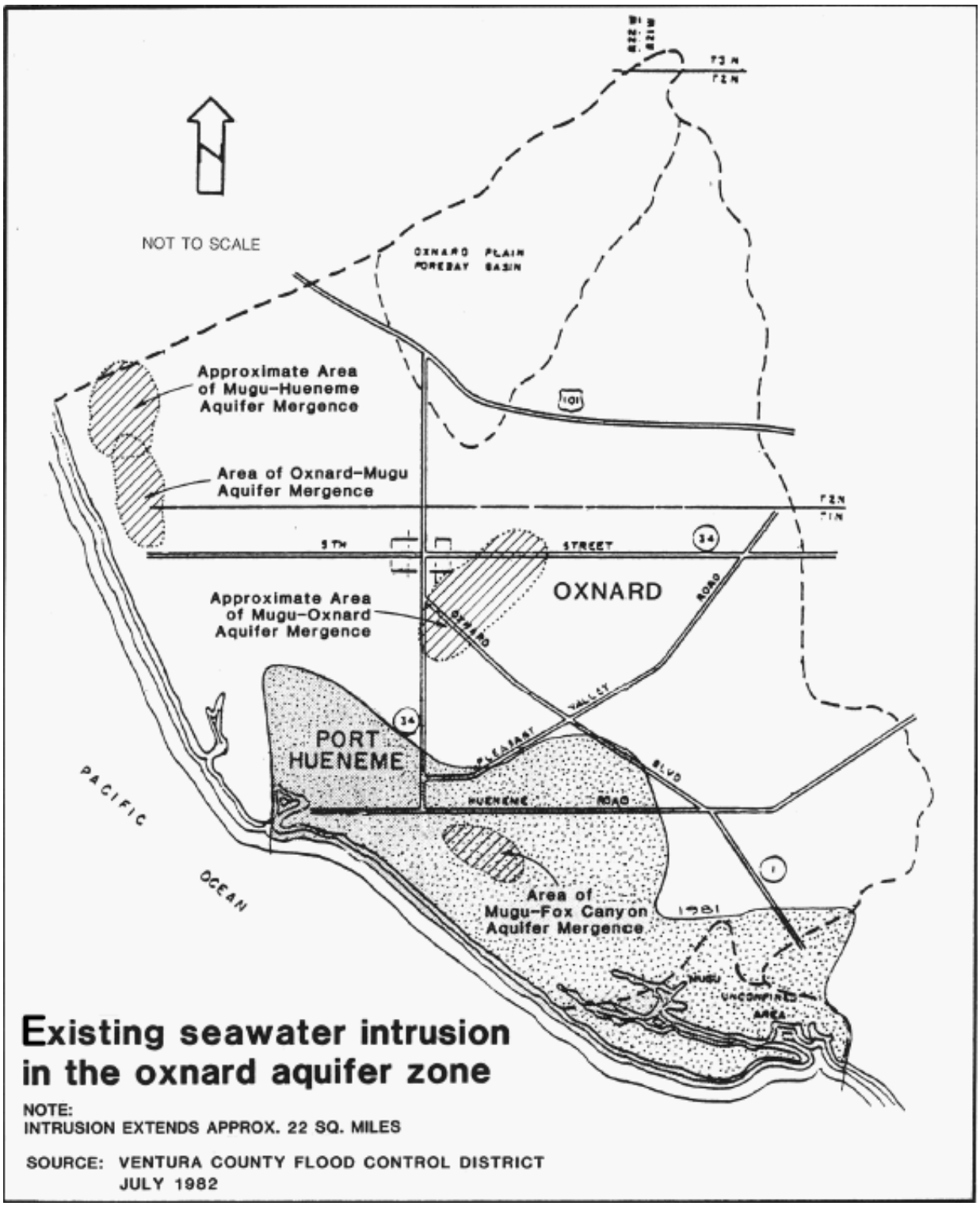


Figure 1.3.4
Aquifer Recharge Areas - Water Resources
(Map)

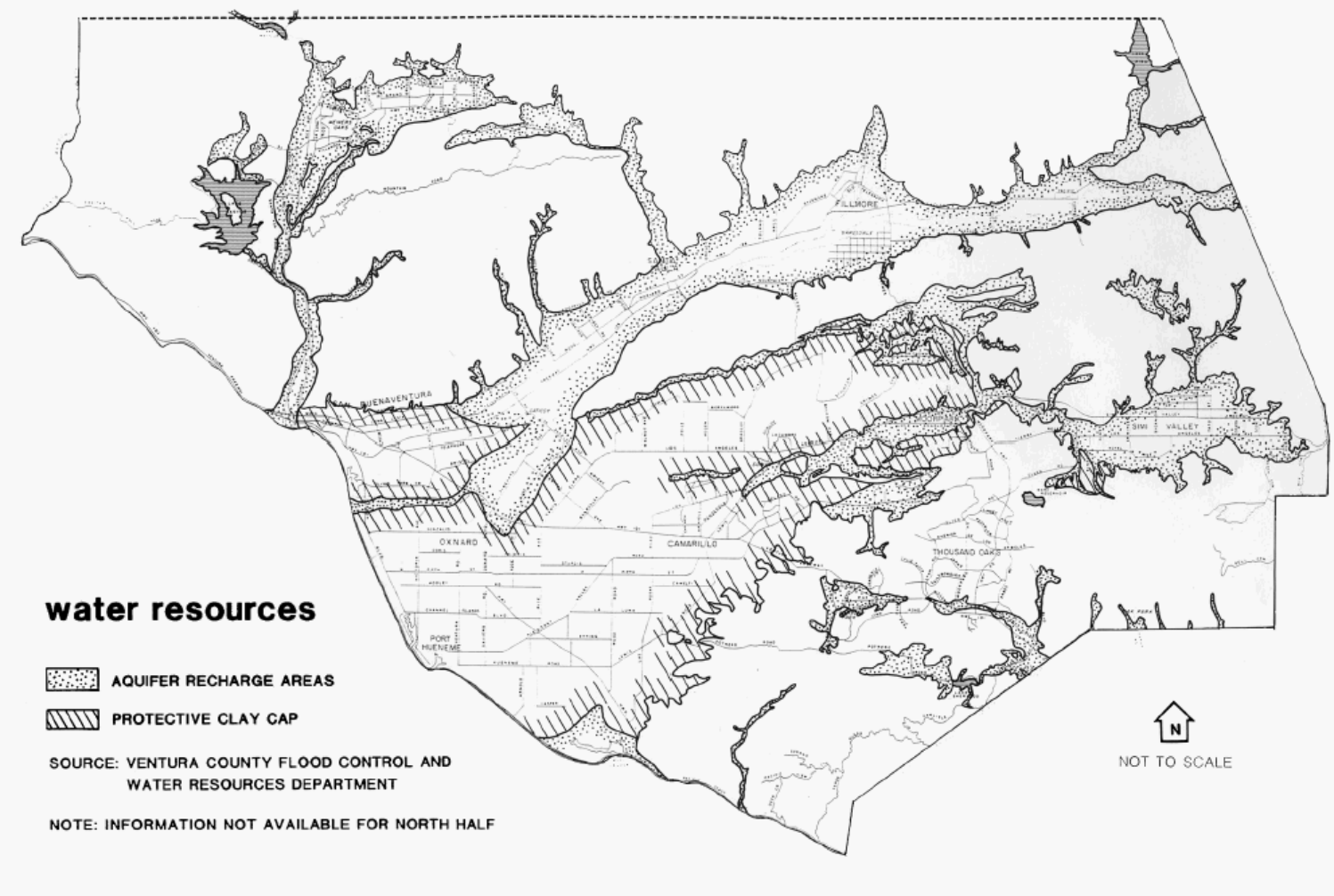


Figure 1.3.5
Water Resources Quantity and Quality Summary Sheet*

AREA	WATER SUPPLY AVAILABILITY (1988)[1]	WATER SUPPLY AVAILABILITY (2000)	WATER QUALITY 1981[2]	WATER QUALITY (2000)
Piru	Adequate[3]	Adequate	Good to injurious	All basins are expected to have poorer water quality by the year 2000. There is approximately a 1% per year degradation. This could mean that a Basin quality of "good to injurious" may become injurious to unsatisfactory.
Fillmore	Adequate	Adequate	Good to injurious	
Santa Paula	Adequate	Adequate	Good to injurious	
Mound	Adequate	Adequate	Good to injurious	
Oxnard Forebay	Adequate	Adequate	Good to Injurious	
Oxnard Plain[4]	Overdraft	Adequate Oxnard Aquifer[5] Overdraft-Fox Canyon[6]	Good to Injurious	
Pleasant Valley	Minor Overdraft	Overdraft Fox Canyon	Excellent to injurious	
Upper Ojai	Adequate	Adequate	Excellent to good	
Ojai	Approaching Overdraft	May be overdrafted (Study of this basin to determine actual safe yield is necessary)	Good to injurious	
Upper Ventura	Adequate	Adequate	Excellent to good	
Lower Ventura	Adequate (Imported CMWD)	Adequate (Imported CMWD)	Injurious to unsatisfactory	
North Law Posas	Serious Overdraft	Basin depletion in 30-50 years (after year 2000)	Excellent to injurious	
South Las Posas	Adequate	Adequate	Good to unsatisfactory	
Santa Rosa	High water Levels	High water Levels	Good to injurious	
Tierra Rejada	Adequate	Adequate	Good to injurious	
Simi Valley	High water Levels	High water Levels	Good to unsatisfactory	
Thousand Oaks	Adequate (Imported SWP)	Adequate (Imported SWP)	Good to injurious	
Lake Sherwood	Adequate	Adequate	Good to injurious	
North Coast	Adequate (Imported CMWD)	Adequate (Imported CMWD)	Good to unsatisfactory	

* Water is imported from agencies indicated, but "Adequate" levels of availability may change over time.

[1] Current practices in water use have been assumed to continue up to the year 2000.

[2] Water quality has been classed according to its use by agriculture. (Ref II-10).

[3] Adequate means that supplies are available to meet demands.

4 The Oxnard Aquifer within the Oxnard Plain is most severely overdrafted which has resulted in seawater intrusion. Water quality within the intruded area has degraded to the point where the water is not suitable for agriculture.

5 Assumes implementation of entire Oxnard Plain Seawater Intrusion Control Project.

6 Total overdraft of the Fox Canyon Aquifer allowed by the Fox Canyon Groundwater Management Agency is approximately 20,000 AF/YR. At this rate, supplies will last over 100 years (with the exception of the North Las Posas Valley).

Figure 1.3.6
Ground Water Basin Quality As Compared To Agricultural and State Drinking Water Standards (Table)

All values are expressed in milligrams per liter (mg/1)

	TDS	Chloride	Sulfate	EC	Nitrate	Boron	pH
Domestic Water Quality State Regulations, 1977	Recommended 500 upper 1,000	Recommended 250 upper 500	Recommended 260 upper 500	Recommended 900 upper 1600	No_3 Recommended 45	B N/A	N/A
Agricultural Water Quality Requirements	500 - 1500	140-240		700-2600*		0.7-2.0	4.8-8.3
Typical values for basin quality							
Piru Basin	1370	82	581	1832	25.0	0.6	7.3
Fillmore	1141	38	496	1477	32.0	0.9	7.4
Santa Paula	1235	71	537	1601	19.0	0.6	7.9
Mound	1126	58	548	1572	42.0	0.7	7.7
Lower Ventura	1670	369	484	2415	8.0	0.7	7.9
Upper Ventura	684	59	211	940	17.0	0.63	7.7
Ojai	546	32	166	831	40.5	0.0	8.0
Oxnard Plain	1152	57	475	1436	20.0	0.4	7.7
Pleasant Valley	1140	188	439	1770	5.0	0.6	8.0
North Las Posas	506	32	159	728	9.5	0.3	8.0
South Las Posas	2154	272	974	3910	4.8	1.20	8.0
Santa Rosa	1200	150	221	1347	46.0	0.2	8.0
Tierra Rejada	920	114	194	2306	46.8	0.02	8.0
Simi Valley	1859	NA	NA	NA	NA	NA	NA

Source: Feasibility of Importation of State Project Water; Engineering Science, Inc. December 1975.

* Depends on type of crop grown

N/A = Not Applicable

NA = Not Available

1.4 Mineral Resources

The following sections discuss aggregate resources, petroleum resources and other mineral resources.

1.4.1 Aggregate Resources

This section discusses the provisions of State law pertaining to mineral resource management and the County's program for compliance.

Implementation of the County program is discussed in the General Plan Goals, Policies and Programs. This section is chiefly derived from the "Technical Appendix, Mineral Resource Background Report, the Conservation and Open Space Elements," 1985.

1.4.1.1 State Law

The *Surface Mining and Reclamation Act (SMARA) of 1975* has two basic objectives. One is to ensure the proper reclamation of surface mining operations, and the other is to safeguard access to mineral resources of regional and Statewide significance in the face of competing land uses and urban expansion.

To ensure proper reclamation of mining sites, the SMARA requires all jurisdictions in which mining occurs to adopt a reclamation ordinance and have it certified by the State Mining and Geology Board (Sec. 2774.3(a) SMARA). Ventura County has adopted such an ordinance (Sec. 8107-9 of the Zoning Code) which was found to be acceptable by the State Board.

While the SMARA references mineral resources in general, the only resources that the State Division of Mines and Geology have surveyed are those which are capable of being used in construction (sand and gravel or crushed rock). The survey process involved two phases. The first phase consisted of the "classification" of areas containing significant mineral deposits which are threatened by land uses incompatible with or which would preclude *mining*. The second phase of the survey process is referred to as "designation", and is the formal recognition by the State Mining and Geology Board of areas containing mineral deposits of regional or Statewide significance which should be protected from land uses incompatible with mineral extraction. The designation process in Ventura County included public hearings and consultation with local agencies and parties of interest. Hearings were held in January of 1982 and the official maps identifying the areas so designated were sent to the County in June of 1982.

The paragraphs that follow address the pertinent aspects of the SMARA:

The Mandate for Mineral Resource Protection - Pursuant to Sec. 2762(a) of the Government Code:

> "Within 12 months of the designation of an area of statewide or regional significance within its jurisdiction, every lead agency shall, in accordance with state policy, establish mineral resource management policies to be incorporated in its general plan which will:
>
> a. Recognize mineral information classified by the State Geologist and transmitted to the Board.
>
> b. Assist in the management of land use which affects areas of statewide and regional significance.
>
> c. Emphasize the conservation and development of identified mineral deposits."

Guidelines for Mineral Resource Protection - While Sec. 2762(a) is the specific mandate for mineral resource protection, the section provides relatively little guidance as to implementation. Fortunately, the SMARA contains other sections which can provide additional guidance.

Pursuant to Sec. 2712, it is the intent of the legislature to assure that:

"(a) Adverse environmental effects are prevented or minimized and that mined lands are reclaimed to a usable condition which is readily adaptable for alternative land uses.

(b) The production and conservation of minerals are encouraged, while giving consideration to values relating to recreation, watershed, wildlife, range and forage, and aesthetic enjoyment.

(c) Residual hazards to the public health and safety are eliminated."

Pursuant to Sec. 2713, "...it is not the intent of the Legislature... to take property for public use without payment of just compensation in violation of the California and United States Constitutions."

Pursuant to Secs. 2715(e) and (f), no provision in the SMARA is a limitation:

"(e) On the power of any lead agency to adopt policies, standards, or regulations imposing additional requirements on any person if the requirements do not prevent the person from complying with the provisions of this chapter.

(f) On the power of any city or county to regulate the use of buildings, structures, and land as between industry, business, residents, open space (including agriculture, recreation, the enjoyment of scenic beauty, and the use of natural resources), and other purposes."

Sec. 2792 addresses additional limitations on the power of the SMARA over local land use matters. The adoption of regulations or the "designation" of an area shall not limit or modify the rights of any person to complete a project approved prior to the "designation" of the area in question. Furthermore, the SMARA does not authorize any local governmental agency to abridge the vested development rights of any individual.

Pursuant to Sec. 2763(a) and (b), land use decisions made by a lead agency, such as the County, relative to areas of regional or Statewide significance shall, "...in balancing mineral values against alternative land uses, consider the importance of these minerals to their market regions as a whole and not just their importance to the lead agency's area of jurisdiction." Furthermore, consideration shall also be given to "...the importance of the mineral resources to the state and nation as a whole."

In addition to the informal guidance provided by the above referenced sections of the SMARA, the State Division of Mines and Geology has prepared "Mineral Resource Management Goals and Policies" which, in accordance with the SMARA, provide additional guidance in the preparation of the County's MRMP. These are quoted below:

"1. **Mineral Resources Management Goals**

Management of identified mineral resources by local government should be directed toward the following goals:

(a) Mineral lands classified *MRZ-2* or designated as areas of Statewide or of regional significance should be protected from preclusive and incompatible land uses so that the mineral resources within these lands and areas are available when needed.

(b) Surface mining within these classified lands and designated areas should be controlled to assure that:

(1) Adverse environmental effects are prevented or minimized and that mined lands are reclaimed to a usable condition which is readily adaptable for alternative land uses.

(2) The production and conservation of minerals are encouraged, while giving consideration to recreation, watershed, wildlife, range and forage, aesthetic enjoyment, and other environmental factors.

(3) Residual hazards to the public health and safety are eliminated.

Mineral Resource Management Policies

Mineral resources management policies developed by local government pursuant to the Surface Mining and Reclamation Act and Board Guidelines should:

(a) Establish land-use categories which will allow for timely mineral extraction to meet projected demand in areas classified as MRZ-2 or designated to be of regional or Statewide significance, and establish regulations for these land-use categories which will protect them from land uses which would preclude mineral extraction.

(b) Develop and implement regulations to ensure that adequate supplies of mineral commodities are developed under a diversity of ownership to protect the consumer against the effects of restricted competition.

(c) Develop and implement regulations which will buffer land-use categories permitting mineral extraction from uses incompatible with mining.

(d) Develop and implement regulations to ensure that after mitigative measures are taken, a proposed mining operation will not create any significant nuisances, hazards, or adverse environmental impacts.

(e) Develop and implement regulations to ensure that all mining operations provide for adequate reclamation of mined lands before issuing mining permits."

In addition to the suggested goals and policies quoted above, the State has provided an initial listing of land use categories which are considered compatible and incompatible with mining activities. The listing that follows will help in the development of land use regulations to safeguard access to mineral resources.

"The following land use categories are provided as a guide to local government in establishing compatible land uses on or adjacent to mineral lands classified as MRZ-2 or designated as areas of regional or statewide significance:

Incompatible - Land uses inherently incompatible with mining and/or which require a high public or private investment in structures, land improvements, and landscaping, and which would prevent mining because of the higher economic value of the land and its improvements.

Examples of such uses include:

High density residential

Low density residential with high unit value

Public facilities

Intensive industrial

Commercial

Compatible - Land uses inherently compatible with mining and/or which require a low public or private investment in structures, land improvements, and landscaping, and which would allow mining because of the low economic value of the land and its improvements.

Examples of such uses include:

Very low density residential (For example: 1 unit per 10 acres)

Extensive industrial

Recreation (public/commercial)

Agriculture

Silviculture

Grazing

Open space

Interim - Land uses which require structures, land improvements, and landscaping of a limited useful life and from an economic and political standpoint can be converted to mining at the end of that limited life. The period of interim use should be compatible with the orderly and timely production of mineral resources and the useful life of the improvements.

Buffer - Land uses which provide sufficient distance and/or barriers between mining and incompatible land uses, to mitigate noise, dust, vibration, and visual impacts of mining, and to protect public safety."

1.4.1.2 Aggregate Supply and Consumption

The mineral resources addressed first by the SMARA are sand, gravel, and crushed rock (aggregate). As referenced earlier, the SMARA does not distinguish between types of mineral resources. Therefore, to implement the SMARA, priorities had to be established as to which mineral resources should be addressed first. This was done by the State Mining and Geology Board which gave priority to construction related materials and particularly those used for Portland Cement Concrete (PCC). The reason for this is the vital role that construction grade aggregate (sand, gravel, and crushed rock) plays in the economy. PCC grade aggregate is emphasized because it is required for 60% of all aggregate used, and is the scarcest of the aggregate materials.

The discussion that follows attempts to identify projected demand for the next 50 years and the location and amount of aggregate supplies available. The information presented is based entirely on data from the State which the County assumes is valid. Special Report 145 of the California Division of Mines and Geology (Mineral Land Classification of Ventura County, 1981) was specifically relied upon.

1. **Production Consumption Regions (PCR)**

   The cost of hauling aggregate products to market is a significant portion of its total production cost. Because of this, areas containing aggregate deposits which are near centers of consumption become the areas from which the aggregate is produced. Consequently, regions can be identified which encompass the supply and demand of a given locale. The State refers to such regions as "Production Consumption Regions" (PCR). There are two PCRs that cover the populated south half of the County. The north half of the County, generally within the National Forest, was not surveyed by the State. The "Simi PCR" includes the southeast quadrant of the County and portions of Los Angeles County (Malibu and Chatsworth/Canoga Park). The "Western Ventura County PCR" includes the entire Santa Clara River Valley and the remaining western portion of the County's south half (Figure 1.4.1).

2. **Projected Demand**

   The State's studies indicate that demand can vary significantly between PCRs. The State found that the annual per capita consumption in the Simi PCR was 5.5 tons, whereas the annual per capita consumption rate in the Western Ventura County PCR was 11.0 tons. These figures were arrived at by comparing the annual aggregate production for each PCR with its annual population between 1960 and 1978. It was assumed that all the aggregate produced within a PCR was consumed there as well. Further study by the State revealed that long-term per capita consumption patterns, coupled with future population projections, was the best way of predicting future demand.

   Based upon population projections developed by the County, the Southern California Association of Governments (SCAG), and the State Department of Finance, the Simi PCR is anticipated to have a population of over 600,000 by the year 2030. The Western Ventura County PCR population is expected to exceed 700,000. Applying the annual per capital consumption figures cited above, the total aggregate demand within the Simi PCR will reach 130 million tons by the year 2030. Within the Western Ventura County PCR demand will reach 310 million tons by the year 2030 (see Figure 1.4.2).

   Projections such as these are very gross measures of demand and have an inherent degree of uncertainty. Recessions and construction slow downs certainly reduce demand, however, a major disaster (e.g. earthquake) could boost demand considerably. Trying to incorporate such

circumstances into a 50 year demand projection is virtually impossible and, therefore, the long term demand projections should be considered general at best.

3. **Location and Classification of Aggregate**

The aggregate resources for the respective PCRs are located in very different geographic settings. The aggregate resources in the Western Ventura County PCR are almost exclusively located in, and adjacent to, the Santa Clara River. The aggregate resources in the Simi PCR are located in the hills northwest of Moorpark and in the hills to the north and south of Simi Valley. The accompanying map depicts the location of the resources (see Figure 1.4.1).

The County's aggregate resources are classified as one of several different *mineral resource zone* categories (*MRZ-1*, *MRZ-2*, *MRZ-3*, *MRZ-3(a)* and *MRZ-4*). These classifications are generally based upon the relative knowledge concerning the resource's presence and the quality of the material. The State-adopted definition of each classification follows:

MRZ-1 - Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence. This zone shall be applied where well developed lines of reasoning, based upon economic, geologic principles and adequate data demonstrate that the likelihood for occurrence of significant mineral deposits is nil or slight.

MRZ-2 - Areas where adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood for their presence exists. This zone shall be applied to known mineral deposits or where well developed lines of reasoning, based upon economic, geologic principles and adequate data demonstrate that the likelihood for occurrence of significant mineral deposits is high.

MRZ-3 - Areas containing mineral deposits, the significance of which cannot be evaluated from available data.

MRZ-3(a) - Areas, judged on the basis of the limited available geologic data and field work, to have higher potential as sources of aggregate material suitable for Portland Cement Concrete than other deposits classified MRZ-3.

MRZ-4 - Areas where available information is inadequate for assignment to any other MRZ zone.

A review of Figure 1.4.1 reveals that there is relatively little land within the County which is known to have significant deposits of construction grade aggregate (those classified as MRZ-2). MRZ-2 areas have been "designated" by the State as areas that should be subject to special management regulations through the General Plan of local jurisdictions.

While the areas designated MRZ-2 represent the State's best guess as to where aggregate resources are located, these conclusions were based upon proprietary industry data, historic well logs and borings, and general knowledge about aggregate bearing formations. No original field research was conducted to specifically assess the quantity or quality of the resource.

4. **Estimates of Aggregate Resources**

Given the limitations on data, the State nevertheless prepared estimates of aggregate reserves in order to project the availability of aggregate supplies for the next 50 years. The MRZ-2 areas designated by the State are the basis for such estimates. Areas classified MRZ-3 and MRZ-3(a) are not considered because of the highly speculative nature of viable aggregate deposits. Areas classified as MRZ-1 and MRZ-4 are likewise excluded from consideration.

In estimating the amount of resources in the various MRZ-2 areas, the following general criteria are used:

- The deposit must consist of sound, durable material substantially free of chemically reactive substances that would preclude its use as Portland Cement Concrete (PCC) aggregate.

- The basic geologic aspects of the deposit must be understood clearly enough to permit interpretation of the lateral and vertical distribution of the material.
- It is assumed that there is an average of 0.07 short tons of aggregate per cubic foot of material.

In addition to the preceding general criteria, specific assumptions were applied to sub-areas ("sectors") of the MRZ-2 designated areas. The Simi PCR includes three sectors (A, B and C), while the Western Ventura County PCR has ten sectors (A through J). The specific assumptions made relative to each sector are found in Special Report 145. Some of the criteria considered were the amount of waste material (such as silt and clay) associated with the aggregate, how much "reactive" material is present (gypsum, zeolite, chert, etc.), depth of the deposit and access to it.

Figures 1.4.3 and 1.4.4 summarize the "inferred" aggregate "reserves" and "resources" in Simi and Western Ventura County PCRs respectively. The term "inferred" is taken from the U.S. Geological Survey classification system and means:

> Reserves or resources for which quantitative estimates are based largely on broad knowledge of the geologic character of the deposit and for which there are few, if any, samples or measurements. The estimates are based on an assumed continuity or repetition, of which there is geologic evidence; this evidence may include comparison with deposits of similar type. Bodies that are completely concealed may be included if there is specific geologic evidence of their presence. Estimates of inferred reserves or resources should include a statement of the specific limits within which the inferred material may lie.

The State describes "reserves" as follows:

> Reserves represent material believed to be acceptable for commercial use that exists within property boundaries owned or leased by an aggregate producing company and for which permission allowing extraction and processing has been granted by the proper authorities.

The State describes "resources" as follows:

> Resources include reserves as well as all potentially useable aggregate materials (non-permitted resources) which may be mined in the future, but for which no use permit allowing extraction has been granted, or for which development has not been definitely established to be feasible based upon current technological or economic conditions.

A quick comparison of the total demand for each of the County's PCRs (Figure 1.4.2) with the supply available in each PCR (Figures 1.4.3 and 1.4.4) reveals an apparent abundance of aggregate and no shortfalls for 50 years of demand. Detailed assessments of supply and demand within the two PCRs are made in subsequent sections.

5. **General Limitations on the Supply of Aggregate**

The preceding section discussed the general availability of aggregate to meet projected consumption through the year 2030. It did not, however, discuss circumstances which could create shortfalls of aggregate. These are discussed below and in more detail as a part of the discussions about the two PCRs:

Quality of Base Data - As discussed earlier, the estimates of reserves and resources are based upon general indications of the resources' presence. Specific and detailed samplings were not taken to determine the aggregates' presence. Therefore, the overall basis for the estimate could be inaccurate (even though it is the best available).

Incorrect Assumptions - When making estimates regarding the volume of material available, assumptions had to be made regarding its quality, percentage of waste material present, depth, accessibility, etc. The application of these assumptions to large areas based on limited knowledge can lead to incorrect estimates of "reserves" and "resources".

Demands from other PCRs - While the estimates of supply and consumption within a given PCR may suggest that a shortfall condition will not arise over the next 50 years, such estimates fail to evaluate the possibility of shortfalls in adjoining PCRs which could trigger increased demand on the supplies of neighboring PCRs. This situation does not limit the estimated supply of aggregate in either of the County's two PCRs, but it does increase the demand for the same supplies which can just as easily create shortfall conditions.

Permission to Mine - While the State was able to generally identify the probable location of viable deposits of aggregate, it cannot guarantee that the deposits will be mined; this is the prerogative of the surface owner and local jurisdictions. Presumably a landowner would find it economically advantageous to allow mining on his property and open it up for such purposes. This may not always be the case. For a variety of reasons, a landowner may not wish to have his land mined.

Local Government Permit Restrictions - While Ventura County has denied only one project in recent years, it has imposed rather stringent conditions on the mining operations that have been approved. The conditions relating to the potential volume of material to be mined are often based on protection of water resources, preservation of wildlife habitat, reclamation, and aesthetics. Conditions addressing such issues will vary from site to site, and between city and County jurisdictions, but could significantly reduce the amount of aggregate available.

Imbalanced Distribution of Aggregate Grades - As indicated in previous sections, distinctions are made between aggregate in general and aggregate suitable for PCC. Another factor that determines the supply of PCC quality aggregate is the mix of fine and coarse grades of material. PCC requires a 50/50 mix of the two grades of material. Therefore, while a given deposit may contain large volumes of aggregate of proper quality, it may not be in the correct proportions. In such cases, the actual supply of PCC aggregate from that deposit would be a function of the lesser quantity of a given grade of aggregate. For example, a deposit of 50 million tons of PCC quality aggregate may consist of 40 million tons of coarse material and 10 million tons of fine material. Given the 50/50 mix requirement, there would only be 20 million tons of PCC aggregate available (10 of fine and 10 of coarse). Such imbalances can be overcome by hauling in the necessary grade of aggregate.

Hauling Impacts - As mentioned previously, the unequal distribution of fine and coarse material for PCC may necessitate the transport of material between sites in order to achieve an optimal supply of PCC quality aggregate. Transporting the material raises costs. It also contributes to traffic impacts, particularly if surface streets must be used. Energy consumption rises and with it air pollution. Finally, new or relocated processing facilities may have to be established, again at considerable costs and perhaps over citizen opposition. Given the impacts listed above, the redistribution of aggregate grades may be impossible. Should this occur, the optimal supply of PCC quality aggregate could not be realized, thereby effectively limiting the total supplies of such aggregate.

Changes In Consumption Patterns - The total volumes of aggregate projected to be consumed through the year 2030 were based on per capita consumption rates derived from consumption rates of the 60's and 70's. Should circumstances change (such as reconstruction from a major earthquake) consumption could rise significantly. Also, if projected population figures are exceeded total consumption will rise (even though the per capita rate might remain unchanged). Such changes in consumption patterns would not limit the availability of the resources identified, but they would place unexpected demands on the resource and possibly create shortfall conditions.

6. **Simi Production Consumption Region (PCR)**

This section will discuss in detail the issues that pertain to the Simi PCR as depicted on Figure 1.4.1.

- **Assessment of Supply and Projected Consumption -** In general terms, the supply of aggregate within the Simi PCR is sufficient to meet the region's projected 50 year demand. Table 1.4.2 indicates the total aggregate demand to be 130 million tons of which 60%, or

80 million tons, will be for Portland Cement Concrete (PCC). Figure 1.4.3 indicates there are total aggregate "reserves" and "resources" of 1200 million tons, of which 760 million tons are cumulatively suitable for PCC. No apparent shortfall exists. However, a detailed review of the resources in each of the three sectors in the PCR reveals that available resources may be less than initially estimated.

Sector A (which consists of existing mining operations) has total aggregate supplies of 180 million tons to meet a projected need for 130 million tons. When evaluating the supply of PCC suitable aggregate, it appears there are 130 million tons available to meet an 80 million ton demand. However, the relative proportions of fine and coarse material available as "reserves" in the sector actually limit the available PCC aggregate to 100 million tons. Therefore, while there is no shortfall of PCC aggregate, the excess supply is considerably less than it first appears.

The imbalanced distribution of coarse and fine materials in sector A is indicative of a general problem within the Simi PCR. A review of Figure 1.4.3 reveals unequal distributions of coarse and fine grades of aggregate in sectors B and C which would necessitate the transport of coarse and fine materials between sectors to achieve an optimal supply of PCC quality aggregate. The availability of PCC quality aggregate in each sector and under optimal distribution conditions are summarized on Figure 1.4.5. This table is derived from Figure 1.4.3 and illustrates that there are limited supplies of PCC grade aggregate in each sector and that only by combining the aggregate from the different sectors can there be significant supplies of PCC grade aggregate in the necessary 50/50 proportions.

In summary, the Simi PCR contains adequate supplies of aggregate to meet its projected needs to the year 2030 and significantly more material is available from areas not currently under permit. However, the optimal use of the available resources will require transport between sectors.

- **Specific Limitations on Aggregate Supply -** General limitations on aggregate supplies were discussed earlier; the following are some of the specific limitations that are thought to exist in the Simi PCR.

  Brandeis Institute - This religious institute controls the majority of Sector B and because of the nature of the use, mining may be considered inappropriate on the Institute's land. Lack of access to the resources in this sector could reduce the cumulative supply of aggregate by 510 million tons and the cumulative supply of PCC quality aggregate by 400 million tons.

  Hauling Aggregate - With the imbalance of aggregate grades in the Simi PCR, transporting the material for optimal mixes may become a necessity at some time. Because the present mining and processing facilities are located in the hills to the north and south of the City of Simi Valley, any transport of material between sites will invariably have to pass through the City. The movement of trucks for this purpose may create problems in the area. Any curtailment of the transport of material would effectively reduce the supply of PCC aggregate in the Simi PCR.

  Shortfalls in Adjoining PCRs - The State estimated that the "reserves" within the San Fernando and Western Ventura County PCRs will be depleted within 10 and 13 years respectively if present consumption rates continue. Since the Simi PCR is adjacent to both of these PCRs, it is logical that its supplies of aggregate would be utilized to meet shortfalls in adjoining PCRs. If "resources" within the San Fernando and Western Ventura County PCRs are opened up for mining, the shortfalls projected by the State will be put off and less demand will be placed on the Simi PCR.

  Aesthetics - Given the location of the aggregate deposits in the hills surrounding the City of Simi Valley and the City's strict controls on development on the hillsides which could detract from aesthetic qualities, some mining may be precluded.

Other Constraints - Preservation of rare and endangered species and archaeological sites may further limit the extent of mining in the various sectors.

- **Alternative Sources of Aggregate -** If shortfalls should arise in the Simi PCR, what alternative sources could be utilized?

  Saugus Newhall PCR - This area has not been thoroughly evaluated by the State at this time, but preliminary assessments indicate the presence of substantial supplies of aggregate. The problem, however, would be the costs of hauling aggregate over such long distances and the attendant impacts from its transport.

  Specific studies will have to be made of such potential alternative sources to determine their suitability and to assess the attendant problems that would be associated with mining sites in potentially distant locations.

- **Findings and Implications:**

  - Theoretically, there are adequate supplies of aggregate in the areas presently being mined (Sector A) to meet the total and PCC aggregate demand to year 2030.

  - Sectors B and C collectively contain large volumes of aggregate material, but individually the sectors do not contain favorable balances of coarse and fine material grades for PCC. The aggregate grades from Sectors B and C would have to be combined to provide a complementary supply of material grades for PCC. Combining the materials will require their transport which could result in traffic impacts on the City of Simi Valley.

  - Adjoining Production-Consumption Regions (PCRs) are predicted to experience shortfalls of aggregate supply and will rely on the Simi PCR for material. Increased demands on the Simi PCR from adjoining PCRs could create shortfalls within the Simi PCR of aggregate, particularly of PCC quality.

  - A substantial portion of Sector B is located on lands controlled by the Brandeis Institute (a nonprofit religious institute) and may therefore have limited potential for mining. This would substantially reduce the total supply of coarse material in the Simi PCR and therefore the total amount of aggregate suitable for PCC.

7. **Western Ventura County Production Consumption Region (PCR)**

   This section will discuss in detail the issues that pertain to the Western Ventura County PCR as depicted on Figure 1.4.1.

   - **Assessment of Supply and Projected Consumption –** Figure 1.4.4 summarizes the estimated aggregate supplies in the Western Ventura County (WVC) PCR. Several estimates are provided based upon varying depths to which mining might occur. The total supply of aggregate is 4860 million tons. However, of the land under permit ("reserves"), the actual amount of aggregate estimated to be currently available is only 40 million tons. Of the 40 million tons, only 30 million tons are suitable for PCC. Since the State conducted its study, the County has granted four permits for additional mining operations. The County estimates that these operations can supply up to an additional 15 million tons of aggregate over the 30 year life of the permits. Another permit was issued to the S.P. Milling Co. by the City of Santa Paula which would add to the original State estimate of reserves. At the current rate of consumption, the State estimates that the identified "reserves" within the Western Ventura County PCR (less the 4 CUPs and S.P. Milling) will be depleted within 13 years.

     By reviewing Figure 1.4.4 and comparing the State's estimate of total aggregate supply in the three sectors where mining is presently underway (A, B, and E - 970 million tons) with what is considered to be the total allowed for extraction under County permits in these three sectors (40 million tons) reveals that roughly 4.1% of the total deposits in the three sectors is actually available for extraction. Applying this percentage to the river's total

deposit of 4860 million tons, yields 200 million tons being potentially available given the same level of mining restrictions applied to the entire length of the Santa Clara River.

Because the 4.1% availability factor was derived from heavily mined areas, the mining restrictions imposed in those stretches of the river are probably more stringent than would be the restrictions on mining operations in other sectors of the river. Therefore, the 4.1% available factor is probably conservative.

Contrasting the foregoing estimates of supplies with the consumption projections summarized on Figure 1.4.2 reveals significant shortfalls of aggregate; 310 million tons of demand versus an estimated 200 million tons available. To what degree the demand for PCC quality aggregate (190 million tons) could be met is uncertain. However, if we apply the previously used 4.1% availability factor to the State's estimate of total PCC quality aggregate (3980 million tons), we arrive at a rough estimate of potential supply, 163 million tons. This would approach the projected demand of 190 million tons, but nevertheless fall short by nearly 30 million tons.

In summary, there are projected shortfalls of aggregate if the total 50 year demand is contrasted with the supply of material available from existing mining operations. Such a conclusion does not take into account the possibility of mining operations moving further upstream into areas where additional aggregate resources are located. Given past experience, however, necessary restrictions on river excavations will significantly limit the total amount of aggregate that can be removed. The possibility of shortfalls is still probable, but should be much less severe than initially projected.

- **Specific Limitation on Aggregate Supply -** Like the Simi PCR, the Western Ventura County PCR has some specific circumstances and issues that could reduce the estimated supply of aggregate. Among them are the following:

  Encroaching Urbanization - As of 1983, there has been relatively little urbanization along the length of the Santa Clara River and, therefore, limited citizen opposition to mining operations in the river. This situation, however, has been changing over the past several years as homes have been built in Ventura on the bluffs overlooking the river in the vicinity of the S.P. Milling and Conrock operations in El Rio and Saticoy. A proposed expansion of S.P. Milling's operations in the river received strong opposition from the new neighbors in 1980 and contributed to the applicant's withdrawal of the proposal.

  Urban expansion along the river in the Ventura-Oxnard areas is a problem now and will likely worsen as more residences are built which overlook mining operations. This same situation can (and probably will) be repeated up river in the cities of Santa Paula and Fillmore over the next 50 years. Therefore, public opposition to new mining will likely increase.

  Multiple Jurisdictions - If the river were solely within the County's jurisdiction, a unified and consistent set of management policies might be developed which could focus on the resource's regional importance. However, the city limits of Santa Paula and Fillmore already extend across the river. The city limits of Oxnard and Ventura might intrude into the river in the future as well. Therefore, the managed use of the river's total aggregate resources are presently, and will continue to be, in the hands of multiple jurisdictions with potentially different priorities for their use.

  More Restrictive Mining Regulations - The mining restrictions (Conditional Use Permit conditions) on operations in the river have been necessary to safeguard natural (and man-made) resources associated with the river. Since the original restrictions were applied, studies have been undertaken to more fully assess river dynamics. The results of these studies and future ones could suggest that in-river mining restrictions be tightened.

  One reason for tighter mining restrictions is the County's growing need to very carefully manage its limited supply of water which is supplied in part by the Santa Clara River. To the extent that the management policies of water and mineral resources conflict is a

measure of the restrictions that may be imposed. Should this occur, there would almost certainly be a functional reduction in potential supplies of aggregate.

Competition from Agricultural Uses - Just as there are resources within the river (such as water) which compete with aggregate extraction, so are there also competing uses outside of the river. These often consist of irrigated row crops and orchards. Unlike the grazing land in the Simi PCR, the agriculture that competes with aggregate resources in the WVC PCR consists of highly productive cash crops. Since agriculture is a very important use within the County, it may be difficult to displace such uses in favor of mining uses.

- **Alternative Sources of Aggregate -** Beyond the resources cited as being available, there are other potential sources which are listed below:

  Simi PCR - This source, as discussed earlier, has surplus capacity beyond the projected demand within its own region. Given its proximity, it would be a likely alternative source although increased transportation costs and impacts would result.

  Saugus Newhall PCR - This region abuts the eastern end of the Western Ventura County PCR and is considered to have large supplies of aggregate. Transport of material to the WVC PCR could be more costly than bringing material in from the Simi PCR.

  Storm Flows - The State estimates of aggregate resources within the Santa Clara River were based upon the amount of material in the river presently and did not consider the possible replenishment of aggregate which is constantly being washed downstream. One reason for this is that there is very limited data on possible replenishment rates. Secondly, only major storm flows bring down any significant amounts of material and these are not very predictable.

  MRZ-3 Areas - There are large areas outside the river which the State has identified as having potential aggregate value. Their exact value must await further study. Regardless of their potential value, some MRZ-3 lands (such as those in the Santa Monica National Recreation area) will probably not be available for mining.

  Deeper Excavation in River - Previous discussions indicated that mining restrictions (basically depth and width) had effectively limited the available aggregate resources within the Santa Clara River. The imposition of these restrictions could be lifted at some point if it were discovered they were unnecessary or their removal was acceptable in light of the cost of having to import aggregate.

- Findings and Implications

  - Of the two PCRs in the County, the Western Ventura County PCR has by far the greater demand and probable shortfall. The potential aggregate resources are great (5000 million tons); however, actual "reserves" (resources under permit) are only 40 million tons. An extrapolated total supply of aggregate resources based upon probable in-river mining restrictions might yield 200 million tons. This represents a prospective shortfall of 110 million tons by the year 2030.
  - There are significant environmental problems associated with mining in the river and these are heightened as the depths of excavation increase.
  - The permitted "reserves" are expected to be depleted prior to the year 2030 which will necessitate the issuance of additional mining permits either in, or outside of, the river if demand is to be met from supplies within the PCR.
  - Unlike the Simi PCR, the sources of aggregate from the Santa Clara River often lie within the city limits of various cities or within city Spheres of Influence and Planning areas. This means there will likely be competing views on how aggregate resources should be managed.

- As aggregate supplies are depleted in the lower reaches of the Santa Clara River, mining operations will be forced to move further upstream. This means increasing the distance from the consumers who are located primarily on the Oxnard Plain. This anticipated relocation of mining operations may also require the relocation of existing processing plants which are now situated in the El Rio/Saticoy area.
- The effects of moving upstream will be increased costs of operation, and additional impacts from the transport of material.

1.4.1.3 Competing and Conflicting Land Uses

The previous section discussed issues of supply and demand within the County's two Production Consumption Regions (PCRs), as well as factors which affect the theoretical projections of supply and demand. Some of these were related to conflicts with various land uses. This section will examine in further detail the specific land use factors which could influence the supply of aggregate resources. In so doing, this section will illustrate the problems of retaining access to, and mining of, mineral resources in the face of encroaching urbanization.

The discussion that follows is general in nature. The focus is on those areas of the County which the State has designated as having significant deposits of mineral resources. The discussion of conflicting and competing land uses is divided into four categories.

1. **Existing Structures and Land Uses**

   The existence of structures and land uses presents the greatest potential conflicts with mineral resources. Their presence over, or in close proximity to, a mineral resource may preclude or hinder the extraction of the resource. The uses and structures that are most likely to have this effect are those which entail a fairly significant investment or which involve the presence of people. The paragraphs that follow will describe the subcategories of structures and uses that pose probable conflicts with mineral deposits.

   - **Existing Uses of Land -** This subcategory has four broad classes: existing mining CUPs, undeveloped sensitive, developed non-sensitive, and developed sensitive.

     Developed, sensitive uses include significant structures and improvements, and are generally adversely affected by mining operations in close proximity. Like other "developed" uses, mining would be virtually precluded on the site where the use is located.

     The types of uses included in this class are residential, commercial, and institutional uses, and water spreading grounds. Given the fact that development of these types of uses has been concentrated in and around urban centers, conflicts between these sorts of uses and mineral deposits will be limited. They exist in the El Rio and Saticoy areas near the Santa Clara River and along the major access routes to the resource deposits in the Simi Valley area.

     Developed, non-sensitive uses is a broad class that is meant to identify uses which would likely preclude mining beneath the use itself, but which would generally be unaffected by mining operations in close proximity to them. Among the uses that fall into this category are heavy industrial uses, oilfields, landfills, and cemeteries. Of the uses listed, oilfields (as described by the State Division of Oil and Gas) cover the largest area, but they are the least densely developed. Despite this, the network of roads and pipelines leading to the relatively few oil wells and tank facilities could significantly limit access to mineral deposits.

     Undeveloped, sensitive land uses are generally devoid of structures and improvements, but are devoted to activities which utilize the land in a manner which precludes or hinders mining operations. Parks and irrigated agricultural lands are prime examples. Parks are depicted in Figures 4.10.2 & 3 of the Public Facilities and Services Appendix. Agricultural lands are depicted in Figure 1.6.2.

     While these areas appear to be available for future mining due to the general absence of improvements, existing County policies, plans and laws limit, in some degree, the use of

the land for mining purposes. Irrigated agricultural lands under a Land Conservation Act (LCA) Contract are a specific case in point.

Existing mining CUPs (Figure 1.4.6) are listed here and appear on the accompanying maps to identify their locations and to suggest that resource areas already under permit do not represent new, untapped sources of aggregate to meet future demand. Two CUPs are on file for the north half of the County; the Schmidt Quarry above Ojai and Ridgelite in Lockwood Valley.

- **Structures -** This subcategory includes levees, bridges, pipelines, the proposed Vern Freeman Diversion Structure, and other structures whose presence can preclude or seriously hinder river mining operations. They are costly, necessary public facilities which frequently cannot be relocated. The presence of such structures in and along the Santa Clara River has, and will continue to, limit access to mineral resources located there. This is because mining in the river can alter the river's behavior and lead to the destruction of the structures by the river. The presence of these same structures outside of a river does not conflict to the same degree with mining operations because the structures can be more easily protected from adverse mining impacts.

  The presence of the above described structures will have a disproportionate effect on the Western Ventura County PCR because the region relies almost exclusively on aggregate from the Santa Clara River. The Simi PCR receives virtually all of its aggregate from landward locations which are generally free of structures which cannot be accommodated in the mining process.

2. **Land Use Plans and Policies**

   This category of land use issues does not represent the obvious land use conflicts exemplified by existing uses and structures, but they include latent conflicts that must be recognized. As intangible as plans and policies are, they often represent substantial financial commitments for services and infrastructure that cannot be reversed. A discussion of the type of plans and policies that affect mineral resources follows:

   Policies are often general in nature (and therefore hard to map), but they can, nevertheless, play a significant role in how development occurs and where mining can take place. Policies establishing *greenbelts* have been adopted primarily to preserve farming, not foster mining. These apply particularly to the areas along the Santa Clara River. Likewise, policies limiting grading and development on steep slopes can effectively preclude mining in some areas. Simi Valley, in conjunction with the County, has such policies to protect the view of the hills from the City. Ventura has similar policies. The City of Oxnard has a specific policy against mining east of Vineyard Avenue. The County has numerous policies relating to water preservation and reclamation programs, and facilities which could affect mineral resources. Among these are the Vern Freeman Diversion Structure and the Pumping Trough Pipeline.

   Land use plans, unlike policies, adopted plans can be easily mapped (see Land Use Chapter). The land use designations of the applicable County and city plans were reviewed to determine which designations had the potential to preclude mining if development occurred and of these which are likely to be sensitive to mining operations in the vicinity.

   "Rural" designated areas of the County, where residential uses are planned for, and "Urban" designated areas generally include "sensitive" land uses. The exception would be areas planned for heavy industrial uses which are not generally adversely affected by neighboring mining operations.

3. **Jurisdictional Interests**

   The discussion of potential land uses conflicts has thus far focused on existing and planned uses. An overriding land use consideration, however, is what jurisdiction has land use authority in a given area (see Land Use Chapter).

The County has limited land use control over State and Federally owned lands. The County's land use authority vis-à-vis the various cities is much more fluid. The County obviously has no land use control within incorporated cities. Immediately outside the city limits the County has control; however, through various policy decisions and understandings, the County has promised to recognize the cities' interests and plans where they extend into unincorporated territory.

4. **Environmental Constraints**

There are numerous environmental factors that can bear on the development of mineral resources. Frequently, conflicts with these factors can be mitigated through the permit process. As such, it is difficult to identify and map factors which could be considered an unmitigable impediment to mining.

Those that were identified include aquifer recharge areas, critical habitat, and the existing limitations on mining in the Santa Clara River (for habitat maps, see Sec. 1.5; for aquifer recharge maps, see Sec. 1.3). This is not an exhaustive list because environmental factors are usually site specific and not applicable on a Countywide basis. Therefore, there may be unique factors in a given mineral resource area that would not be identified until development of the resource was actually proposed.

As an example of the range of factors that can affect mining in an area, the following is a list of some of the factors associated with in-river mining operations:

- possible damage to facilities and structures,
- high groundwater,
- shortened excavation periods,
- exposure and evaporation of groundwater,
- need for frequent surveying,
- disruption of riparian habitat,
- disruption of fisheries, and
- interruption of sediment transport.

5. **Findings and Implications**

- The location of existing and proposed structures and land uses can preclude or hinder the extraction of mineral resources.
- A land use or structure does not have to directly overlay a mineral resource to hamper its extraction.
- The aggregate supplies for the Western Ventura County PCR appear to be subject to greater existing and potential land use conflicts than do the aggregate resources in the Simi PCR.
- The Resource Protection Map (of the General Plan) should identify recognized Mineral Resource Areas.
- A Mineral Resource Protection Overlay Zone should be applied to Mineral Resource Areas identified in the General Plan and should be employed to:
    - Safeguard future access to an important resource.
    - Facilitate a long term supply of aggregate within the County.
    - Minimize land use conflicts.
    - Provide notice to landowners and the general public of the presence of the resource.

1.4.2 Petroleum Resources

Petroleum resources play a significant role in the local and regional economy. In terms of gross dollars, petroleum production accounts for approximately 75% of the total mineral production of Ventura County. Ventura County produced 15,659,398 barrels of oil and 16,130,168 thousand cubic feet of natural gas in 1987 (excluding Outer Continental Shelf [OCS] production), which ranks third in State petroleum production. Figure 1.4.7 identifies known petroleum resources in the County. The petroleum resource areas are derived from maps prepared by the State Division of Oil and Gas. As new wells are drilled outside of known fields, the fields' boundaries are realigned to incorporate the newly found resources. Substantial petroleum production occurs offshore of Ventura County as well. Production within three miles of the coast is under the jurisdiction of the State while that beyond three miles is under Federal jurisdiction.

1.4.2.1 Geologic History

Oil deposits recovered today are a result of various geologic forces that occurred over millions of years. Current theory is that parts of California consist of ancient sea floors that once covered sections of Western North America. Oil and gas fields are the result of the accumulation of layer upon layer of decayed organic material that was successively covered by layers of sediment in the ocean basins and shallow seas of what would later become California (Mintier, 1988).

The accumulated sediments were compacted and heated by the weight of overlying layers of sediment and gradually hardened into shale and sandstone. When oil and gas reach a rock bed that is impermeable, they collect between the rock grains and faults in the earth and form a reservoir. A typical oil and gas reservoir in California is composed of sandstone because sandstone is very porous and is easily permeated by oil which collects in the small spaces between the sand grains.

The rock formations that trap oil have been brought closer to the earth's surface by the action of tectonic forces in the earth's crust. These actions caused the original rock strata to reshift, fold, buckle and fault, forming uplifted geologic structures known as anticlines (Department of Oil and Gas, 1983). Figure 1.4.8 illustrates an anticline and the typical relationship between oil, gas, and water within these formations. The oil cannot escape upward because of the impervious shale bed above the oil sandstone and it cannot travel downward because the water beneath it weighs more than the oil. Most of the petroleum resources located in Ventura County are within anticline formations.

1.4.2.2 History of Oil Development in Ventura County

Drawn to Ventura County by reports of "oil struggling to the surface at every available point," George Shoobridge Gilbert, referred to as California's first true petroleum pioneer, began extraction operations at Sulphur Mountain in 1861 (Triem, 1985). Most of the early unrefined oil found in Ventura County was a thick, sticky substance called asphaltum. Originally, asphaltum was used to surface roads and seal roofs on houses, yet early oilmen like Gilbert began looking for a way to process this material and the good quality, light gravity oil also found in Ventura County, into a more marketable product. In 1854, oil collected at Sulphur Mountain was refined in home-made stills. The first commercial oil refinery in the county was built in 1861 by Gilbert. It was located in the Ojai Valley and produced between 300 and 400 gallons of refined oil a week (DOG, 1983).

By the 1880's almost all of the State's oil production was in Ventura County, as the discoveries at Sulphur Mountain, Rancho Ojai, Rancho Sespe, and Rancho Santa Paula became known (DOG, 1983). The most successful early well, discovered in 1865, was "Ojai 6", which is considered to be the first oil well in California to produce commercially (Triem, 1985). The State's first oil "gusher" occurred in Adams Canyon near Santa Paula in 1888 and was the first big well in California, flowing at an estimated 1500 barrels of oil a day.

As the nation's demand for oil grew, Ventura County continued to be a major oil producer. The South Mountain and Ventura oil fields were discovered in the early 1900's. By this time, oil was

rapidly replacing coal as a fuel for locomotives, ships, and homes (Mintier, 1988). In 1914, gasoline outsold kerosene for the first time, due largely to the increasing popularity of the automobile. The introduction of the Model T Ford in the 1920's led to an even higher demand for oil (Mintier, 1988).

Ventura County experienced tremendous population growth during the 1920's due primarily to the discovery of the Ventura Avenue Oil Field in 1916. By 1926, this field was producing over 20,000 barrels of oil a day and its level of productivity brought in thousands of oil workers, geologists, engineers, and oil-related businesses to the City of Ventura and outlying areas (Triem, 1985).

During the same periods, the town of Santa Paula underwent significant changes with the discovery of the South Mountain Oil Field in 1916 (Triem, 1985). Up until then, agriculture was the only large industry in Santa Paula, but the discovery of oil at South Mountain created an oil boom period which lasted for approximately ten years.

Oil production and exploration practically came to a halt during the 1930's Depression years. Subsequently, World War II brought a resurgence of national oil production, which continued sporadically throughout the 1950's. New oil discoveries in California were limited to smaller fields and to the development of extensions of field boundaries or deeper drilling in existing fields (DOG, 1983).

No large onshore fields have been discovered in Ventura County since the Saticoy Field in 1955 (DOG, 1988). In the 1960's, the first serious exploration of submerged lands was undertaken, which led to the discovery of two large oil fields off the coast of Santa Barbara County (DOG, 1983). Subsequently, Ventura County oil exploration efforts were then concentrated on offshore fields and operators began to explore new, more efficient methods of oil production.

1.4.2.3 Traditional Oil Recovery Methods

There are several methods available for recovering oil. When a field is first discovered, primary recovery techniques are usually sufficient. During the primary stages of oil recovery, the reservoir's natural pressure is high enough to move the oil to the surface. However, in California, only about five to thirty per cent of oil reserves can be recovered in this way (American Petroleum Institute, 1983). The process of pumping oil, another primary recovery method, is the next stage in oil production. As the oil leaves a reservoir, the natural pressure of the reservoir decreases, thus slowing down the production process. An artificial pumping mechanism is then needed in order to recover the oil at a rate fast enough to make production economically feasible for the operator.

While pumping is sufficient in extracting most of the oil in Ventura County, some of the oil reserves, known as "heavy oil," were not recovered using standard pumping operations. Because of the considerable energy required to recover heavy oil, and the difficulty in refining it into useful products, recovery of this resource was not considered feasible until the increase in oil prices brought on by the 1973 Arab oil embargo (API, 1983). At that time, operators began to explore alternative methods to recover the heavier crudes and to recover the lighter crudes in a more efficient manner (see below).

1.4.2.4 Enhanced Oil Recovery Methods

Enhanced oil recovery (EOR) methods add energy in the form of pressure, heat and chemicals to overcome the natural forces that impede oil production (DOG, 1983). In Ventura County, the most common EOR method used is waterflooding which involves injecting water into an oil reservoir through injection wells, which then increases or maintains reservoir pressure (DOG, 1983). As illustrated in Figure 1.4.9, water is often pumped out of a field with oil and gas. In some of the older fields, close to 90 per cent of the recovered fluids are "produced water." Some operators are using this produced water for reinjection into their fields in waterflooding operations.

Another popular EOR method used in California is steam injection. Steam is injected on either a continuous (flood) or an intermittent (cyclical) basis. Cyclical stimulation is carried out by injecting steam into a producing well for a short period of time. After each steam cycle, the well is returned to production. Continuous steam injection, also known as steam flooding, is carried out by adding

steam into a reservoir through injection wells while at the same time producing oil from other, nearby wells (API, 1983).

These methods work well in the recovery of heavy oil because the heat from the steam lowers the viscosity of the heavy crude, thereby improving its flow characteristics. Currently in Ventura County, cyclic steam injection is practiced in the Oxnard Plain. Wells are injected with steam for approximately one week and then shut down. A few days later, production begins and continues until the flow of oil drops to an unacceptable level, and the process is then repeated.

1.4.2.5 Supply and Demand

In 1987, 15,659,398 barrels of oil were produced in Ventura County's 39 onshore fields. An estimate of the remaining oil reserves in Ventura County is 246.141 million barrels as shown on Figure 1.4.9. This estimate has been calculated by DOG and is determined by subtracting each years' production figure from an estimate of the total oil reserves available in each field. Estimating the length of time it will take to deplete these reserves is a much more difficult task.

The price of petroleum products has a direct impact on the rate at which oil/gas reserves are extracted. If the price of crude is low, then the operator will have to determine if it is economically feasible to keep wells producing. If the price per barrel of crude oil is less than the cost to produce it, then the operator will most likely suspend production of his wells until the price of oil rises. Therefore, if the price of oil is down, then the rate of extraction is relatively slow and reserves will last for a longer period of time than if the price of oil is high. If oil prices are up, the rate of extraction will increase significantly because the operator can assume a profit on each barrel produced. Since most production costs remain relatively constant, the higher the price, the more profit per barrel of oil. Therefore, the operator is more likely to extract oil at a faster rate if oil prices are high, which will cause the depletion of petroleum resources more rapidly.

When making long term projections, prices are assumed to be influenced principally by major trends of supply and demand in the world oil market (Energy Information Administration, 1987). Perhaps the overriding influence between now and the year 2010 is the current surplus in world oil production capacity. In 1986, it was estimated that existing fields were capable of producing approximately nine to ten million barrels per day more than was actually produced. Most of this surplus capacity is in the Organization of Petroleum Exporting Countries (OPEC) of the Persian Gulf, so the reliability of the source is questionable given the political instability of the region. It is assumed that growth in demand will be met primarily from the supply of OPEC oil in this region because there is relatively little excess production capacity anywhere else in the world.

Currently, because of the level of overall economic growth and relatively low oil prices, oil consumption worldwide is expected to increase by more than one million barrels per day, reaching a high of between 48 - 52 million barrels per day by 1990. Then, during the next twenty years, rising oil prices are expected to moderate projected demand (EIA, 1987). However, even with this moderate increase in demand, prices in real terms are expected to remain relatively low, due in large part to the projected surplus in the OPEC oil supply previously mentioned. A range of $27 - $41 per barrel (in 1986 dollars) is projected, with an average price of $33 per barrel by the year 2000 (EIA, 1987). Due to the political instability of the Persian Gulf area, access to OPEC's surplus oil supply cannot be assured. Therefore, if the oil in that area was to become inaccessible, the price could increase to between $55 -$90 per barrel as the supply of oil would fall far short of demand. If this were to occur, Ventura County oil production could be expected to experience a significant increase over the next twenty years.

1.4.2.6 Land Use Regulations

Land use conflicts created by petroleum production typically include on- and off-site environmental impacts, impacts to neighboring sensitive land uses, hazards associated with historic oilfields such as abandoned wells, and siting of development so as to preclude future access to petroleum resources. The impacts of production can be mitigated through the regulatory permit and enforcement processes established by the State and County (including the County Zoning Ordinance). Avoidance of hazards can be facilitated by identifying production sites and by

integrating this information in appropriate literature. The public could then be alerted to this potential problem. Urban development could be prevented from obstructing access to petroleum resources by accurately identifying known and potential reserves and designating them as Mineral Resource Areas subject to the Mineral Resource Protection Overlay Zone or similar mechanism.

Petroleum extraction on non-Federally owned lands is regulated by the County Zoning Ordinance and State laws and guidelines. A problem has arisen in that many existing production facilities are operating under archaic, long-term permits that do not provide the degree of regulation afforded by today's Zoning Ordinance. This situation will be corrected as these old permits expire or are modified.

Presently, the U.S. Department of Interior, through the Bureau of Land Management (BLM), has sole authority to issue mineral leases on National Forest lands. The Forest Service's role and authority depends on the type of the mineral involved. Most of Ventura County's North Half is within the Los Padres National Forest, and close coordination between County, State and Federal jurisdictions is necessary in the review of environmental assessments prepared for oil and gas leases.

1.4.3 Other Mineral Resources

Various minerals other than aggregate and petroleum are also extracted in Ventura County. None of these other mineral deposits, however, have been recognized as being of Statewide significance nor do they play a major role in the County economy. These other mineral resources include:

- Expansible shale known as "Lockwood Clay" is exposed at the surface in the Lockwood Valley and Frazier Mountain areas. The Ridgelite Operation in Lockwood Valley is currently in moderate production of this expansible clay, used for lightweight aggregate.
- Gypsum is found in Quatal Canyon and is currently being mined by Monolith Portland Cement Co. The U.S. Gypsum Co. has been prospecting and evaluating the extent and quality of a significant phosphate deposit and associated gypsum in Chorro Grande Canyon, south of Pine Mountain.
- Currently, small scale prospecting for gold occurs in the Frazier Mountain and Piru areas.
- Three deposits of valuable uranium-bearing strata are located in the North Half, however, none are presently being exploited.
- Decorative rock is currently mined in the Grimes Canyon area.
- Asphalt, borates and limestone deposits were all formerly mined in the County.

1.4.4 Conclusions

- Ventura County contains valuable aggregate and petroleum resources which are vital to the physical and economic development of the County. These resources warrant protection to ensure their continued availability. Identification of these resources and adoption of a mineral resource protection zone could provide this protection.
- Mineral resource extraction can pose conflicts with adjoining land uses. These conflicts can in turn preclude mineral extraction, therefore resources in proximity to urbanizing areas should be extracted before advancing urbanization prevents their use. A General Plan goal should encourage utilization of resources in urbanizing areas before land use conflicts preclude their use.
- Mineral resource extraction may cause environmental impacts if not appropriately regulated. General Plan Goals, Policies and Programs and the Zoning Ordinance should regulate mineral resource extraction activities. In accordance with CEQA, new development should mitigate any significant impacts caused by development. An enforcement program should ensure adherence to adopted regulations.

- Abandoned oil and gas wells can be hazardous. An attempt should be made to locate all such wells and mitigate any dangers.
- State law requires protection of mineral resources and proper reclamation of mining sites. The General Plan should contain goals, policies and programs to satisfy this requirement.

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Figure 1.4.1
Aggregate Resources Map

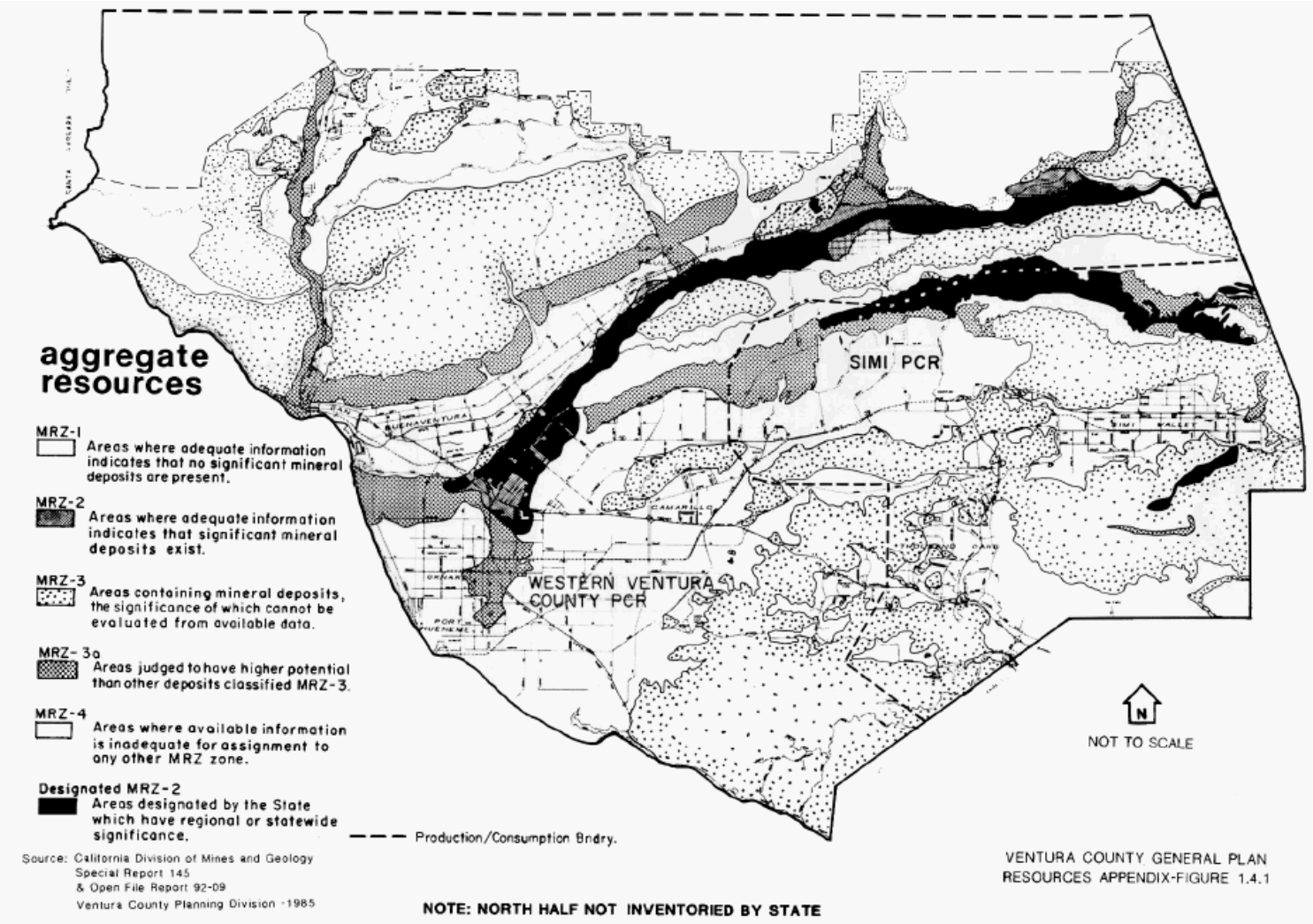


Figure 1.4.2
Projected Aggregate Demand to 2030 (Table)

Years	Simi P-C Region		Western Ventura County P-C Region		San Fernando Valley P-C Region		Saugus Newhall P-C Region	
	5 year per capita consumption = 27.5 tons/person		5 year per capita consumption = 55 tons/person		5 year per capita consumption = 8 tons/person		5 year per capita consumption = 29.3 tons/person	
	Average Population (millions)	Aggregate* Consumption (million tons)	Average Population (millions)	Aggregate Consumption (million tons)	Average Population (millions)	Aggregate Consumption (million tons)	Average Population (millions)	Aggregate Consumption (million tons)
1980-1985	.34**	9	.36	21	2.74	22	80	5
1985-1990	.37	10	.40	23	2.80	22	87	5
1990-1995	.41	11	.44	25	2.86	23	92	6
1995-2000	.44	12	.48	27	2.91	23	95	6
2000-2005	.47	13	.52	30	2.95	24	98	6
2005-2010	.51	14	.57	32	2.97	24	104	6
2010-2015	.54	15	.61	35	2.99	24	110	7
2015-2020	.57	16	.65	37	3.01	24	117	7
2020-2025	.60	17	.70	40	3.03	24	122	8
2025-2030	.63	17	.73	41	3.05	24	127	8
Totals		130 (80) ***		310 (190) ***		230 (140)***		60 (40) ***

* Aggregate Consumption = average population (5-year average) x 5-year per capita consumption factor. (Western Ventura County aggregate consumption includes an every five year export of one million tons to Santa Barbara County: for example, for the 1980-1985 period, (.36)(55) = 20 million tons + 1 million tons = 21 million tons).

** Population projections based on data from Ventura County, the State Department of Finance (1977), and the Southern California Association of Governments (1978).

*** Approximately 60% of the total aggregate demand will be for Portland Cement Concrete.

Source: Table 2.4 of California Division of Mines and Geology Special Report 145.

Figure 1.4.3
Simi Production Consumption Region (Table)

Sector	Resources Covered By Use Permit (Inferred Reserves)			Resources Not Covered By Use Permit (Inferred Resources)			Total
	Fine aggregate suitable for base and asphaltic concrete	Fine aggregate suitable for PCC	Coarse aggregate suitable for PCC	Fine aggregate suitable for base and asphaltic concrete	Fine aggregate suitable for PCC	Coarse aggregate suitable for PCC	
A	40	80	50	None	None	10	180
B	None	None	None	80	None	430	510
C	None	None	None	140	290	110	540
Totals	40	80	50	200*	300*	550*	1,200**

All numbers in million short tons.

* Figures rounded off to nearest 50 million.

** Figures rounded off to nearest 100 million.

PCC = Portland Cement Concrete.

Source: Table 2.3 of California Division of Mines and Geology Special Report 145.

Figure 1.4.4
Western Ventura County Production Consumption Region (Table)

Resource Depth Interval	Resources Covered By Use Permit								Resources Not Covered By Use Permit						Total Resources
	Regulated Extraction Limit		Resources Contained Between Surface & Bottom Of Deposit		Resources Contained Between Surface & 30' Below Surface		Resources Contained In Depth Interval Below 30' Depth		Resources Contained Between Surface & 0 Feet Elevation		Resources Contained In Depth Interval Below Sea Level		Resources Contained In Total Depth Interval		
Highest Aggregate Use / Sector	PCC*	MISC*	PCC	MISC	PCC	MISC	PCC	MISC	PCC	MISC	PCC	MISC	PCC	MISC	PCC+MISC
A	**	**	180	60									180	60	240
B	**	**							140	50	50	20	190	70	260
C									270	90	30	10	300	100	400
D			70	20									70	20	90
E	**	**			90	50	220	110					310	160	470
F					190	60	730	210					920	270	1190
G					160	20	480	60					640	80	720
H					120	20	830	100					950	120	1070
I					70	--	340	--					410	--	410
J					10	--	--	--					10	--	10
Column Total	30	10	250	80	640	150	2600	480	410	140	80	30	3980***	880****	4860

R. 12/19/89

All numbers in million short tons.

* Aggregate is divided into amount of material suitable for use in Portland Cement Concrete (PCC) and remaining material usable only in miscellaneous aggregate products.
* (MISC) - asphaltic concrete, road base, and railroad ballast. Normally material suitable for use in Portland Cement Concrete is also used in miscellaneous aggregate products.
** Cannot be shown due to confidentiality of producer data.
*** Includes 265 million tons located under producer properties.
**** Includes 100 million tons located under producer properties.

Source: Table 3.3 of California Division of Mines and Geology Special Report 145.

Figure 1.4.5
Available PCC Quality Aggregate in Simi PCR (Table)

Sector	Inferred Reserves			Inferred Resources			Total
	Fine	Coarse	PCC Total	Fine	Coarse	PCC Total	PCC In Sector*
A	80	50	100	0	10	0	120
B	0	0	0	0	430	0	0
C	0	0	0	290	110	220	220
							Cumulative Totals
Total Fine	80			290			370
Total Coarse		50			550		600
							Total PCC Between Sectors
							740

* PCC aggregate required 50/50 mix of fine and coarse material.

All numbers in million short tons.

Figure 1.4.6
Mineral Resources Mining Permits Map

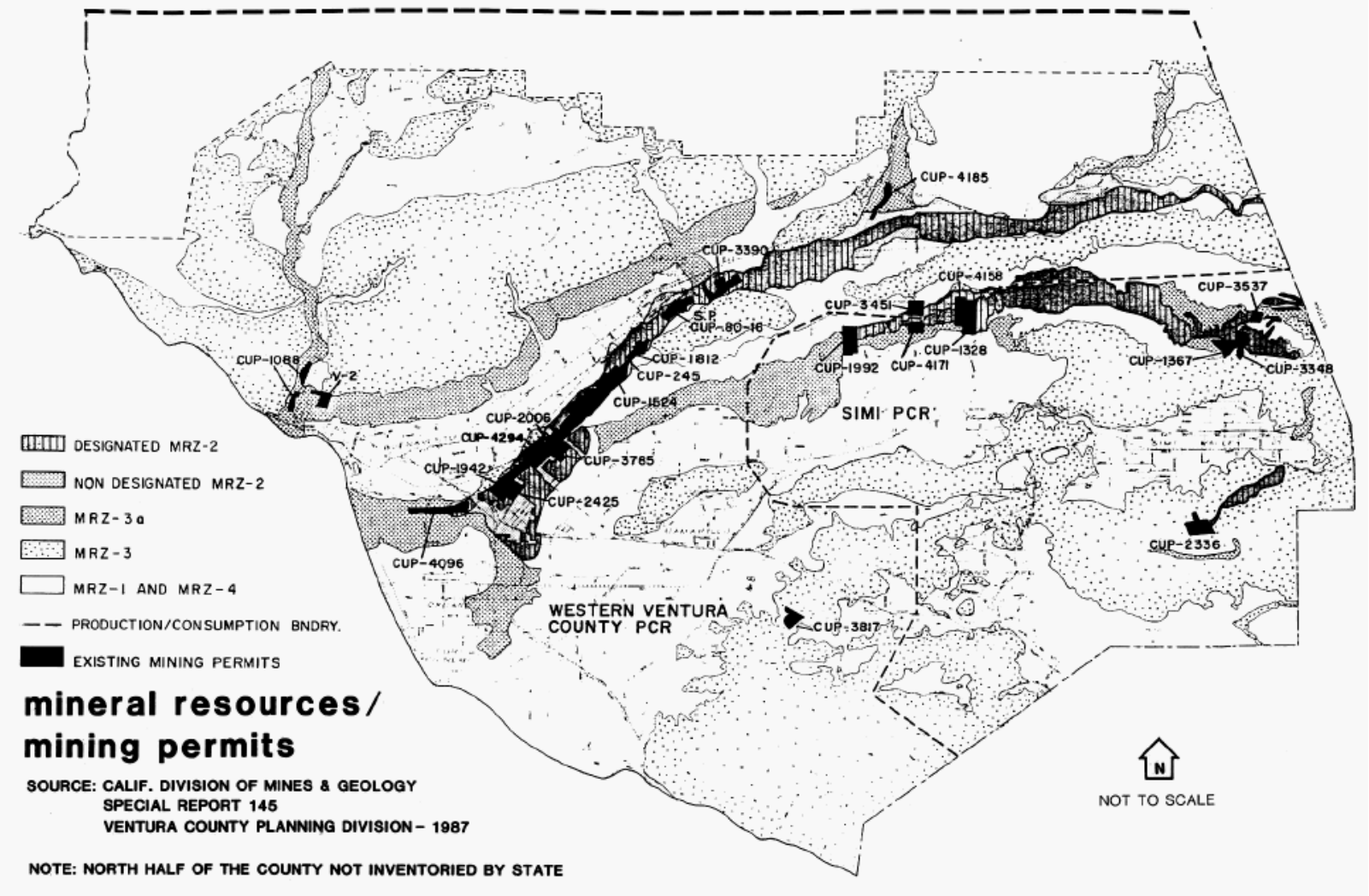


Figure 1.4.7
Petroleum Resources Map

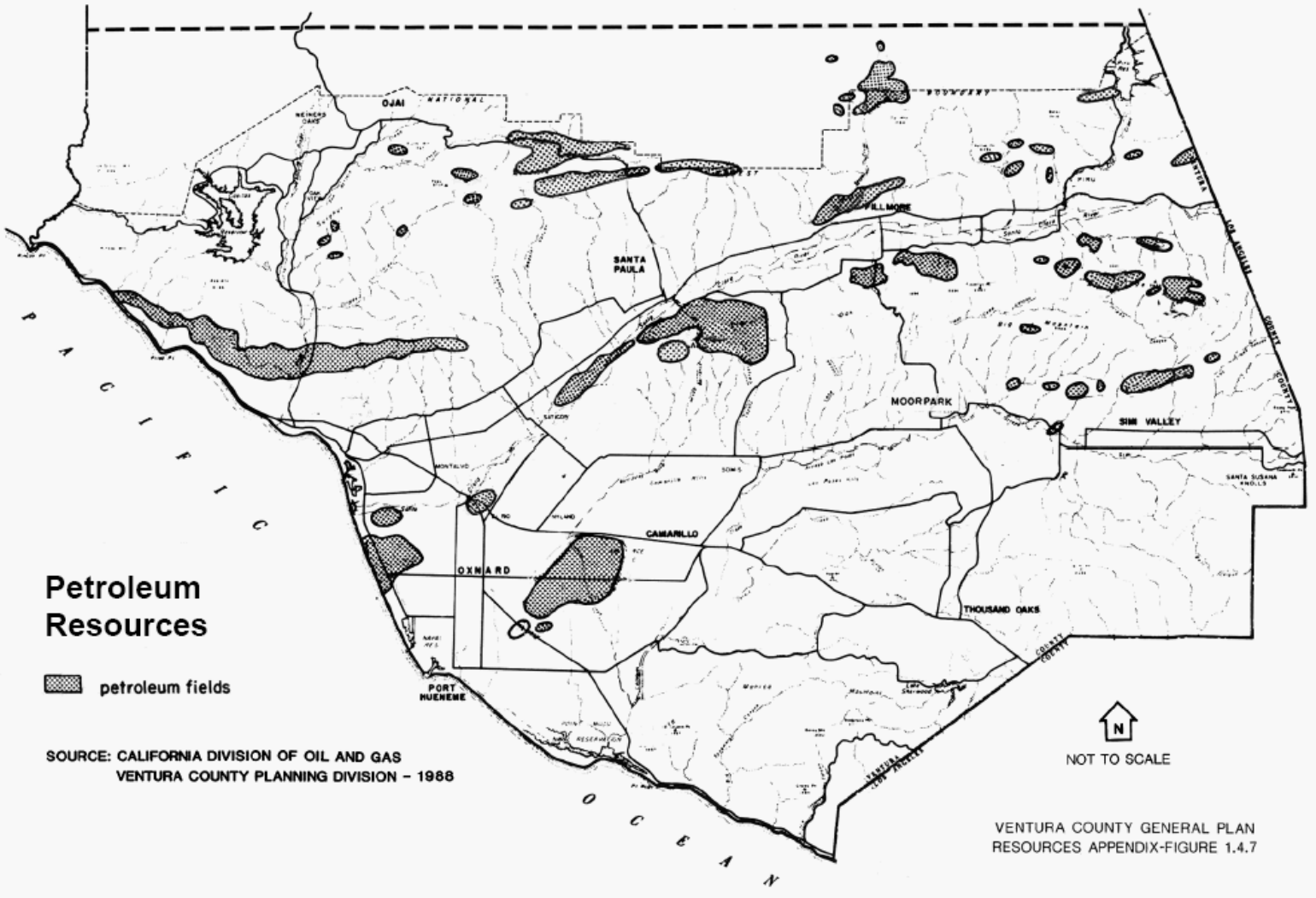
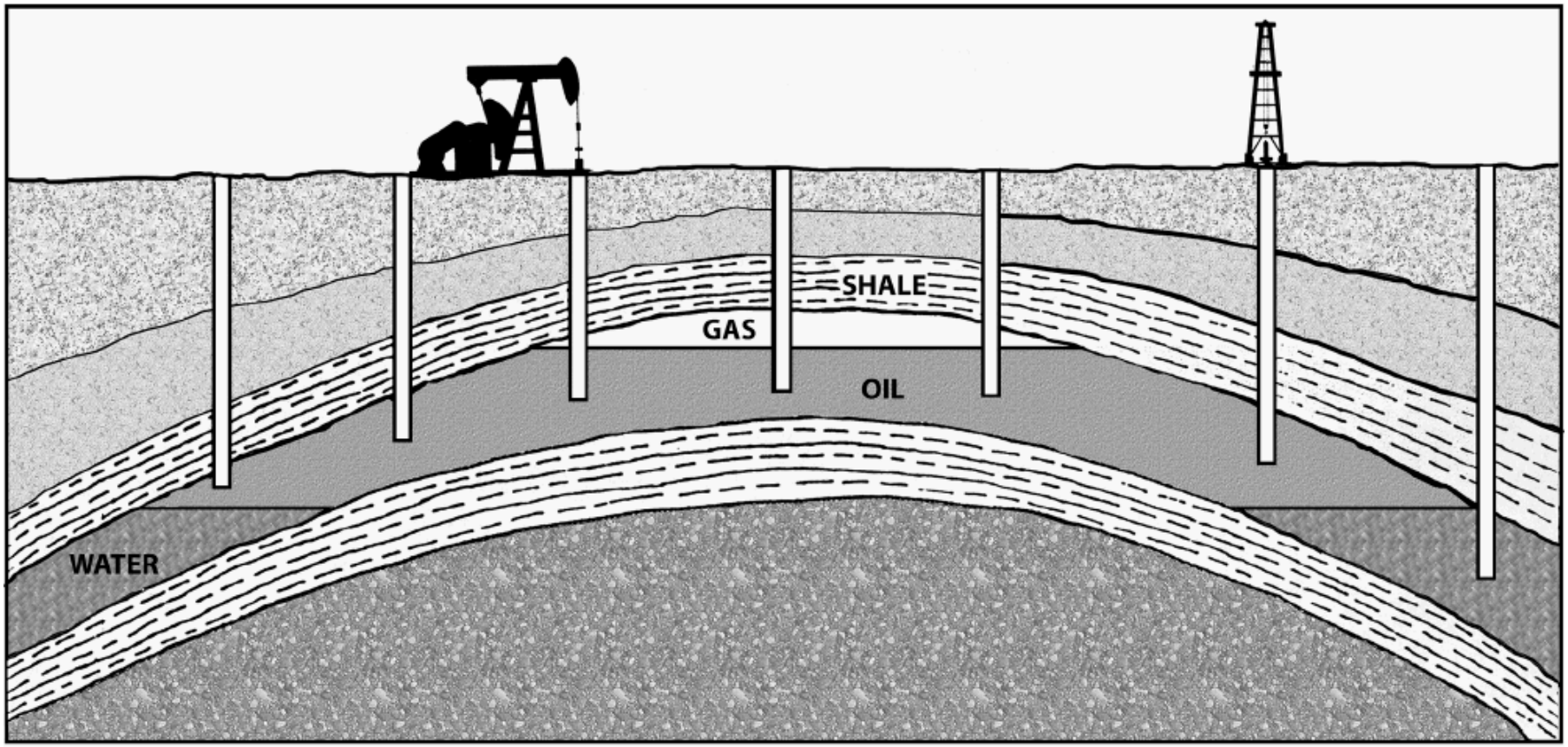


Figure 1.4.8
Typical Anticline (Illustration)



Longitudinal view of a typical anticline. The oil cannot escape upward because of the impervious shale bed above the oil sand; neither can it travel downward because of the water associated with an accumulation of this type.

Figure 1.4.9
Oil Reserves (Table)

Oil Field	Oil Condensate Production 12/31/87 Bbls.	Estimated Oil Reserves 12/31/87 Mbbls.	Produced Water Bbls.	% Water	Known Acreage As Of 12/31/87
Aliso Cyn.	341,907	3,555	2,117,002	86.1	540
Bardsdale	66,852	1,091	65,346	49.4	360
Big Mountain	30,274	188	25,591	45.8	40
Canada Larga	601	**	224	27.2	30
Chaffee Cyn.	4,116	**	4,061	49.7	50
Del Valle	118,113	1,562	429,303	78.4	410
Eureka Cyn.	12,998	**	87,540	87.1	100
Fillmore	18,232	670	5,894	24.4	20
Holser	24,759	234	18,228	42.4	120
Hopper Cyn.	18,933	270	40,696	68.2	50
Las Posas	1,306	**	4,317	76.8	20
Montalvo West*	218,184	3,543	508,704	70.1	290
Moorpark West	18,255	UNKNOWN	UNKNOWN	N/A	20
Oak Park	36,932	497	93,540	71.7	140
Oakridge	151,079	1,929	1,271,282	89.4	180
Ojai	922,186	12,482	1,118,836	54.8	1,470
Oxnard	528,193	13,621	993,202	65.3	850
Piru	2,567	**	1,527	37.3	50
Piru Creek***	---	---	---	---	10
Ramona	102,126	958	86,037	45.7	460
Ramona North	1,512	N/A	186	11.1	10
Rincon**Error!**	1,164,454	17,110	4,446,827	79.2	1,110
San Miguelito	1,945,193	46,630	4,966,217	71.9	770
Santa Clara Ave.	150,990	1,135	185,240	55.1	190
Santa Paula	6,753	**	4,884	42.1	140
Santa Susana	70,174	562	110,353	61.1	40
Saticoy	104,595	1,298	349,453	77.1	220
Sespe	1,087,385	14,364	428,297	28.3	2,540
Shiells Cyn.	166,349	4,078	189,179	53.2	660
Simi	32,209	263	49,909	60.8	310
South Mountain	741,479	12,821	871,678	54.1	2,440
Tapo Cyn. South	33,448	573	48,062	59.1	270
Tapo Ridge	3,888	**	9,063	70.1	20
Tapo North	8,856	**	25,740	74.4	110
Temescal	15,611	475	162,728	91.2	110
Timber Cyn.	64,266	753	22,910	26.3	230
Torrey Cyn.	132,248	1,801	97,950	42.6	190
Ventura	7,278,869	103,367	44,828,360	86.1	2,710
West Mountain	33,506	311	22,365	40.1	170
Totals	15,659,398	246,141	63,690,731		17,450

** Reserve figure less than 100,000 BBLS

1.5 Biological Resources

The natural ecosystem, with the various species of plants and animals, is a basic resource of Ventura County. All the natural resources (land, water, air, and biology) are part of the ecosystem. Disruption of one part may affect the others. Effects are intimately intertwined and the significance of those effects also is difficult to determine without consideration of the whole system.

All species and ecosystems are of aesthetic, ecological, educational, historic, recreational and scientific value to the people of Ventura County. Natural ecosystems which are conserved are productive, and many of these products are utilized by the human population. Of major concern in Ventura County are water production and watershed protection. Hunting, fishing, and outdoor recreation are consumptive uses. It is important to recognize that wildlife are publicly owned and are not held by owners of private land where wildlife are present. The habitat including the vegetation is, however, generally under the control of the individual land owners and the supervision of County agencies. It is the protection of this habitat which is most critical to maintenance of a healthy ecosystem and protection of fish and wildlife species, especially those which are *rare, threatened or endangered.*

Various species of fish, wildlife and plants in Ventura County have become extinct as a consequence of urban growth and development "untempered by adequate concern and conservation." Other species of fish, wildlife and plants have been depleted in numbers and have experienced a loss of habitat and disruption of the ecosystem of which they are a part. This habitat destruction occurs most often as a result of human activity, such as the introduction of non-native species to an environment, the exploitation of natural resources, or urban growth.

The following section discusses Federal and State law pertaining to *biological resources.* Following this are sections on vegetation, fish and wildlife, *rare, threatened, and endangered species*, locally unique habitats and resource management.

1.5.1 Biological Resource Laws and Regulations

Federal and State governments have developed laws and regulations designed to protect biological resources under their jurisdiction or that may be affected by the actions they undertake. Many of the resources are under direct Federal protection (e.g., coastlines and navigable rivers). Fish and wildlife resources are under State jurisdiction. Local governments are responsible for the majority of ecosystem components, while abiding by both Federal and State laws.

1.5.1.1 Federal Legislation

Federal legislation regarding biological resources has many focal points. Laws cover a broad range of issues and cover many levels of authority, responsibility, and accountability down to local jurisdictions. Federal legislation is important not only because it sets national policy, but also because it provides a number of systems for biological resource conservation and evaluation. Federal law also establishes programs of funding through grants and loans to states and local jurisdictions. It is important to note that although California law closely follows Federal law in many areas of biological resource protection, State laws and regulations do not overshadow those of the Federal system. This is particularly relevant for those resources over which the Federal government maintains jurisdiction.

There are a number of species specific laws and regulations for protection, conservation and commercial use. Programs are provided for designation and management of lands in systems for biological conservation (e.g., in Ventura County, Hopper Mountain National Wildlife Refuge, Dick Smith Wilderness, Channel Islands National Park, Santa Monica Mountains National Recreation Area, and the proposed Sespe Creek Wild and Scenic River).

Laws protecting the soil, water and air resources from destruction or pollution directly affect the conservation of fish, wildlife and plant habitats.

Perhaps the most influential Federal acts are the National Environmental Policy Act of 1969, the Coastal Zone Management Act of 1972, the Endangered Species Act of 1973, and the Fish and Wildlife Conservation Act of 1980, which are summarized below.

1. **National Environmental Policy Act of 1969 (NEPA)**

   This Act represents the first major attempt by Congress to declare a National policy which encourages productive and enjoyable harmony between man and his environment, promotes efforts which prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man, enriches the understanding of the ecological systems and natural resources important to the Nation, and establishes a Council on Environmental Quality (CEQ). The CEQ issues regulations for implementation of the NEPA procedures which apply to all Federal agencies and all projects which involve the use of Federal funds. NEPA is the forerunner to the California Environmental Quality Act and there are striking similarities. The key difference is that NEPA does not require the identification and evaluation of potential growth inducement factors and mitigation measures.

2. **Coastal Zone Management Act of 1976**

   The major provision of this Act is to "encourage and assist" states to develop and implement management programs in the coastal zone. The requirements for subjects to be discussed in coastal plans are extensive and broad in scope. The emphasis is strongly placed on the protection of the coastal zone ecosystem and management of natural hazards.

3. **Endangered Species Act of 1973**

   This Act provides for the protection of endangered and threatened species and the ecosystem upon which they depend. When species are entered on Federal lists, specific regulations are included which are species specific. California has since enacted a similar State program for protection of additional species, although, in case of conflict, Federal law prevails. In Ventura County there are several plant and animal species on the Federal listings.

4. **Fish and Wildlife Conservation Act of 1980**

   This Act, as does the Coastal Zone Management Act, provides direction to states to develop and implement conservation plans and programs for nongame fish and wildlife. The plan requirements are extensive and include inventories, identification of problems and opportunities, and action implementation.

1.5.1.2 California Legislation

State legislation concerns a variety of habitats and ecosystems. These include all wetlands and water resources, whether perennial or seasonal; they include unique resources, such as oak groves or perennial grasslands, as well as isolated pockets of native vegetation, such as big-cone Douglas fir in the chaparral. All native vegetation is protected, and its loss through development should be considered a definite effect with potentially serious significant impacts.

The California Environmental Quality Act (CEQA) follows the philosophy and evaluation procedures set forth in NEPA. CEQA provides for recognition of biological issues as part of the environmental review of projects. On a daily basis this Act has major significance in Ventura County.

In addition to CEQA there are a number of significant laws relating to biological resources in California. The Wildlife Conservation Law of 1947 was the first major law to set forth the State policy of preservation, protection, and restoration of wildlife and the acquisition, restoration and maintenance of high productivity habitat. The Native Species Conservation and Enhancement Act defines the policies of the State to maintain sufficient populations of wildlife and native plants and their habitats for their beneficial use and enjoyment by the citizens, and for their intrinsic and ecological values as well as their direct benefits to man. The California Native Plant Protection Act gives the California Department of Fish and Game the power to "preserve, protect, and enhance endangered plants of this state." The Fish and Wildlife Habitat Enhancement Act of 1984 is intended to provide the financial means to meet the objectives of assuring adequate habitat, with the resulting increase in the abundance of fish and wildlife. The California Endangered Species

Act, like the Federal Act, provides for protection of endangered and threatened plant and animal species. The Fish and Game Commission establishes a list of species to be protected and State agencies must consider options in project planning to conserve the species and their habitats.

The State General Plan Guidelines describe the inclusion of biological resource information in several elements of the General Plan. The California Coastal Act provides for a comprehensive program for the entire coastal zone. Local coastal programs are required to include a land use plan, zoning ordinance and other measures for implementation.

1.5.2 Native Vegetation

The diverse climate and topography in Ventura County have given rise to establishment of a wide range of plant communities. Native vegetation in Ventura County can be categorized into seven general plant communities: grasslands, coastal sage - scrub, chaparral, oak woodland, riparian, pinyon - juniper, and timber - conifer (see Figure 1.5.1). Many subgroups or localized distinct groups can be discerned, however the map scale selected does not afford their inclusion.

In the south half of the County, much native vegetation has been extirpated due to urban and agricultural development. For the most part, this development is confined to the fertile valleys and plains, and along the coastline. Consequently, most of the mountainous areas in the south half still support significant native plant communities.

Chaparral is the most common type of vegetation association in the County and consists of many species of woody shrubs which can attain heights greater than twelve feet and are often densely arranged. Chaparral is generally located on steeper slopes and has characteristics which make it highly flammable. The coastal sage - scrub association contains many plants of the chaparral, but is located at lower elevations (generally below 3000 feet) and is dominated by sages that are generally only three to four feet in height and are more widely spaced than those in the chaparral.

Grassland vegetation is not common, and as groundcover, is usually associated with oak woodland or open areas. The La Jolla valley in Point Mugu State Park is the only area in the County that still contains native bunch grasses in pure stands, and is considered a locally unique habitat.

The oak woodland community in Ventura County contains the easily identifiable valley oaks, with trees 20 to 60 feet tall and grassland and soft shrubs as groundcover, as found in the Thousand Oaks, Lake Casitas, and Hidden Valley areas. A large area of foothill oak woodland is found on Sulphur Mountain.

Riparian vegetation is significant due both to its rarity and its high value as wildlife habitat and use as migration corridor(s). Riparian vegetation is found along most of the permanent and ephemeral streams within the County. Typical trees of this community include sycamores, willows, cottonwoods, and alders. Extensive riparian growth lines Piru, Sespe, and Santa Paula Creeks, and the Santa Clara and Ventura Rivers.

The diversity of topography and climate in the North Half has resulted in a range of vegetation communities from Mediterranean-climate chaparral to subalpine forest, from desert shrublands to riparian woodlands. The front ranges south of Pine Mountain Ridge are largely covered with chaparral. Riparian vegetation borders all perennial and many intermittent streams. Pine Mountain Ridge with the highest point, Reyes Peak (7810 feet), supports a significant band of ponderosa pine forest from west to east across the County. The north slopes of Pine Mountain Ridge are covered with thick, mixed chaparral. The badlands and low elevation areas in the northwest corner of the County grade from desert scrub into pinyon-juniper woodlands on the higher and wetter sites -- especially up Quatal and Apache Canyons. Lockwood Valley probably once supported native grasslands and meadows and is largely in ranching today. The mountains to the north, Mount Pinos (8831 feet) and Sawmill Mountain, and east Frazier Mountain (8013 feet), support ponderosa pine forests which at the highest elevation on Mount Pinos grade into subalpine limber pine. To the east, pinyon-juniper woodlands cover much of the mountains with sagebrush in the valleys. Hungry Valley on the northeast corner was characterized as a native grassland and the valley is

still surrounded by a significant valley oak woodland. Oak woodlands are found in other isolated, localized areas of the North Half as are freshwater marshes (e.g., the Potholes at Devil's Potrero).

The Forest Service gives the following acreages by vegetation type for the North Half:

	Acres
Conifer	76,538
Pinyon-juniper	143,477
Oak forest	13,134
Oak woodland	3,186
Grassland	4,400
Mixed chaparral	101,612
Chamise & desert chaparral	196, 204
Sagebrush	22,085
Barren	2,807
Urban (near Ojai)	695

Approximately 81% of the parcels of private land in the North Half are currently vacant with native vegetation (or with the disturbed grassland typical or an area previously grazed). The large isolated ranches are almost all in pasture or cultivation in forage crops such as alfalfa. Development in Lockwood Valley has partially been into the pinyon-juniper community. For the most part, there has been only spotty destruction of the native vegetation (except loss of the native perennial grasslands).

1.5.3 Fish and Wildlife

Although fish and wildlife are *renewable resources*, the rates of renewal are usually very slow and are often impeded by such disruptive forces as urbanization, human harassment, predator control and pollution. Important fish and wildlife habitats are located on the *Significant Biological Resources* Map, (Figure 1.5.2).

The naturally vegetated areas of the County provide shelter, food, and nesting areas to create habitats for a wide variety of animal species. Each plant community has different characteristics which support different species of wildlife, although a species may use various habitats at different times of the year or at various stages in the animal's life cycle.

The low-elevation, drier plant communities, such as the grasslands, coastal sage-scrub, and chaparral, support a wildlife population which includes rodents, insectivores, hares, fox, coyotes, raptors (such as hawks, falcon, owls, and eagles) and numerous perching birds, from hummingbirds to ravens. The upland plant communities, such as the oak woodlands, pinyon-juniper, and timber-conifer, provide habitats for larger animals as well, and include populations of bobcat and mountain lion, mule deer, and black bear, in addition to a game population of quail, rabbit, tree squirrel, band-tailed pigeon, dove, turkey, and chukar (partridge). Reptiles are commonly found throughout the County.

The two big game species found in the North Half are California mule deer and black bear. Mule deer range throughout the area utilizing the higher regions in warm seasons and the valley during winter when the mountains are snow covered. Sheltered and isolated valleys and marshes serve as fawning areas in the spring. Their main home range extends from about 3750 feet up.

There are seven major species of upland game which occur primarily in the mountain areas: quail, rabbits, tree squirrels, band-tailed pigeons, dove, turkey and chukar. There are no good population estimates of any of these upland game species due to lack of adequate field data.

The vast majority of wildlife species on the Los Padres National Forest (and within Ventura County) falls within the nongame category. There are at least 64 species of birds, 61 mammals, 32 reptiles and 16 amphibians which constitute this nongame group. These species are listed in the U.S. Forest Service Wildlife Survey of 1982. Because of the vast number of species and respective types of habitat needs, and due to generally low public interest or support for these nongame species, they have not generally been addressed in past wildlife management projects, except for those designated rare candidate, threatened or endangered species. This situation has prevented adequate nongame management so that many of these species are at population levels well below habitat potentials (Freel, 1982).

Although owls and cuckoos were once prevalent along the riparian green belts, their populations have been greatly diminished due to human intrusion and modification of these habitats.

1.5.4 Endangered, Threatened, and Rare Species

Pursuant to State and Federal legislation, the California Department of Fish and Game (CDF&G) and the U.S. Fish and Wildlife Service (USF&WS) have established lists of Endangered, Threatened and Rare (CDF&G only) Species. In addition, the USF&WS lists species as: candidates for listing as endangered or threatened. Various additional species are considered sensitive by biologists.

Ventura County is home to numerous species of plants and animals that are *endangered, threatened, rare*, or considered to be a *candidate* for one of those designations. A full listing of these species, with their State and Federal designations and a general description of their location is found in Figure 1.5.4. The areas where these species are known to be located are also depicted on the Significant Biological Resources map, (Figure 1.5.2). The definitions of the above mentioned designations can be found in the Glossary.

Extirpated Species: Eight species of native animals no longer exist within the County. The California grizzly bear (extinct), red wolf, tule elk, peregrine falcon, unarmoured threespine stickleback, desert bighorn sheep, antelope, and California condor did not survive the rapid growth of the human population in Southern California. However, State and Federal agencies remain optimistic about current efforts to reintroduce the tule elk, bighorn sheep and the California condor into various habitats in the County.

1.5.5 Locally Unique Habitats

Ventura County contains several areas that are of *unique* significance due to their ability to provide habitat for endangered, rare and threatened species or because they constitute an example of a unique plant community.

The coastal wetlands and lagoons found along the south coast of the County provide shelter, forage, and nesting areas for thousands of birds, fish, mollusks, crabs, seals, and many other marine organisms and plants. The wetland area with the richest diversity is the Mugu Lagoon, which shelters the remnants of many plant, bird, fish, and insect populations which once inhabited the coast from the Ventura River to the Santa Monica Mountains. Other wetlands include the McGrath Lake and Ormond Beach areas, and the mouths of the Ventura and Santa Clara Rivers. These areas are considered significant biological resources (see Significant Biological Resources Map, Figure 1.5.2).

The Pothole in the Devil's Potrero, on the Agua Blanca Creek, is an inland freshwater marsh that contains several small species of plants that are unique to freshwater marshes. It is located in the Los Padres National Forest, and is within the Sespe Condor Sanctuary.

The Sespe Creek is designated as a "Wild Trout Stream" by the State of California. The steelhead trout, an anadromous fish, uses this stream as its spawning area. The Pacific lamprey, an anadromous vertebrate, also uses the Sespe Creek (and the Santa Clara River) for its spawning area. The creek also supports a significant population of rainbow trout, cousin to the steelhead. The "Wild Trout Stream" designation affords some protection of water flows and riparian

vegetation, both threatened by water development projects. In addition, the Forest Service has proposed that a 28½ mile portion of Sespe Creek receive a "Wild and Scenic River" designation. The Sespe is also mapped as a Significant Biological Resource.

The Santa Clara River east of Piru is the last remnant of relatively undisturbed riverine habitat in the county. Several endangered, threatened, and rare species of birds have been sighted in this area, and nowhere else in the County, over the past few years.

The Ventura River deserves mention as it currently supports a limited population of rainbow trout in the Foster Park area and a limited steelhead run in the River and San Antonio Creek. According to the State Department of Fish and Game, the River has the potential for the introduction of a steelhead and chinook salmon fishery in the future. Local populations of steelhead and rainbow trout along the Ventura River have nearly been eliminated, a result of dam construction and water pollution from agricultural operations and septic system leachate.

Ventura County has two large areas set aside as sanctuaries for the California Condor. Although there are (as of 1986) no longer any of these rare and majestic birds living in the wild, the U.S. Fish and Wildlife Service remains hopeful that its Condor Recovery program, involving captive breeding and eventual release, will again allow the condor to safely exist and repopulate in Southern California. As a result, both Matilija and Sespe Condor Sanctuaries remain as significant biological habitats, as shown on the Biological Resources Map.

The Sespe Condor Sanctuary was dedicated in 1947 and consists of 53,000 acres (see Figure 1.5.3). The majority of known sites historically used for nesting (25 of 33) are located within its boundaries. The sanctuary contains extensive rocky canyons, cliffs and areas of bare sandstone interspersed with dense chaparral. Big-cone Douglas fir and incense cedar found in scattered locations are used for roosting. The area is closed to public entry, although there are two north-south travel corridors--one along Sespe Creek and the other along Forest Service Trail 20W11 through Squaw Flats. There is no shooting allowed within the Sanctuary and in some surrounding critical condor habitat.

The Sanctuary is surrounded on the west, north and east by critical condor habitat and the Hopper Mountain National Wildlife Refuge is to the south of the Hopper Mountain area. "Critical" condor habitat was described for three areas in Ventura County: Mount Pinos, Matilija and Sespe-Piru (Federal Register, Vol. 41, No. 187, September 24, 1976). All Federal agencies must ensure that actions authorized, funded, or carried out by them do not result in the destruction or modification of these critical habitat areas.

"Essential" habitat are those areas intended to supplement the officially designated critical habitat. These areas have no legal status (a "Critical Habitat" is a legal status); however, the habitat management recommendations are intended to be applied with equal emphasis in these areas. Both areas in Ventura County extend the Sespe-Piru critical habitat -- on the northeast to Liebre Mountain in Los Angeles County and the west to Madulce Peak in Santa Barbara County. The boundaries will be updated as needed.

Hopper Mountain National Wildlife Refuge (N.W.R.) lies adjacent to the Sespe Condor Sanctuary on the east and south just outside the Los Padres National Forest. The 1,871 acres is comprised of rugged mountains, rock out-croppings, chaparral, hardwood groves, stands of Douglas fir and open grasslands. The area is a traditional working cattle ranch. A variety of raptorial birds reside there year-round. Condor use was infrequent--probably due to the surrounding land uses, especially oil and gas exploration.

1.5.6 Habitat Connectivity and Wildlife Corridor

Habitat connectivity is the degree to which the natural landscape facilitates or impedes movement of species among habitat areas. Movement is essential to the survival of biota because it allows seasonal migrations, access to resources, dispersal of offspring, genetic diversity, and allows for long-term changes in species' range in response to climate change. A high degree of connectivity among habitat types is also important for maintaining biodiversity and ecosystem functions.

Habitat loss and fragmentation are the leading threats to biodiversity worldwide, including within Southern California. Loss of habitat connectivity or habitat fragmentation has occurred due to urban sprawl, roads, conversion of wildlands to other uses, installation of fencing that restricts or prevents wildlife movement, and other human and natural influences. Urbanization can result in the following effects on wildlife corridors:

- Decreased abundance and diversity of native species and replacement by non-native species.
- Removal and fragmentation of natural vegetation lowering habitat quality.
- Increased rates of roadkill and habitat fragmentation due to the development of a local road network.
- Spread of exotic plants through disturbance or introduction by humans that results in loss of biodiversity and habitat quality.
- Increase in perennial water which favors non-native aquatic organisms such as bullfrogs, and non-native terrestrial organism such as Argentinean ants which outcompete native species.
- Artificial night lighting which can impair the ability of nocturnal animals to navigate through a corridor.
- Increased noise, which disturbs or repels many animals and presents a barrier to movement.
- Disruption of the natural fire regime by either increasing the number of fires or suppressing fires that maintain natural ecosystem structure.

Biological diversity benefits both the natural and built environments in several ways. It benefits wildlife and plant species by fostering vigor and resiliency. For example, In the urban and agricultural environments, biological diversity supports a variety of pollinators necessary for crop health, and it helps to ensure healthy populations of predators that control vermin (e.g., rodents).

Within Ventura County, the following Habitat Connectivity and Wildlife Corridors have been identified:

- Santa Monica-Sierra Madre Connection - Connections between the Santa Monica Mountains to the Santa Susana and Sierra Madre mountain ranges. This Connection incorporates the Santa Clara River;
- Sierra Madre-Castaic Connection - Connections between the Sierra Madre to the Castaic ranges; and
- Ventura River Corridor.

These habitat linkages and wildlife corridors are shown in Figure 1.5.5 and are referred to as Habitat Connectivity and Wildlife Corridors. They enable the migration and dispersal of wildlife and plant species, which are critical to the long-term survival of these species in an urbanizing environment. The corridors provide: (1) buffers to mitigate for “edge effects” where dissimilar habitats meet; (2) viable habitat for species needing multiple generations to achieve gene flow through the linkage; (3) needed resources (e.g., food, water, specific habitat, breeding partners, etc.); and (4) needed habitat to allow natural processes to operate and allow for species and natural communities to respond to climate change.

Ventura County recognizes that individual development projects have the potential to impact habitat connectivity. The County encourages development that enables wildlife movement by integrating design features to assist wildlife movement, such as limiting wildlife impermeable fencing, use of nighttime lighting that is directed away from natural areas, clustering development to preserve larger intact areas, and maintaining buffers between developed uses and natural habitats used by wildlife to move safely through the landscape.

Within the mapped Habitat Connectivity and Wildlife Corridors, there are three geographic area referred to as Critical Wildlife Passage Areas (CWPAs). The three geographic areas identified as CWPAs are portions of Oak View, the Simi Hills, and Tierra Rejada Valley, as depicted on Figures 1.5.6, 1.5.7, and 1.5.8.

These areas were identified as particularly vulnerable to loss of functional connectivity based on a variety of factors including, but not limited to:

- Width of the corridor;
- Existing habitat value;
- Extent of existing development and land use; and
- Proximity to important features such as water bodies and road crossing structures.

1.5.7 Conclusions

Various governmental agencies provide for the protection and preservation of the County's plant and animal communities. The State Department of Agriculture has the power to regulate and control the use of fertilizers, herbicides and pesticides. The County Agricultural Commissioner, governed by the State Agricultural Code, is responsible for the protection of the public from harmful plant diseases and pests.

Among the agencies which help protect and preserve the County's fish and wildlife are the U.S. Department of the Interior and the State Department of Fish and Game. The U.S. Navy controls all research activities within the Mugu Lagoon, and the U.S. Forest Service is responsible for the preservation of wildlife habitats within the Los Padres National Forest. The Forest Service has plans to reintroduce a number of wildlife species into the forest. Peregrine falcons will be introduced over time as animals and funds are available. Bighorn sheep from Cattle Canyon on the Angeles National Forest and Lytle Creek on the San Bernardino National Forest are to be transplanted in upper Piru Canyon. Turkeys, once common on Sulphur Mountain, are also to be reintroduced.

Both the Forest Service and Ventura County Fire Department (through the California Vegetation Management Program) are conducting prescribed burns, primarily in the chaparral. Mosaic blocks of perhaps 2,000 - 4,000 acres will be burned every 20-30 years. This burning will allow a rejuvenation of the vegetation beneficial to wildlife.

Among the issues raised in the "Biological Resources" discussion are management and land use practices which conflict with the protection and preservation of the County's plant and animal species. The use of poisons and traps has led to the indiscriminate killing of many animals. However, the greatest threats to the survival of the various biological communities are urbanization and other forms of human intrusion. Problems related to urbanizing pressures, such as increased fire danger, as well as water, air and noise pollution, have contributed to the degradation and/or destruction of many habitats. Introduction of predators and human harassment have affected wildlife and introduction of invasive nonnative species has disrupted plant communities.

Local agencies such as the County Planning Division and the Public Works Agency can aid tremendously in protecting sensitive areas and species. Protection can usually be accomplished through appropriate project design after a site survey and project review have been performed by a qualified biologist.

General Plan Goals, Policies and Programs should foster adequate project review and protection of biological resources. Controlled burning should be promoted by the Fire Protection District.

The interdependence of all life forms and the ecological needs for a stable and well-balanced environment must be recognized so that a healthy coexistence between human and natural biological communities can be assured.

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California Department of Fish and Game, California Natural Diversity Data Base, 1987.

South Coast Wildlands, 2008. South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion. Produced in cooperation with partners in the South Coast Missing Linkages Initiative. Available online at http://www.scwildlands.org.

Figure 1.5.1a
Vegetation Map (South Half)

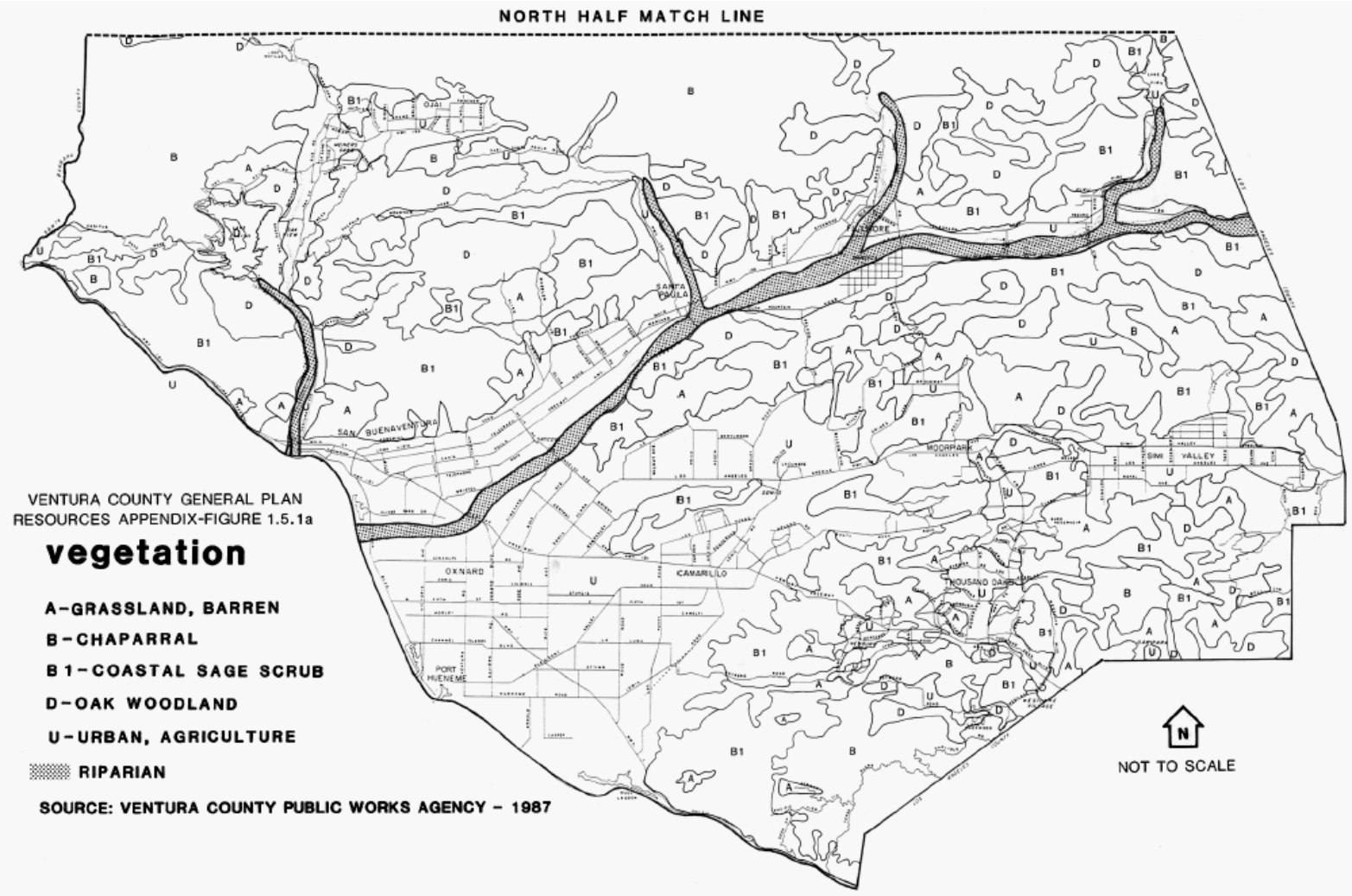


Figure 1.5.1b
Vegetation Map (North Half)

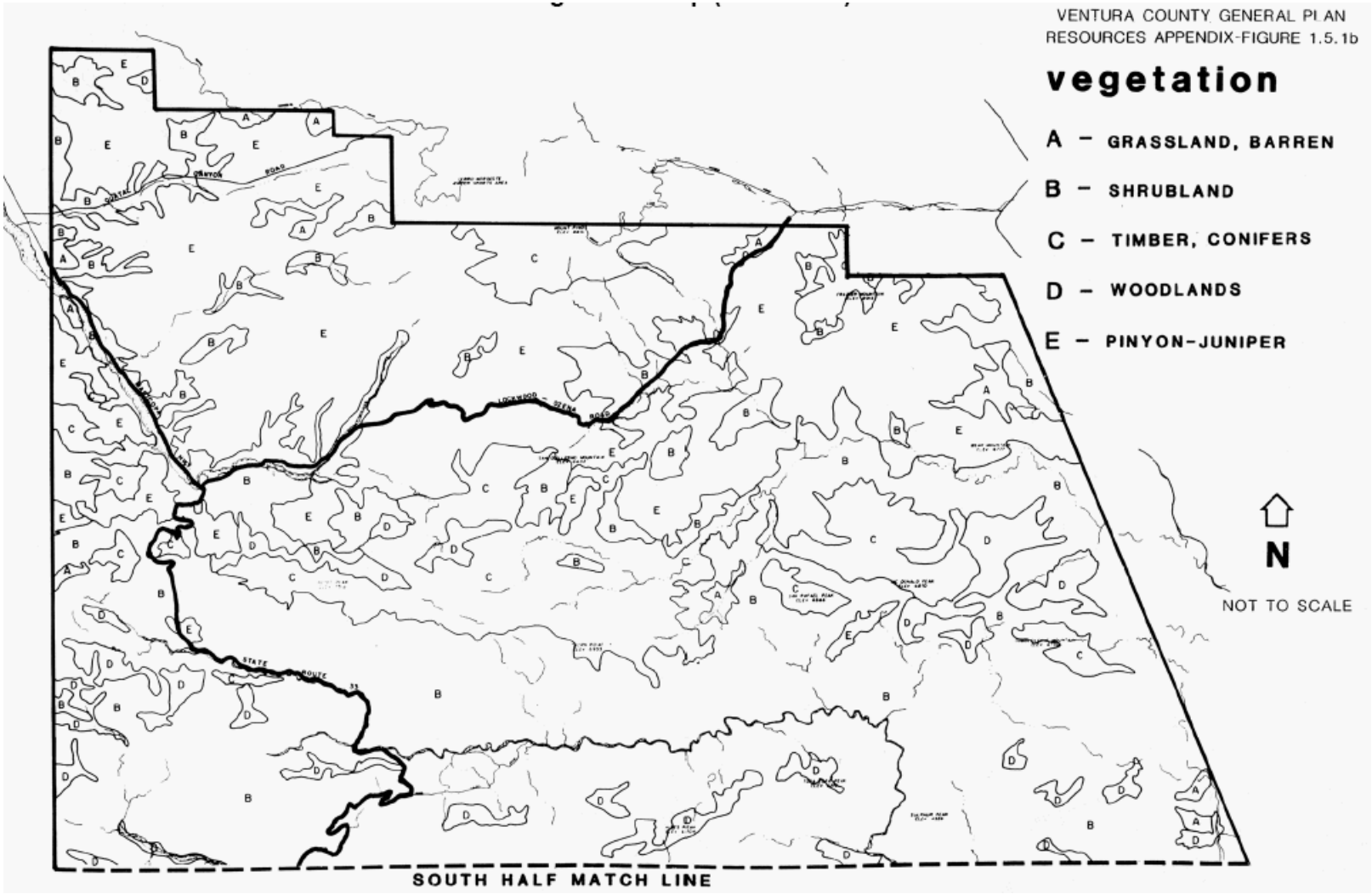


Figure 1.5.2
Significant Biological Resources Map

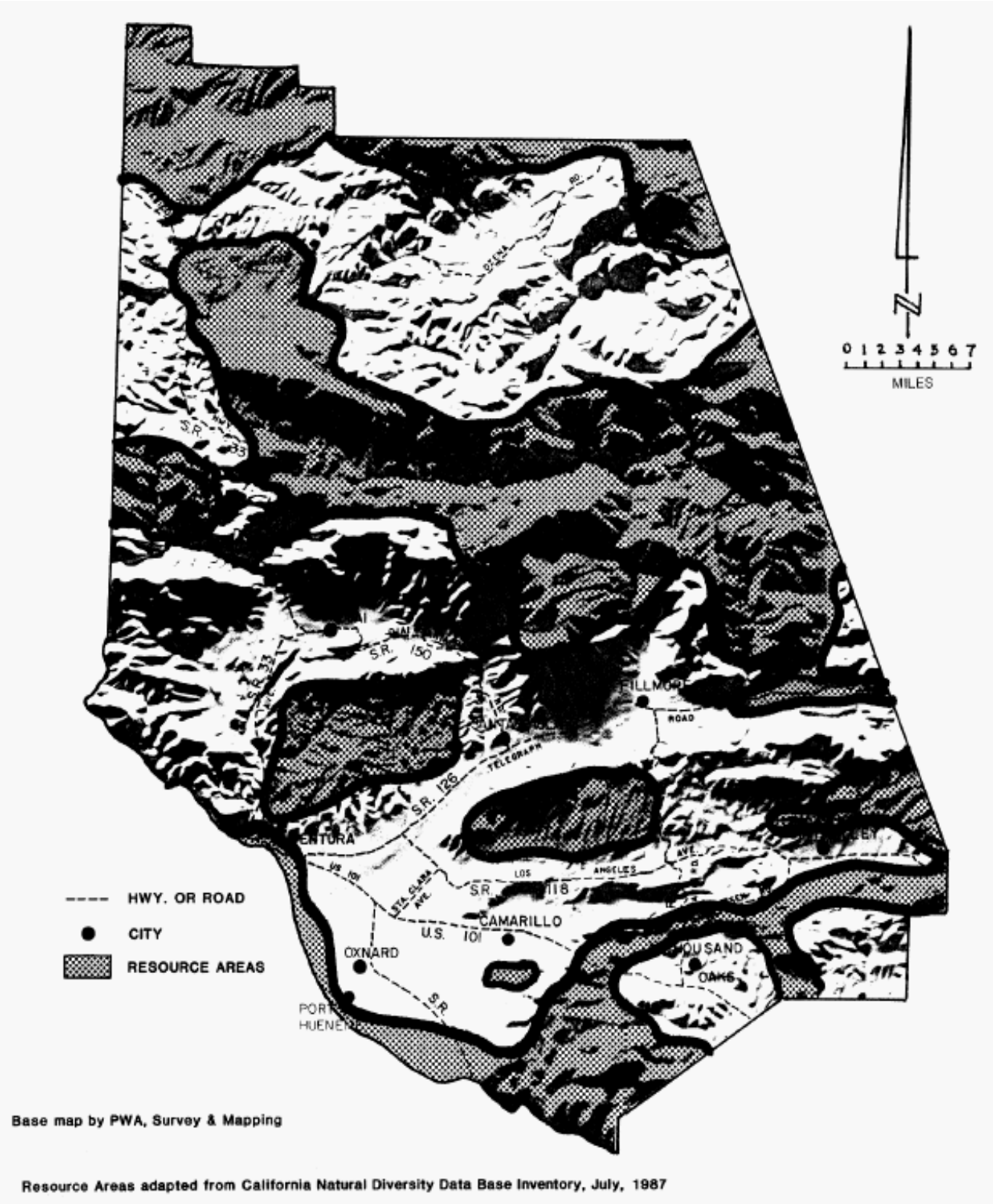


Figure 1.5.3
Condor Habitat Map

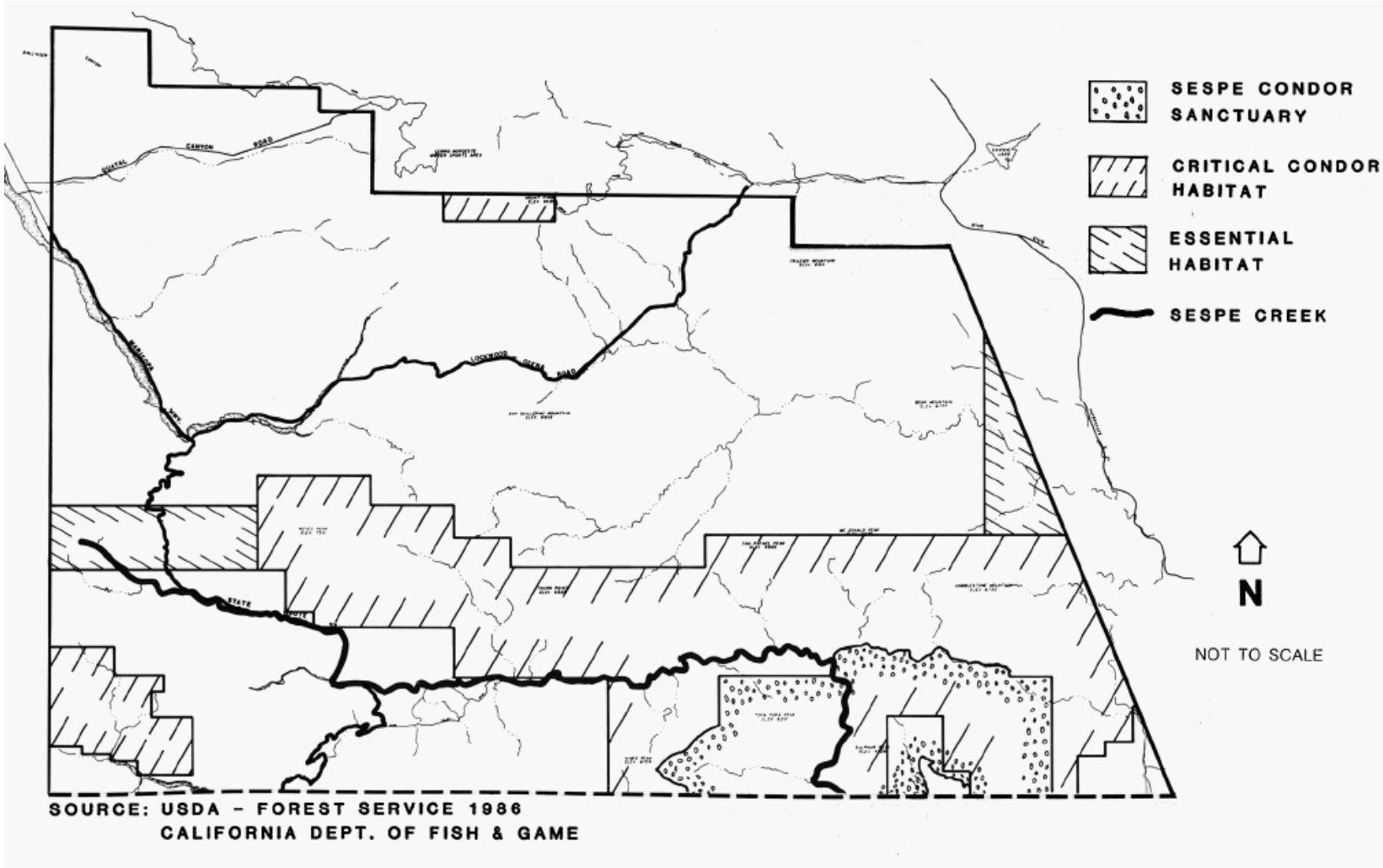


Figure 1.5.4
Candidate, Rare, Threatened, Endangered Species Known to Exist in Ventura County (List)

This list was compiled from the 1987 Natural Diversity Data Base (NDDB) of the California Department of Fish and Game. The mapping of known habitat locations of species of the NDDB has been incorporated in the map of Significant Biological Resources.

	Species	Legal Status		Location Of Observation
		Federal	California	
1	California Condor/Spec. Habitat	endangered	endangered	Sespe Sanctuary
2	San Joaquin Pocket Mouse	candidate		Quatal Canyon
3	San Joaquin Antelope Squirrel	candidate	threatened	Ballinger Canyon
4	Blunt Nose Leopard Lizard	endangered	endangered	Ballinger Canyon
5	Southern Rubber Boa	candidate	threatened	Cuddy Valley
6	Flax-Like Monardella	candidate		Cuddy Valley
7	California Condor/Spec. Habitat	endangered	endangered	Matilija Sanctuary
8	San Diego Thornmint	candidate	endangered	Bear Canyon
9	Santa Susana Tarweed	candidate	rare	Simi Hills
10	Dudleya Verityi	candidate		S. of Camarillo
11	Conejo Buckwheat	candidate	rare	S. of Camarillo
12	Least Bells Vireo	endangered	endangered	Ojai Valley
13	Santa Monica Mts. Dudleya	candidate	rare	Hidden Valley
14	Conejo Dudleya	candidate		Conejo Mt. Area
15	Dudleya Verityi	candidate		Conejo Mt. Area
16	Conejo Buckwheat	candidate	rare	Conejo Mt. Area
17	Lyons Pentachaeta	candidate		Wildwood Park, T.O.
18	Snowy Plover	candidate		Ormond Beach
19	Western Yellow Billed Cuckoo	candidate	threatened	Sta. Clara River, Vta.
20	California Black Rail	candidate	threatened	Ormond Area
21	Beldings Savannah Sparrow	candidate	endangered	Ormond Beach
22	California Least Tern	endangered	endangered	Ormond Beach
23	Ventura Marsh Milk Vetch	candidate		Oxnard Area
24	Salt Marsh Bird's Beak	endangered	endangered	Ormond Beach
25	Snowy Plover	candidate		McGrath
26	Tidewater Goby (fish)	candidate		Sta. Clara Estuary
27	Beldings Savannah Sparrow	candidate	endangered	McGrath Beach

Figure 1.5.4 (cont'd.)

	Species	Legal Status		Location Of Observation
		Federal	California	
28	California Least Tern	endangered	endangered	McGrath Beach
29	Ventura Marsh Milk Vetch	candidate		McGrath Beach
30	Snowy Plover	candidate		Mugu Lagoon Sandspit
31	Globuse Dune Beetle	candidate		Pt. Mugu NAS
32	Tidewater Goby (fish)	candidate		Mugu, Calleguas Creek
33	Saltmarsh Skipper (insect)	candidate		Pt. Mugu NAS
34	Beldings Savannah Sparrow	candidate	endangered	W&E Mugu Lagoon
35	Light Footed Clapper Rail	endangered	endangered	E. Mugu Lagoon
36	California Brackishwater Snail	candidate		W. Mugu Lagoon
37	California Least Tern	endangered	endangered	NW of Pt. Mugu NAS
38	Salt Marsh Bird's Beak	endangered	endangered	Arnold R., PMTC
39	CA Blacktailed Gnatcatcher	candidate		W. Santa Paula
40	Least Bells Vireo	endangered	endangered	ENE of Santa Paula
41	Least Bells Vireo	endangered	endangered	Sta. Clara R. Saticoy
42	Least Bells Vireo	endangered	endangered	Arroyo Simi, Vta. Co.
43	Brautons Milk Vetch	candidate		N. End of Kanan Rd.
44	Conejo Dudleya	candidate		Norwegian Grade
45	Conejo Buckwheat	candidate	rare	N. of Lake Eleanor
46	Lyons Pentachaeta	candidate		Westlake Blvd. (mts.) - Lake Sherwood
47	Santa Monica Mts. Dudleya	candidate	rare	Little Sycamore Cyn.
48	Western Yellow Billed Cuckoo	candidate	threatened	E. of Piru
49	Least Bells Vireo	endangered	endangered	E. of Piru
50	Tidewater Goby (fish)	candidate		N. Ventura River
51	Ojai Fritillary	candidate		Wheller Gorge

The following species are listed as "sensitive" by the Natural Diversity Data Base which indicates that they are considered to meet the definition of "rare" or "threatened" but have not yet been officially listed as such:

Prairie Falcon, Santa Ana Sucker (fish), Spotted Owl, Yellow Breasted Chat, Tiger Beetle (gravida and frost), Bank Swallow, Cooper's Hawk, Yellow Warbler and Black Shouldered Kite (protected).

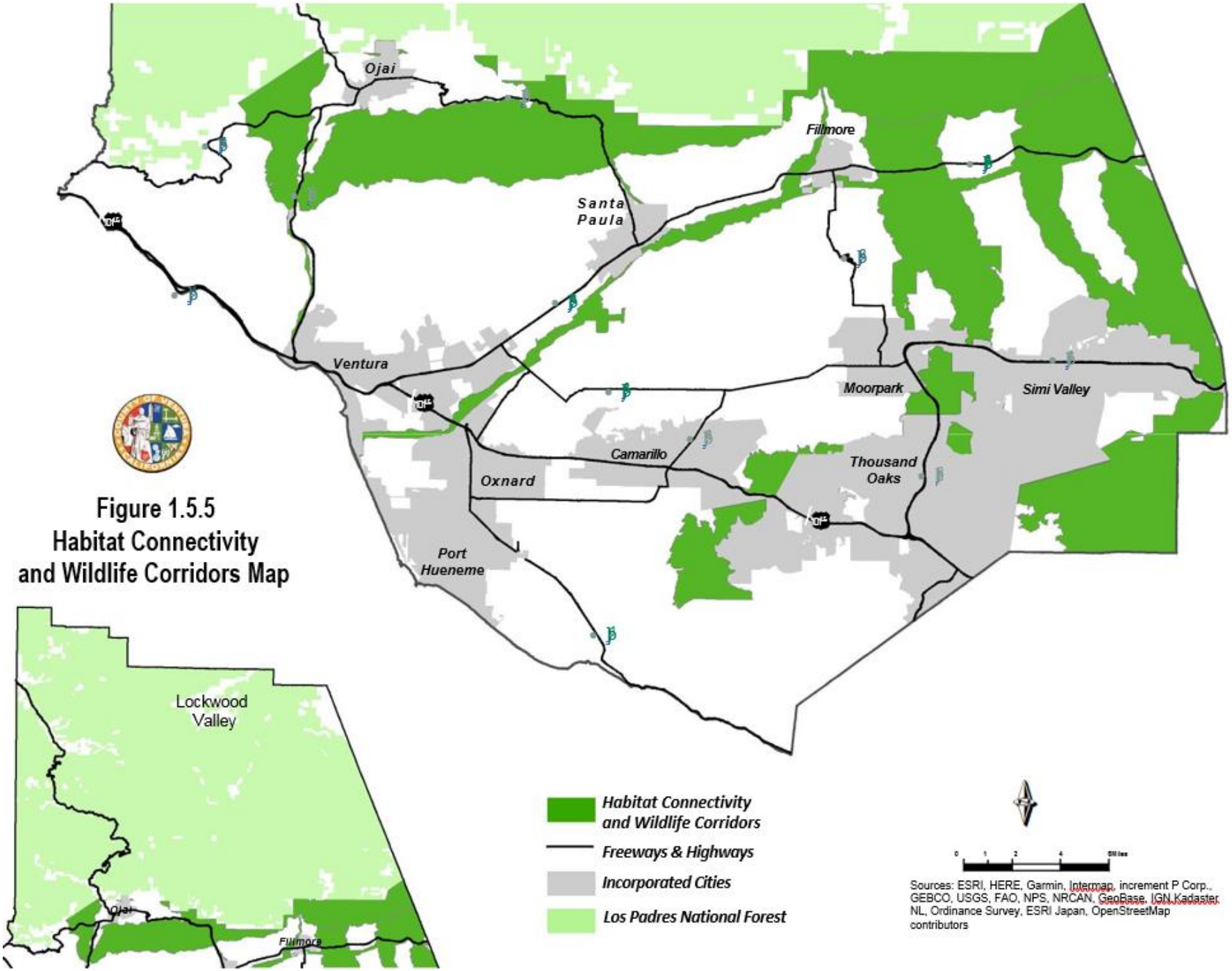


Figure 1.5.5
Habitat Connectivity and Wildlife Corridors Map

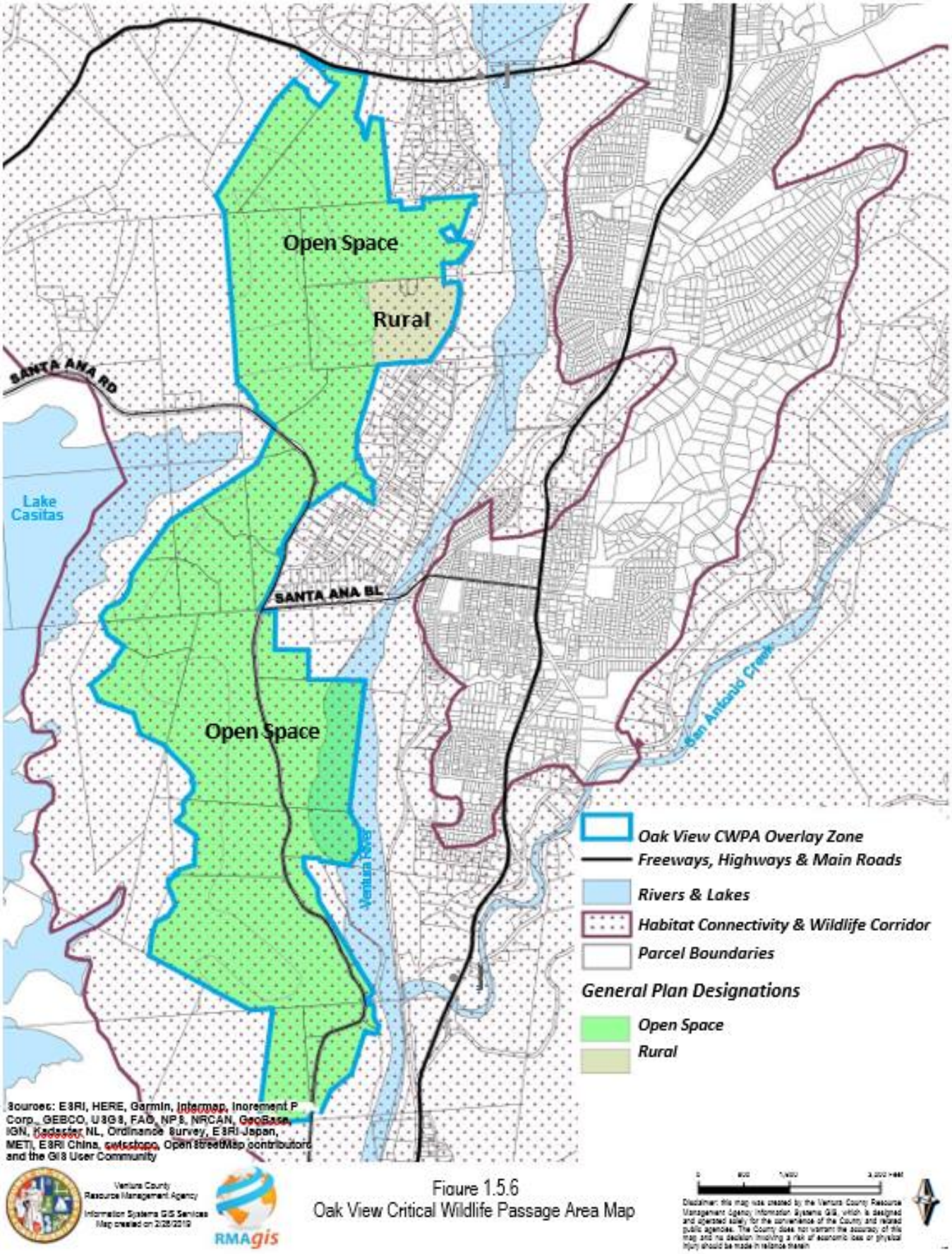


Figure 1.5.6
Oak View Critical Wildlife Passage Area Map

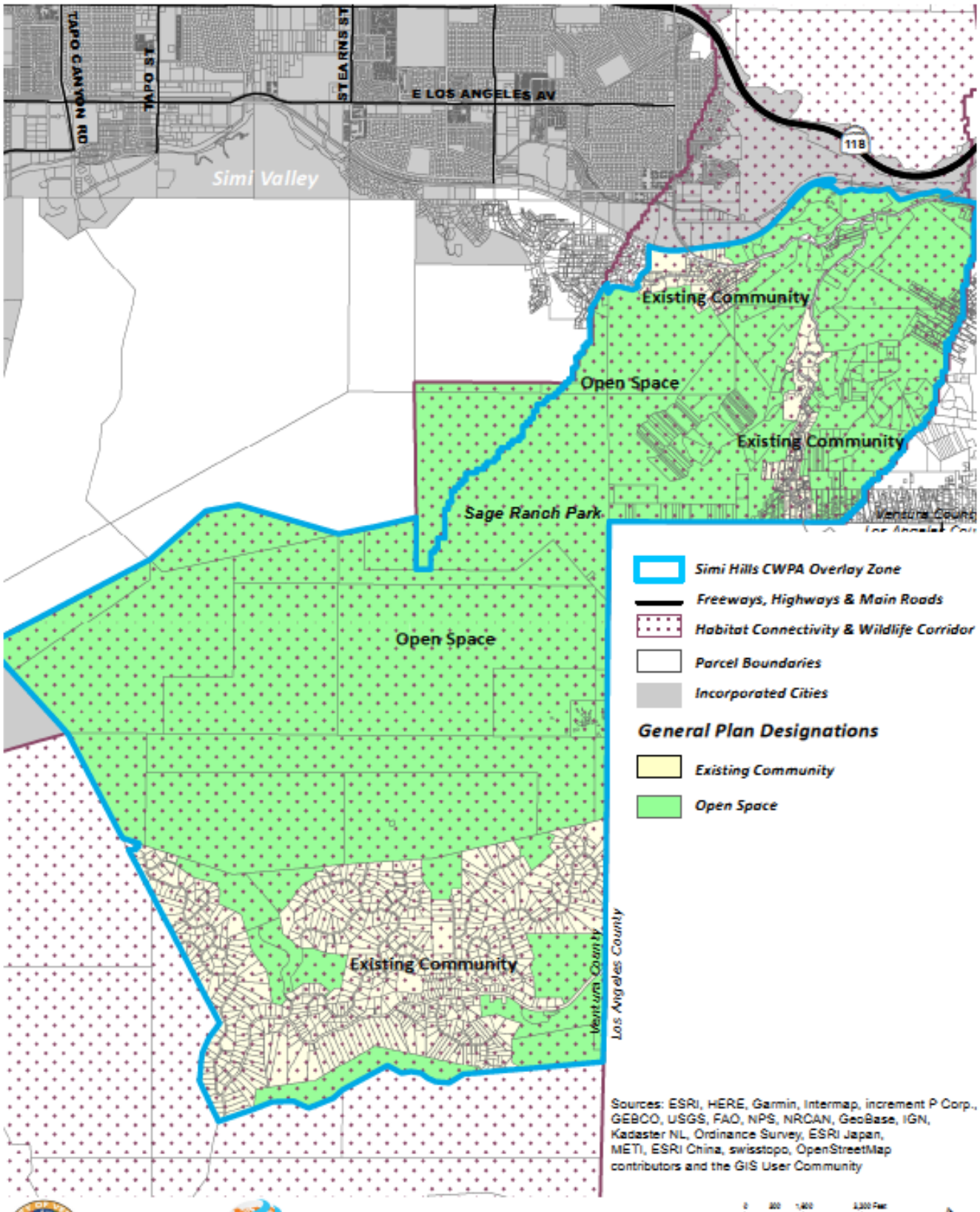
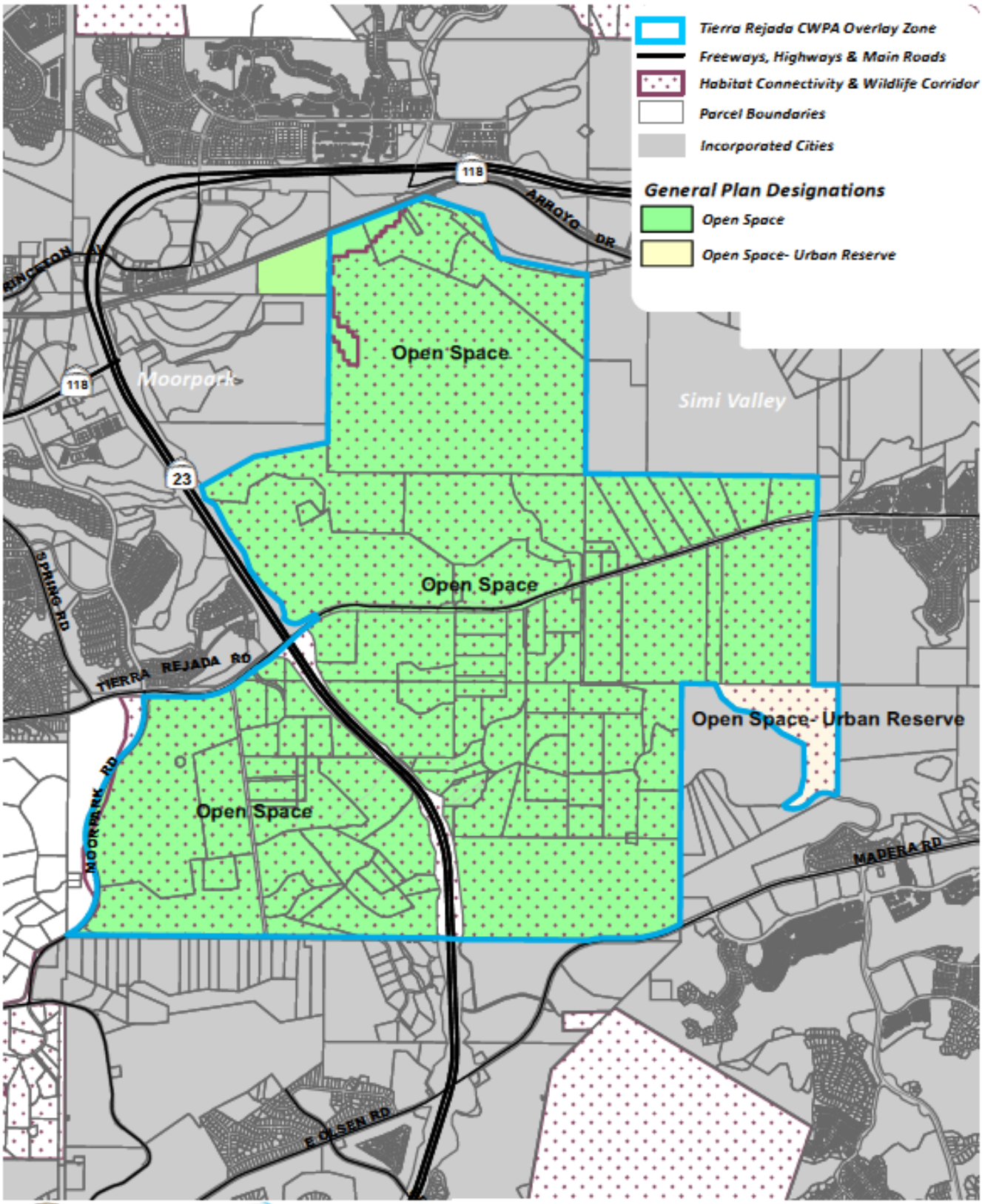


Figure 1.5.7

Simi Hills Critical Wildlife Passage Area Map



Ventura County Resource Management Agency Information Systems GIS Services
Map created on 7/11/2019

RMAgis

Tierra Rejada Critical Wildlife Passage Area Map
Resources Appendix Figure 1.5.8

1.6 Farmland Resources

Agriculture plays an important role in the national, State, and County economies. Ventura County is one of the principal agricultural counties in the State, ranking tenth in income in 1985, with a total income of over 600 million dollars, and ranked seventeenth out of 3,175 counties nationally. This prolific production is made possible by the presence of high quality soils, adequate water, favorable climate and level topography. The combination of these four factors makes Ventura County one of the world's most favored agricultural areas.

According to the Employment Development Department, agricultural employment accounts for approximately 9% of total employment in the County (February, March, April 1982). In addition to that employment is the employment which is "induced" by agriculture through the spending of wages earned by direct and indirect employees of agriculture. This adds 3,226 people to agricultural employment and brings the average total for February, March and April to 19,359 people, or 11% of total Countywide employment.

The following sections discuss the County's farmland inventory, farm characteristics, farmland preservation issues and preservation implementation programs.

1.6.1 Farmland Inventory

The first step in the development of a program to protect Ventura County's farmlands is the definition, identification and mapping of lands considered to have agricultural value. For inventorying County farmlands, the Important Farmlands Inventory (IFI) system is used. This system is superior to merely identifying Class I and II type soils in that other aspects of the land's productive potential are factored in. The IFI is described below. Figure 1.6.2 depicts lands identified as *"Prime"* and of *"Statewide," "Unique"* and "*local*" importance.

As part of the Rural Development Act of 1962 (USCS Section 2661), the Secretary of Agriculture was directed to conduct a Land Inventory and Monitoring Program which ultimately included an inventory of important farmlands. The Soil Conservation Service was charged with developing criteria which assures a standard for the definition and specific criteria for "prime" farmlands in all parts of the nation. The necessity for a uniformly accepted definition of the term *"prime farmlands"* was made apparent by the growing number of legislative and regulatory references to the term nationwide. An additional purpose of the inventory is "to identify the extent and location of important rural lands needed to produce food, feed, fiber, forage, and oilseed crops" (7 CFR Part 675).

In developing the inventory, State soil conservationists were directed to work with other State representatives in applying the national "prime" definition to their state. In addition, the program required that the SCS identify, again with State and local cooperation, three other classifications of agricultural lands, those lands of "statewide" importance, "unique" importance and "local" importance. In some areas of the country a fifth category, "grazing," is inventoried as well. Grazing is not inventoried in Ventura County as its dollar share of gross production is not significant.

A key factor in applying the IFI criteria to Ventura County is the Ventura County Soil Survey, which was issued in 1970 as part of a previous SCS program. The soil survey serves to identify mapping units which met the "prime" and "statewide" definitions. Generally speaking, "prime" farmlands in California are irrigated soils over 40 inches deep with an available waterholding capacity of four inches or more. They are generally well drained and free from frequent flooding. Soil reaction is neither extremely acid nor strongly alkaline and the soils do not have salt or alkali problems. The erosion hazard is only slight and farming is not limited by cobbly surface layers, very slow subsoil permeability or freezing soil temperatures. Farmlands of "statewide" importance are lands other than Prime that have a good combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops. The criteria are basically like that for "prime" but there is no minimum soil depth limitation and no permeability restriction. They have broader waterholding capacity, soil reaction may be slightly saline and alkali affected, and have a moderate erosion

hazard. In Ventura County, lands of "prime" and "statewide" significance represent 106,900 acres. "Unique" lands are additional lands which produce high value food and fiber crops as listed in the annual report of the Department of Food and Agriculture. In Ventura, this generally means hillside citrus and avocado plantings and represents 20,200 acres Countywide. The criteria for farmlands of "local" importance, as developed by the SCS Field Office in Somis and reviewed by the Ventura County Agricultural Advisory Committee, represents dry farmed lands and unirrigated "prime" or "statewide" lands. Approximately 11,000 acres fall into this category.

1.6.2 Farm Characteristics

The total number of farms in the County in 1982 was 2,064 with the majority of these (66%) owned and operated as individual farms; about 23% were partnerships. About 70% of the farms were less than 50 acres in size and only about 5% were greater than 500.

SIZE OF ALL FARMS REPORTING, 1982

	#	%
Under 10 acres	754	36.5
10 to 49 "	693	33.6
50 to 179 "	351	17.0
180 to 499 "	152	7.4
500 to 999 "	61	3.0
1,000 to 1,999 "	28	1.4
2,000 acres and over	25	1.2
	2,064	100.0

1.6.3 Farmland Preservation Issues

To preserve the agricultural base of the County, it is necessary to discourage the conversion of farmland to other uses. Declining profitability of agriculture combined with soaring land values for urban and rural uses has induced many farmland owners to sell their properties. The following is, in part, excerpted from the Agricultural Land Protection Program Technical Appendix, 1983.

1.6.3.1 Factors Which Affect Agricultural Economic Viability

The purpose of this section is to discuss the factors which affect agricultural economic viability, and to identify actions the County could take which would have a positive economic impact on agriculture. The costs and returns which determine the profitability of an agricultural operation are complex and highly variable. The cost of land and the improvements required to farm it, interest rates on loans, the crop selected and its price, water costs, the weather, the cultural practices selected and their effect on productivity, the time it takes to bring a crop to maturity, and the farmer's ability, all affect the profitability of a given agricultural operation. This section briefly examines these factors in an attempt to determine what actions the County can take to help retain agriculture as an economically viable industry.

Because of the variability involved, the following factors are not in order of importance.

1. **Cost of Land**

   The cost of land is a very important cost in agricultural production.

   A major contributor to increasing price is the increased demand for developable land and land speculation for non-agricultural purposes. Some factors which make this land viable for agriculture also make it a desirable location for living and home sites (climate, slope, etc.) A purchaser of land will be willing to pay a higher price if they expect to be permitted to subdivide or develop sometime in the future. A person who wishes to purchase land for farming must pay the inflated market price due to demand and/or speculation on surrounding property.

Another factor influencing land cost is parcel size. Smaller parcels tend to command higher prices per acre and consequently higher taxes. In addition, a larger parcel allows more efficient use of machinery and management, greater flexibility in terms of crop to be grown and a larger margin of safety in terms of return on the crop.

Cost of land is an economic factor which can be beneficially affected by County action. Perhaps the central issue in retaining the economic position of agriculture involves permanence in land use. By having a long-term commitment to agriculture, the County can adopt land use regulations which will protect agriculture from conversion to non-agricultural uses, over subdivision and adjacent incompatible uses, and assist in retaining its economic viability.

The costs associated with speculation can be avoided by reducing the possibilities of housing subdivisions and by limiting the number of permitted home sites.

In terms of property taxes, the County can continue its support of Land Conservation Act contracts, explore Open Space and Conservation easements and initiate and support farm tax-break legislation at the State level.

To avoid the costs associated with undersized parcels, the County can ensure parcel sizes which retain economic efficiency and ensure convertibility of crops.

2. **Cost of Water**

The cost of water is another factor affecting agricultural economic viability. With rising energy costs, this factor will become even more important, and farmers may have to change water application techniques or crop types in order to use less water in the future.

The agricultural sector consumes 86% of the groundwater used in the County. Irrigated agriculture is dependent on water to survive and, in this sense, the County has the opportunity to take some positive steps to ensure water availability.

The County is playing an active role in attempting to solve its water quantity and quality problems. The 1978 and 1982 Water Quality Management "208" Plans recognized these problems and recommend measures to alleviate them. Section 1.3 discusses water resources, and the Public Facilities and Services Appendix discusses water distribution.

3. **Cost of Material and Equipment**

The cost of materials and equipment is a function of the overall economy. Some examples of material and equipment include pesticides, fertilizers, tractors, tillage and planting implements, irrigation pipe, pick-up trucks and harvesting equipment.

Maintenance and operating costs of equipment are also a function of the overall economy. Implicit in operating costs are energy costs. The cost of energy is rising and the farmer is feeling the effects. Most energy used on farms goes to fertilizer manufacture, distribution and application, tillage, and pumping of irrigation water. As farms become more mechanized, they become more energy intensive.

There are several opportunities available to reduce energy consumption in agriculture. These include: 1) maximum extension and use of technology to conserve fertilizer and crop protection chemicals, 2) increasing farm size to secure more efficient use of machinery, and 3) reducing the amount of processing of raw products.

By continuing its commitment to agriculture and by limiting land divisions, the County can encourage the efficient use of energy associated with large parcels, thereby reducing the cost to the farmer for material and equipment use and traveling between parcels.

4. **Cost of Labor**

Agricultural labor has traditionally been seasonal and less skilled. However, increased mechanization of agricultural production has tended to cause a shift from the intermittent seasonal type of employment to year-round farm work (The Future of California's Agriculture

1974-2000, Commission for Economic Development). Farm machine maintenance and operation generally require a degree of skill not necessary for hand labor and harvesting, and the workers command a higher wage because of their skill. Although this increases the cost to the farmer, it also increases efficiency.

It does not appear that there are any actions the County can take that would influence the cost of labor.

5. **Cost of Processing and Distribution**

The costs associated with processing and distribution of crops include energy and labor costs. These are determined by the overall economy. Processing is heavily dependent on energy, and as energy prices increase, so does the cost of processing.

The County has the opportunity to prevent that occurrence by retaining its commitment to agriculture and by preserving agricultural areas. The County could also ensure the establishment, through land use policies, of agricultural support services in agricultural areas.

6. **Interest Rates**

Because agriculture is a capital intensive industry, it is severely affected by interest rates. Because interest rates are a function of the overall economy, there are no actions the County can take to mitigate their effect.

7. **Consumer Demand**

Agricultural economic viability is obviously affected by consumer demand because, quite simply, the farmer isn't able to sell his product if people do not find it desirable.

Demand is determined by a number of factors. Among these are type of crop, amount and type of marketing, and price. Demand tends to be relatively stable, and price variations are caused by shifts in total supply.

This factor is outside of County influence.

8. **Natural Factors**

Other factors outside of County control are natural ones. Individual farmers and their regional agricultural industry can be affected by factors such as weather and pests. Obviously these cannot be directly controlled by the County, but there are on-going programs, conducted by the Agricultural Commissioner and the Ventura County Agricultural Extension Office. The County could have a minor, negative impact on the cost of pest management if further regulations are adopted by such agencies as the Air Pollution Control District or Environmental Health Division governing the use of pesticides.

9. **Housing and Its Effect on Agriculture**

Historically, Ventura County has always permitted, as a matter of right, a single-family dwelling on any legally created parcel zoned for agricultural purposes. The reason for this is to allow a farmer to build a house for his/her family or farm manager. The agricultural zones also allow, by Conditional Use Permit, the construction of farm laborer or caretaker dwellings in addition to the principal single-family dwelling. In actual practice, however, not all parcels in the agricultural zones have dwellings on them, although they all have the right to have at least one.

Because of this ability to build a single-family home on any legally created parcel, some parcels have been created in agricultural zones primarily for expensive home sites. Although these parcels may grow agricultural products (typically citrus or avocado orchards), the agricultural use is not the sole source of income and is principally done to offset some of the cost of holding the land. These parcels are commonly known as hobby farms or "ranchettes", and are generally within the 5 to 20 acre size range.

Ranchette type development can have a significant effect on commercial agricultural areas. First, as the number of houses in agricultural areas increase, the need for urban type services increases (water, roads, electricity, gas, police and fire protection), altering the character of the

area and creating growth inducement for non-agricultural land uses. Secondly, these additional dwellings can cause cumulative environmental impacts on agricultural areas; loss of agricultural land, grading impacts, increased drainage, flooding and sedimentation, increased traffic, and increased vandalism and citizen complaints. Thirdly, owners of ranchettes are typically not full-time farmers, and may not use best agricultural management practices. This can cause problems for adjacent commercial agricultural operations (pests, disease, weeds, etc.). Lastly, ranchette type of development increases land costs due to speculation for non-agricultural purposes; decreasing the commercial farmer's incentive to continue farming and decreasing the overall economic viability of commercial agriculture.

Assuming a land cost of $20,000 per acre, a ten acre parcel would cost $200,000. This is within the marketable range of expensive home sites considering the real estate market of Southern California and the land's ability to grow crops which partially offset the cost of holding the land. However, a 40 acre parcel, even assuming a lower per acre cost of $15,000, would cost $600,000. Although some people may want to invest that amount of money into an expensive home site, the likelihood (compared to a ten acre parcel) is much less.

Through the General Plan and Zoning Ordinance Code, the County can establish minimum parcel sizes which can limit the development of ranchettes in agricultural areas. In addition to the problem posed by development of ranchettes, conflicts are created when residential development, even at rural densities, encroaches into and abuts agricultural areas. This encroachment is a double-edged sword simultaneously bringing increased land values and residential versus agricultural conflicts. These conflicts involve vandalism, flooding and siltation for farmers and noise, dust and odors for their neighbors who then seek to curtail farming operations.

Buffer standards including lot size, setback and fencing for residences, and spray buffers for farms, can reduce these inherent incompatibilities.

10. **Congestion on Farm-to-Market Roads**

Traffic congestion on farm roads has an adverse effect on agricultural operations (Hueneme Road is an example). Growers are often precluded from using the road during commuting hours. Accidents between urban traffic and agricultural implements have occurred and are reflected in increased costs. Deposition of mud on roads by farm vehicles has been cited as a cause of accidents.

Because of a lack of packing sheds in the Las Posas Area, orchard owners or packing companies are needed to increase the number of very expensive haul trucks. Stop signs and intervening residential build out between points of production and processing have increased haul truck turnaround time between orchard and processing plants. Field workers and pickers must either be idled because the haul truck cannot make the circuit or more trucks must be added (trucks are a costly item, some at $50,000+ each).

1.6.3.2 The Effect of Parcel Sizes on Agriculture

As mentioned previously, parcel sizes can affect the economic viability of agriculture and the County can, through land use regulations and zoning, establish minimum parcel size limitations in support of commercial agriculture. In addressing this issue, the question arises; "What is an agriculturally viable parcel size?" Put another way; "What parcel size(s) is/are needed for the long term maintenance of agriculture?"

The "Technical Appendix Supplement GPA 82-3 - Agricultural Economics Issue Paper," studied this issue and identified several factors which point to an appropriate minimum parcel size.

From this study, it would appear that 40 acres should be the minimum parcel size for irrigated agricultural lands, 80 acres should be the minimum parcel size for dry land farming, and 80 acres and greater (based on carrying capacity) should be the minimum parcel sizes for dry land grazing. These minimum acreages are supported by the following factors:

1. Historically, almost all land under LCA contract (71% of all agricultural land in Ventura County) has been zoned A-E, 40 acre minimum parcel size.
2. Land which can support a variety of agricultural crops (Irrigated Variculture - "Prime" and "Statewide Significance" classed lands), should have at least 40 acres to ensure long-term agricultural efficiency and flexibility.

   Small parcels reduce efficiency due to the inconvenience, expense and time involved in moving workers and equipment from parcel to parcel, higher per-acre agricultural contractor fees (pest control, picking/hauling, etc.), and increased potential for conflicts with adjacent land uses (longer boundaries per acre of usable land). To verify the validity of a 40 acre minimum parcel size, a survey of Oxnard Plain farmers was conducted by the Ventura County Agricultural Advisor in 1982.

   Although there was no absolute minimum parcel size identified in this survey, 40 acre parcels appear to be the smallest unit the majority of farmers are comfortable farming. Even at that size, 23% (5 farmers) of the farmers felt that the parcel needs to be larger in order to achieve farming efficiency.
3. Farms growing tree crops would need substantially more than 28 acres to earn a median-family income (1983). The per acre profit margin of orchards dictates that a larger parcel is needed to produce an adequate family income.
4. Parcel sizes below 40 acres in size may facilitate ranchette type development which may adversely impact commercial agricultural areas by extending urban type services, creating cumulatively adverse environmental impacts and increasing land speculation.
5. The LCA Guidelines, which were amended in 1983 based on a study conducted by the Agricultural Advisory Committee, establish a minimum preserve size for dry land farming of 80 acres and a minimum preserve size for dry land grazing of 80 acres or greater depending on the land's ability to support 20 head of cattle. These Guidelines are considered by the Agriculture Advisory Committee to be still valid.

1.6.4 Implementation Programs

The County has adopted various programs designed to preserve agriculture. Agricultural preservation has been integrated into overall land use planning strategy and consequently is a reciprocal beneficiary of many interagency regional land use planning and resource conservation programs. The principal interagency programs are: the *Guidelines for Orderly Development, Greenbelt Agreements* and the various regional water programs (see Land Use Chapter and Sec. 1.3 Water Resources). Specific County agricultural preservation programs are:

Agriculture Land Use Designation - The Land Use Chapter establishes an Agriculture designation for lands identified in the Important Farmlands Inventory (with some exceptions, see Land Use Chapter). This designation establishes a forty acre minimum parcel size and subjects all parcels to the Agricultural Exclusive (A-E) zone.

Land Conservation Act Program - In 1966, the State adopted enabling legislation to enhance the preservation of agricultural lands. Known as the Land Conservation Act (LCA) or *Williamson Act,* the law allows farmers to enter into a long-term contract (minimum of 10 years) to keep their land in exclusive agricultural use in exchange for a reduced tax assessment based on the agricultural value of the property. Ventura County entered the program in 1969, and as of June 1982 had 839 contract holders representing 166,886 acres of crop and grazing lands. In 1986 there were 165,996 acres under LCA Contract. This voluntary program has historically been the backbone of agricultural preservation efforts in the County and should be supported and encouraged to expand in to all areas designated "Agriculture."

Although revisions and modifications have been made to the County's LCA program from time to time, there are a number of amendments which should be undertaken. Specifically, the existing LCA contract should be overhauled to make it consistent with the new agricultural protection

policies. The Board adopted program resolutions and "Decision-making Guidelines" used by the Board's appointed Agricultural Advisory Committee in managing the LCA program also need attention to remove ambiguities and inconsistencies.

Another LCA-related action for investigation is the development by the Advisory Committee, with County staff assistance, of a comprehensive annual report on the status of agricultural lands in the County. This is envisioned as a cooperative effort by the County, the Agricultural Commissioner's Office, the Farm Advisor, Farm Bureau, Soil Conservation Service and other farming interests on the full status of County agriculture including an agricultural land use conversion update. These entities already produce annual reports, so the one being proposed would attempt to integrate them into one comprehensive report. Under the provisions of State legislation (AB 966), the County is required to report annually to the State on the yearly changes in agricultural lands, so the concept of a comprehensive Annual Report would be complementary to the preparation of this required information.

It should be noted that several land trust organizations exist which would likely be willing to accept donations of land or easements for preservation purposes. Two such agencies are the Ventura Land Conservancy and the American Farmland Trust.

1.6.5 Timberland

The "1987 California General Plan Guidelines" state:

> "The Timberland Productivity Act of 1982 requires all counties and cities with productive private timberland to establish 'Timberland Production Zones,' called TPZs, for the purpose of discouraging the premature conversion of timberland to other uses (Government Code Sections 51100 et seq.). The General Plan must reflect the distribution of existing TPZ zoning and have a land use category that provides for timber production. TPZ zoning can also be used to implement the conservation element by husbanding timber resources.
>
> Patterned after the Williamson Act, TPZs are rolling ten-year contracts providing preferential tax assessments to qualified timberlands. Under this program, assessments on timber are based on the value of the timber at the time of harvest, rather than an annual assessment on the market value of standing timber. Assessment of zoned timberland is based on a statutory value of land that is related to site capability, and is annually indexed to changes in the periodic immediate harvest value."

The State Government Code offers the following definition:

> "Timber" means trees of any species maintained for eventual harvest for forest products purposes, whether planted or of natural growth, standing or down, on privately or publicly owned land, including Christmas trees, but does not mean nursery stock.

Ventura County does not contain land which produces timber commercially for eventual use as lumber or pulp; however, six Christmas tree farms are zoned Timberland Preserve (T-P) pursuant to the provisions of the Timberland Preserve Zone of the County Zoning Ordinance. The "T-P" zone is compatible with the Open Space, Agriculture and Rural land use designations (of the Land Use Chapter). Five of these six properties are located in the Ojai Valley area and one in the Piru area. Together they total approximately 94 acres. These parcels are identified by the following Assessor's Parcel Numbers: 30-23-17, 24-08-15 and 16, 32-16-7, 35-09-12, 18-17-38 and 55-18-12. All are privately owned.

1.6.6 Conclusions

Agriculture is Ventura County's number one industry, and it is also very important both Statewide and nationally.

There are many costs associated with farming which determine profit for the farmer. Because many factors are outside of County control, the County cannot ensure economic viability. The

County does, however, have the opportunity to take some actions which would indirectly support agricultural economic viability.

The County can adopt or support water *policies*, regulations and *programs* which would protect water quantity and quality. Examples include: encourage the use of reclaimed water for agriculture, water conservation measures, support of the Fox Canyon Groundwater Management Agency, Well Ordinance, Abandoned Well Study, Saticoy Diversion and Pumping Trough Pipeline, and Hillside Erosion Control Ordinance.

The County can demonstrate its long-term commitment to agriculture through land use planning policies and regulations. The adoption of planning policies and regulations which identify and protect existing agricultural land would ensure the continued availability of these lands for agricultural uses. By protecting agricultural lands, the County would save farmers the costs of relocation and the costs associated with urban encroachment. By establishing buffer standards for residential uses which abut agricultural areas conflicts between these uses can be mitigated.

By establishing sufficiently large enough minimum parcel sizes, the County would support agricultural operating efficiency and the ability to vary crop types, and discourage ranchette type development and land speculation for non-agricultural purposes. The minimum parcel size for irrigated farms should be at least 40 acres, and should be at least 80 acres for non-irrigated farms and grazing.

Long range circulation plans can take measures to reduce traffic conflicts with agricultural vehicles. Planning to reduce traffic on primary farm roads and provision of over-crossings, frontage roads and extra lanes can help.

Water resource planning, land use planning policies and regulations, and maintenance of minimum parcel sizes are the most positive actions the County could take to support long-term economic viability of commercial agriculture and the preservation of agricultural land.

References:

University of California Farm Advisor, Ventura County Agriculture at a Glance, 1986

Ventura County Planning Division, Ventura County General Plan, Conservation and Open Space Elements, 1986, with General Plan Amendment 82-3 Agricultural Lands Protection Program Technical Appendix.

Ventura County Agricultural Commissioner, Ventura County Agricultural Crop Report, 1986

Figure 1.6.1
Top Crops in Ventura County, 1987 (Table)

Crops	Bearing Acres	Value in Dollars
Lemons	21,669	162,715,000
Strawberries	3,468	88,408,000
Celery	9,615	79,679,000
Poultry & Dairy Products	-	59,909,000
Valencia Oranges	14,535	45,097,000
Misc. Vegetables	3,780	31,880,000
Ornamentals (Nursery)	-	27,332,000
Nursery Stock	-	25,985,000
Avocados	16,303	20,947,000
Cut Flowers	-	20,783,000
Lettuce	6,390	20,333,000
Seed	1,850	19,756,000
Broccoli	4,985	9,798,000
Spinach	3,364	9,188,000
Tomatoes	3,327	6,206,000
Cabbage	2,004	5,490,000
Peppers	1,980	4,520,000
Green Lima Beans	5,045	3,612,000
Parsley	2,727	3,474,000
Grapefruit	836	3,350,000
Cattle, Hogs, Sheep	-	3,166,000
Navel Oranges	1,328	3,010,000
Cauliflower	1,035	2,813,000
Fruit and Nut Crops	59,831	2,190,000
Sweet Corn	1,531	1,997,000
Cucumbers	820	1,590,000

Recapitulation

Crops	Bearing Acres	Value in Dollars
Fruit and Nut Crops	59,076	324,304,000
Vegetable Crops	44,985	181,369,000
Livestock, Poultry, and Dairy	-	63,955,000
Nursery Stock, Christmas Trees, Sod	6,500	56,568,000
Field Crops	7,964	21,319,000
Cut Flowers	-	20,783,000
Apiary Products	-	885,000

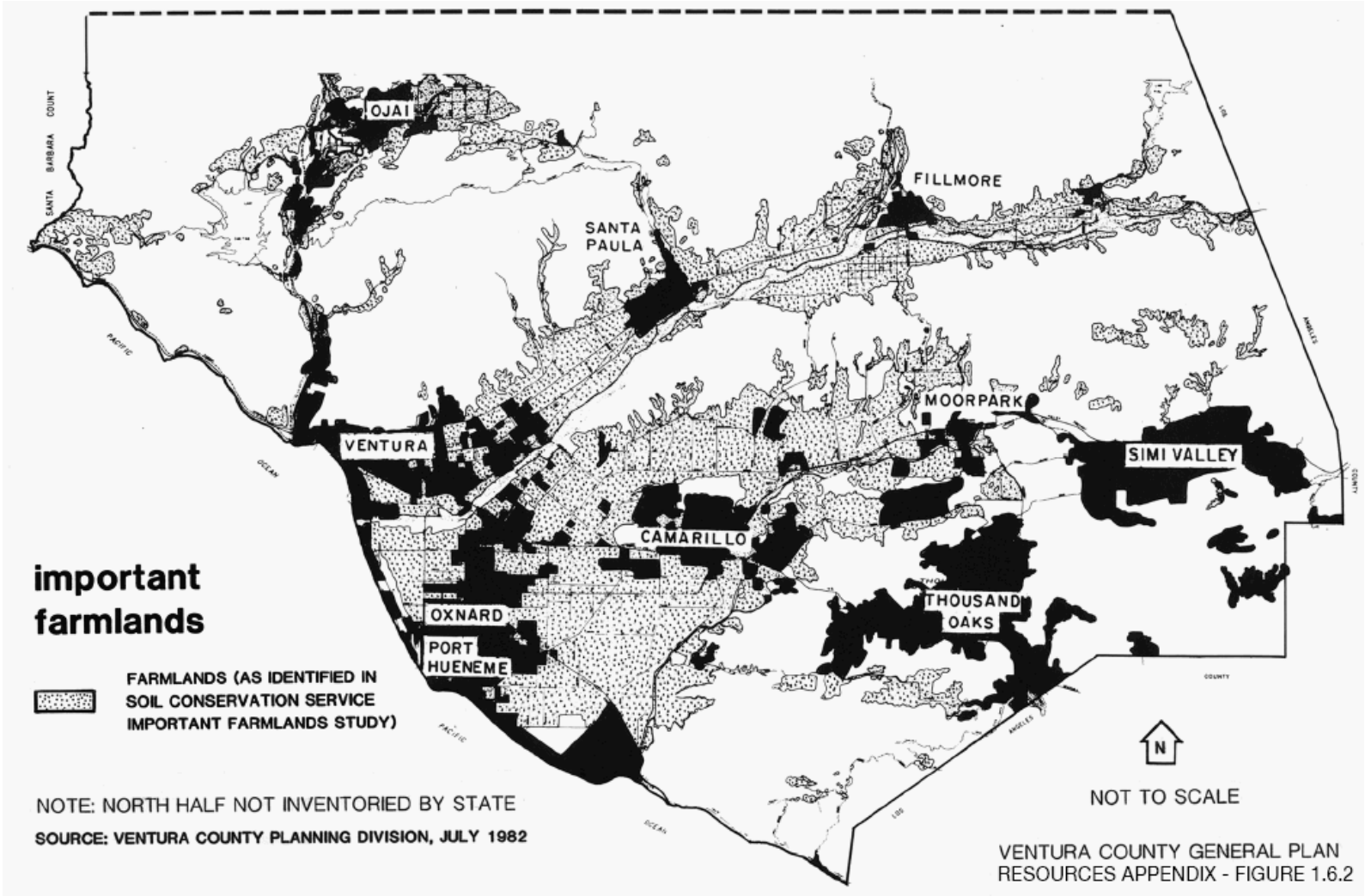
Acreage

117,526	Bearing Acres
757	Non-Bearing Acres, Tree Crops
118,283	Total Acreage (Crops) *
95,284	Total Acreage (Land in Crops)

* Crop acres include approximately 26,626 acres planted to more than one crop each year.

Source: U. C. Agricultural Advisor

Figure 1.6.2
Important Farmlands Map



1.7 Scenic Resources

The scenic resources of Ventura County are of considerable value both in providing a pleasurable environment to local citizens and in stimulating tourism. Aesthetic surroundings are a primary determinant in quality-of-life considerations. Ventura County contains a wealth of scenic resources. From the coastline to the forested mountains of the north, the County contains features which continue to attract visitors and provide pleasure to residents. Preservation of these resources, and visual access to them, is a goal of the County.

The following Section 1.7.1 discusses general inventorying of scenic resources and the program the County has employed to inventory and protect special County scenic resources. Section 1.7.2 discusses the scenic resources within the viewshed of County lakes and Section 1.7.3 discusses scenic highways including the State and County scenic highways programs.

The criteria used to determine which areas are worthy of special consideration and regulation is set forth in the Scenic Resource Area Criteria Matrix (Figure 1.7.1). Those areas which meet the criteria are known as *Special Resource Areas* and are depicted on the *Resource Protection Map* (Figure 1) of the Resources Chapter of the General Plan *Goals, Policies and Programs*. Scenic Resource Areas consist of certain County lakes and their view sheds (Section 1.7.2) and State and County designated scenic highway corridors (Section 1.7.3). Additionally, area-specific scenic resources are protected in area plans (Section 1.7.4). Protection of Scenic Resources Areas is accomplished through the Scenic Resource Overlay Zone of the Non-Coastal Zoning Ordinance. (Section 1.7.5.)

1.7.1 Scenic Resource Inventory

Inventorying and assessing visual resources is not an exact science, as perception of beauty is highly subjective. The County's natural visual resources are generally composed of the varied topography, exposed rock formations, varied and unique coastline, vegetation, and waterways. The man-made environment of buildings, parks, harbors, etc., can contribute to, or degrade, scenic resource quality.

A view is generally composed of:

(1) Foreground with attention to detail, at less than one-half mile;

(2) Middle-ground, with much less detail but attention to vegetation changes from one-half mile to 3 to 5 miles; and

(3) Background, with no detail and attention to large land forms at distances greater than 3-5 miles away.

Conservation of visual quality activities and characteristics in the foreground zone is most important. The viewing location can also influence perception of visual quality.

The U.S. Forest Service is a leading proponent of visual resource analysis and has evaluated the Los Padres National Forest for visual quality and sensitivity. The Forest Service's Visual Management System serves as a model of visual resource analysis technique.

1.7.2 Viewshed of County Lakes

Viewsheds surrounding County lakes were determined to be in need of special protection. They are geographically compact and contain sensitive habitats where many oaks, alders, maple trees and many other native plants grow and where wildlife flourishes. Lakes are usually surrounded by steep slopes, which make them sensitive to the forces of nature if greatly disturbed. Lakes are also thought of as central foci for people who enjoy these areas as recreational and educational areas. Based on the criteria set forth in Figure 1.7.1, four of the seven lakes in Ventura County were determined to be worthy of special protection as a Scenic Resource Area. The four lakes are Lakes Casitas, Lake Matilija, Lake Piru and Lake Sherwood as shown on Figure 1.7.2 (Viewsheds of County Scenic Lakes).

The Scenic Resource Area of these four lakes includes the area encompassing the lakes and the viewshed extending from the lakes to the highest ridgeline surrounding the lakes, excluding land designated as Existing Community. Pursuant to *Goals, Policies and Programs* Policy 3.2.2-2(1), the Existing Community designation is intended to recognize existing urban enclaves located outside cities and unincorporated urban centers. Thus, within the Existing Community designation, views are largely manmade rather than natural and, therefore, these areas are not deemed to be a significant scenic resource area.

The lakes not included in the Scenic Resources Protection Overlay Zone are Bard Lake (Wood Ranch Reservoir), McGrath Lake and Lake Eleanor. Bard Lake is strictly a water reservoir, McGrath Lake is adequately protected under the Local Coastal Plan and is largely within the City of Oxnard, and Lake Eleanor is within the City of Thousand Oaks.

The criteria used, and the justifications for their use, are as follows:

- **Accessibility by Road -** allows the public visual and physical access.
- **Absence of Major Development -** refers to the absence of large residential developments. An absence of development makes the area visually more pleasing as a scenic resource area.
- **Recreational Use -** refers to the accessibility of the area to the public or to private owners for recreational purposes.
- **Steep Slopes -** means that more than 85% of the area has steep slopes. While steep slopes are difficult to develop, they are thought to have greater scenic value.
- **Watershed Areas -** refers to the importance of the land as a water drainage areas. Watershed areas are important for the replenishment of domestic water supply and for maintaining groundwater levels.
- **Dense Vegetation Cover -** refers to the presence of dense vegetation of all types on the slopes. Vegetation is necessary to hold soil in place, particularly on steep slopes.
- **Stands of Trees -** refers to the presence of many species of mature trees. Trees are visually pleasing and are most in need of protection.
- **Abundance of Wildlife -** refers to the presence of wildlife. The protection of trees and other vegetation will help to protect wildlife in the scenic areas.
- **Open Space Designation -** refers to the current land use designation of the major part of the area.

- **Percent of Land in National Forest or other Government Ownership -** refers to the approximate percentage of land that is currently not in private ownership.

1.7.3 Scenic Highways

The following paragraphs describe the development of the Designated and Eligible Scenic Highways Map (Figure 1.7.3) and potential courses of action for implementing scenic highway protection.

The area within ½ mile of an adopted County or State Scenic Highway that is designated Open Space, Agricultural or Rural on the Land Use Map of the *Goals, Policies and Programs*, or the parcels that are contiguous to an adopted County or State Scenic Highway that are designated Urban, Existing Community, or State and Federal Facilities on the Land Use Map of the *Goals, Policies and Programs* are deemed Scenic Resource Areas and are depicted on the *Resource Protection Map* (Figure 1) of the Resources Chapter of the General Plan *Goals, Policies and Programs*. Scenic Resource Areas are subject to the provisions and standards of the Scenic Resource Overlay Zone set forth in the Non-Coastal Zoning Ordinance.

Traditionally, scenic highways have been pleasure drives through the idyllic countryside. With urbanization encroaching on the countryside, the traditional notion of scenic highways is being revised.

The traditional scenic highway was used primarily for recreational purposes, but with commuting being such a large part of our lives, perhaps scenic highways should be planned around commuting patterns--around fast, straight, super highways as opposed to slow, meandering country roads. If scenic highways are to be enjoyed, should they not be enjoyed by the daily masses of commuters as well as the Sunday driver or vacationer?

The viewscapes from most of our scenic highways are rural in nature despite the fact that most people live in urban environments. Probably because of the general unattractiveness of our urban areas, we often conclude that scenic highways do not legitimately belong in the cities. This is unfortunate because there are genuinely attractive urban settings which could be rightfully included in a scenic highway system. The development of scenic corridors within urban areas is generally more difficult to achieve than in rural areas.

There are always portions of our developed areas which are unattractive, but they need not remain that way. Scenic highway programs are almost universally designed to preserve and protect the scenic qualities within a corridor; they seldom direct their attention to the creation or enhancement of scenic values. Instead of preserving existing scenic qualities, scenic highways programs could in effect become a coordinated series of roadside beautification projects intended to create scenic qualities.

The criteria below were used in selecting the prospective scenic highway routes depicted on the Designated and Eligible Scenic Highways Map (Figure 1.7.3).

These criteria are used as a guide only, and are in no way intended to be the final definition of what is "scenic." Included in the listing are criteria suggested by the State Division of Highways. Ultimately, the determination of what is scenic rests with the local jurisdiction.

State Suggested Scenic Highway Selection Criteria:

(a) The scenic corridor through which the highway passes should have consistent scenic, historic or aesthetic value during all seasons.

(b) Consideration should be given those highways or routes which are:

- State or jurisdictional entry routes
- Predominately utilized for recreation or vacation travel
- Utilized for one-day sightseeing or study trips;
- A part of an integrated, or semi-integrated scenic route system that traverses varied *scenic corridors* for longer trips, and/or
- Through areas of extraordinary scenic value;
- Typical or demonstrative of varied scenic factors available within the jurisdiction.
- If possible, all principal landscape and topographical type areas should be represented in the system.
- Routes of historic significance which connect places of interest should be considered even though the route is of marginal scenic value.
- The number of times a route has been suggested as a scenic highway in other plans and studies.
- The degree to which a route can be integrated into a system of "loops" or continuous scenic drives.
- Whether a route connects the scenic highway systems of adjoining jurisdictions.
- The general attractiveness of the route, including the variety and diversity of its viewscape
- The extent to which the route supports other General Plan elements or plans, such as the open space, conservation, recreation, circulation, bicycle, and parks plans.
- The extent to which the route traverses representative samples of County's various environs, whether natural or man-made.
- The amount of traffic on the route.
- The degree to which the route was thought to be a leisurely drive.
- The attractiveness of the highway as viewed from other areas of the corridor.

Figure 1.7.3 depicts the County's eligible and designated scenic highways. This system of routes was recommended by the Ventura County Association of Governments General Plan Advisory Committee in 1973, with the aid of the above criteria. The State Scenic Highways, both "Designated" and "Eligible" are as depicted on the *Master Plan of State Highways Eligible for Official Scenic Highway Designation*.

Once a *scenic route* has been identified, and the route's purpose or character defined, an inventory should be made of the pertinent features within the viewshed. These features may include "assets" (broad vistas, unique architecture, historic sites, etc.). Both assets and liabilities must be inventoried because both must be considered in the eventual development of the route.

Once the assets and liabilities of a route have been inventoried, the next step is to determine what action is to be taken relative to each feature. Where a positive feature exists the appropriate action might be to preserve it or maintain it. For the liabilities inventoried, alleviation measures should be discussed.

Whenever scenic routes are improved, or designated "future" scenic routes are constructed, the following standards should be followed. These standards are taken from State publication, The Scenic Route, and are listed below:

Design and Construction Standards:

- The establishment of general alignment and grade to fit the scenic character of the area to be traversed.
- Curvilinear alignments should be stressed.
- The highway profile should be rolled to fit the topography.
- The reduction to a minimum of all roadway cut and fill scars.
- Elimination of cuts or fills wherever possible. This may be accomplished through the use of tunnels and/or bridges when necessary.
- Flatten or contour all grades and landscape slopes where they cannot be eliminated.
- The provision of erosion control standards.
- Acquisition of wider rights of way or scenic easements should be encouraged where (1) Access control is necessary; and (2) the elimination of outdoor advertising and unsightly development through zoning should be required.
- The provision of vegetation screens for the purpose of hiding objectionable views.
- Selective clearing of vegetation to open up or provide views of desirable scenic qualities.
- The location of and/or design of structures with an intent to achieve beauty of aesthetic qualities.
- The provision of roadside parking areas and lookouts wherever scenic vistas are warranted.

State Scenic Highways Program

The State has adopted legislation (Division 1, Chapter 2, Article 2.5 of the Streets and Highways Code) governing the application of the designation "State Scenic Highway." In order to receive that designation, the local jurisdiction must follow the following process. County Scenic Highways can achieve State recognition by following the same process, save for appearing on the *Master Plan of State Highways Eligible for Official Scenic Highway Designation*.

1. Master Plan of State Highways

Before a route can be designated as an official State Scenic Highway, it must be included in the *Master Plan of State Highways Eligible for Official Scenic Highway Designation*. New routes can only be added to the Master Plan by legislative action. Any proposed route should be reviewed by CALTRANS staff to the Departmental Transportation Advisory Committee and the committee for scenic potential prior to its

inclusion in the Master Plan by the Legislature. As a general policy, short or segmented routes are not recommended for inclusion in the Master Plan. If several routes within a jurisdiction are being considered for inclusion in the Master Plan, they can be incorporated by means of a single piece of legislation.

2. Resolution of Intent

The local jurisdiction(s) having jurisdiction over lands adjacent to the eligible route must provide the District Director to Transportation with a resolution of intent to initiate the designation process. The resolution of intent must be accompanied by:

- A contour map of the suggested scenic corridor boundaries and route limits. (The *scenic corridor* is defined as the area of land generally adjacent to and visible from the highway.)
- A brief description of the roadway with respect to its surrounding area.
- An inventory of elements that make the route scenic, i.e., facts of historical significance, vistas, topography, stands of trees, rock outcrops, etc.

3. Review by Departmental Transportation Advisory Committee

Following the resolution of intent, CALTRANS staff to the Departmental Transportation Advisory Committee (DTAC) will review the proposed scenic route to determine if the route has reasonable potential for official designation and present a staff recommendation to DTAC.

The local jurisdiction will be notified of the meeting and may attend at their discretion.

4. Local Protection Program

After receiving DTAC's approval to proceed, the local jurisdiction prepares and adopts a program to protect and enhance the scenic corridor.

5. Designation

If the protection program is found to be satisfactory by DTAC, the Director of the Department of Transportation, upon DTAC's recommendation, will officially designate the route as a scenic highway.

Local Scenic Highway Protection Program

The procedure for achieving official designation of scenic highways includes the requirement that the local jurisdiction(s) prepare and adopt a program to protect and enhance the appearance of the scenic corridor. The elements of that program are described as follows:

1. Content

The minimum requirements under Section 261 of the Streets and Highways Code which must be met include, but are not limited to:

- Regulation of land use and density of development (i.e., general plan classifications with specific density restrictions and types of allowable land uses);
- Detailed land and site planning (i.e., establishment of a permit or design review authority and defined regulations for the review of proposed developments and projects);

- Control of outdoor advertising (i.e., prohibition of off-premise signs in rural settings, control of onsite advertising structures, with allowances for traveler information);
- Careful attention to and control of earthmoving and landscaping (i.e., adoption of a grading ordinance, grading permit requirements, approval by a permit or design review authority, landscaping and vegetation requirements); and
- The design and appearance of structures and equipment (i.e., design review authority and regulations).

The protection measures, which are to be in the form of ordinances or included in the general or specific plans, shall apply to the area of land within the scenic corridor boundaries and route limits. Assistance in establishing the corridor boundaries can be requested from the CALTRANS district scenic highway coordinator.

These ordinances can be new or existing, but must meet the five criteria in Section 261 of Streets and Highways Code as listed above. The protection program will vary from one jurisdiction to another, depending upon the geographic setting and/or the prevailing land uses in the scenic corridor. In general, the degree of controls should be at the level and degree of detail necessary to protect the scenic appearance of the corridor.

2. Public Participation

The scenic highway protection program should be prepared in cooperation with local citizens' committees, affected property owners, environmental groups, and anyone else who might be impacted or interested in the proposed designation. These groups should be involved at the earliest possible date to afford ample time for review and comment before official action is taken.

Notification by mail to affected property owners is strongly suggested, particularly in areas with a significant number of vacation or second homes. Effective citizen participation will result in a protection program which generally meets local desires and will reduce the probability of last minute controversy.

3. Proposed Realignments or Route Improvements

The local jurisdiction(s) should contact the CALTRANS District Office in their area for information on proposed route improvements or realignments to determine any effects on any eligible route's scenic qualities. Eligibility may be transferred to the new route automatically, or legislation may be required for its inclusion in the *Master Plan of State Highways Eligible for Official Scenic Highway Designation*. This determination will be based on the nature and the extent of the realignment, and will be made in cooperation with CALTRANS staff to the Departmental Transportation Advisory Committee and the CALTRANS District Office.

4. Format and Submission of Request for Designation

Following the adoption of the scenic highway protection program, the local jurisdiction must request that the route be designated as an official State Scenic Highway. The request, addressed to the Chair of the Departmental Transportation Advisory Committee, must include:

- A cover letter from the local jurisdiction(s) requesting official designation;
- A contour map which defines the scenic corridor boundaries and route limits;

- An inventory of elements that qualify the route as scenic (as submitted with the resolution of intent to initiate the designation process);
- A brief description of the process employed for public participation;
- A description of proposed realignments or route improvements and further actions, if any, that need to be taken on the transfer of eligibility; and
- An annotated summary report of the adopted ordinances that apply to the area of land within the scenic corridor boundaries and route limits.

The request will be reviewed by the CALTRANS district scenic highway coordinator and CALTRANS staff assigned to the Department of Transportation Advisory Committee for compliance with statutes and these guidelines.

Upon receipt of the written request for designation, the Department of Transportation Advisory Committee will conduct a review of the scenic highway protection program. If the protection program is found to be adequate, the Departmental Transportation Advisory Committee will make a recommendation to the Director of Transportation to designate the route as an official State Scenic Highway.

The Director of Transportation will then designate the highway as an official State Scenic Highway and this will be so indicated in departmental publications or maps which are issued to the public. The department will place and maintain appropriate signs along the scenic highway.

1.7.4 Area Plans

In addition to viewshed of lakes and scenic highways designated as Scenic Resources Areas as discussed in sections 1.7.2 and 1.73 above, there are Scenic Resource Areas that are identified in some area plans. The criteria used in determining these scenic resources and the policies governing development varies from area to area. Therefore, the reader is directed to review the applicable Area Plan.

1.7.5 Implementation

Scenic Resources Areas are subject to the Scenic Resource Overlay Zone of the Non-Coastal Zoning Ordinance, which is designed to preserve, protect and enhance the County's scenic resources through the regulation of *discretionary development* that may adversely affect these resources. The provisions of the overlay zone apply to Scenic Resource Areas depicted on the *Resource Protection Map* (Figure 1) of the Resources Chapter of the General Plan *Goals, Policies and Programs*, or Scenic Resource Areas identified in an Area Plan

1.7.6 Conclusions

Ventura County contains scenic resources which could potentially be degraded by development. In addition, the view from scenic views, vistas or highways could be obstructed by development. Scenic areas should be protected by policies which prohibit degradation of scenic resources. Development should be required to incorporate measures to enhance or preserve scenic characteristics. To facilitate implementation of these goals, a specific overlay land use designation and~~/or~~ zone should identify those areas deserving special protection and the zoning standards that would apply to those areas.

References:

California Department of Transportation, *Scenic Highway Guidelines*, (no date) available at the following website:
http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/guidelines/scenic_hwy_guidelines_04-12-2012.pdf

Ventura County Planning Division, Ventura County General Plan, *Conservation and Open Space Elements*, 1986 with North Half Technical Appendix, 1986.

Ventura County Planning Division, *Ventura County Scenic Highways Element*, 1974.

Figure 1.7.1
Scenic Resource Area Criteria Matrix

Location	Accessibility by Road	Absence of Major Development	Recreational Use	Steep Slopes	Watershed Area	Dense Vegetation Cover	Stands of Trees	Abundance of Wildlife	Open Space Designation	Approximate Percentage of Land in National Forest or Other Government Jurisdiction
Lake Casitas	X	X	X	X	X	X	X	X	X	90%
Lake Eleanor (No longer within unincorporated territory)	X	X	X	X	X	X	X	X	X	100%
Matilija Lake	X	X	X	X	X	X	X	X	X	75%
McGrath Lake		X						X	X	95%
Lake Piru	X	X	X	X	X	X	X	X	X	80%
Lake Sherwood	X	X	X	X	X	X	X	X	X	-0-
Bard Lake		X								-0-
Highway 33 Scenic Corridor	X	X	X	X	X	X	X	X	X	95%

Source: Ventura County Planning Division

09/09/2008

Figure 1.7.2
Viewsheds of Ventura County Scenic Lakes

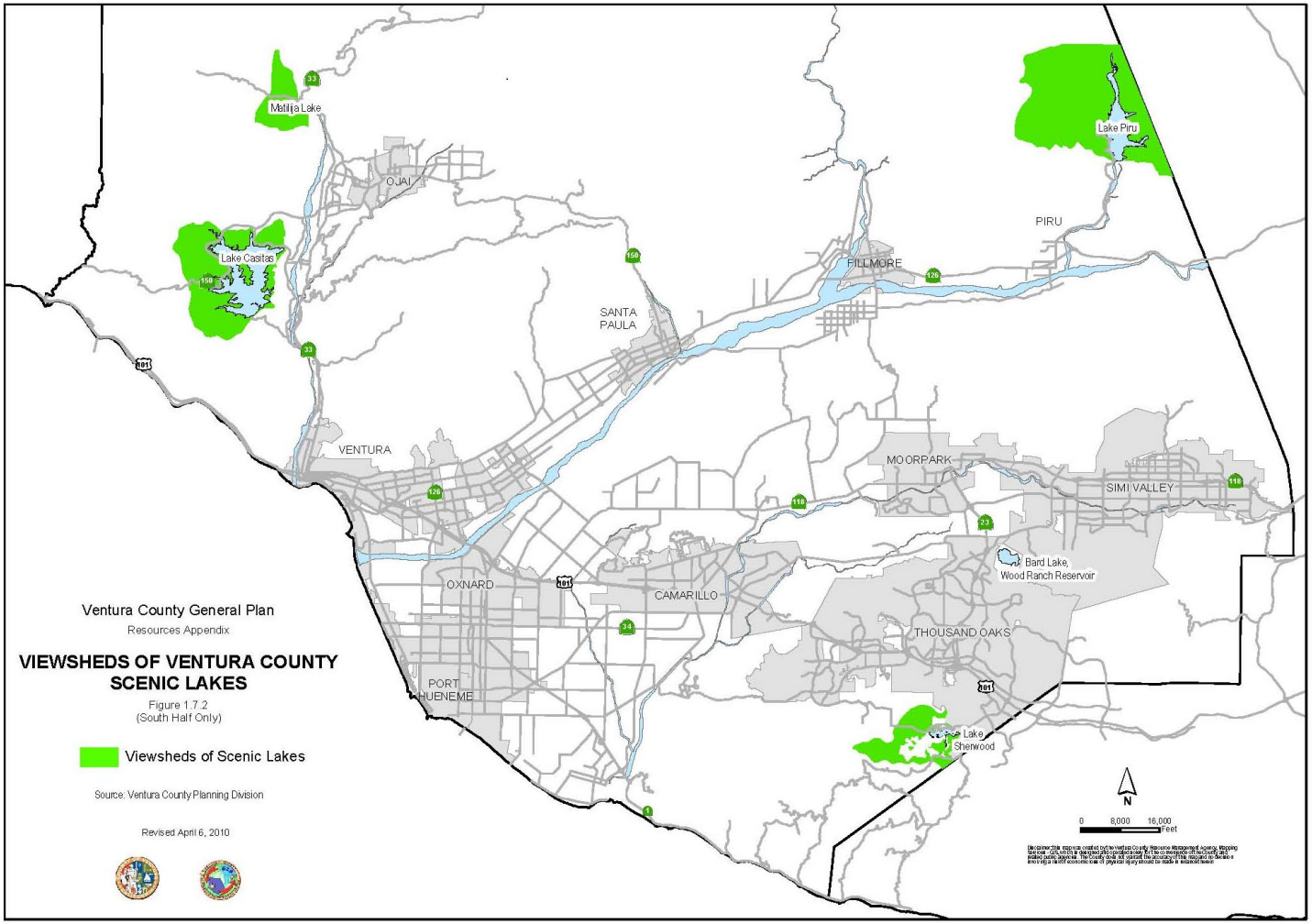


Figure 1.7.3a
Designated and Eligible Scenic Highway Map (North Half)

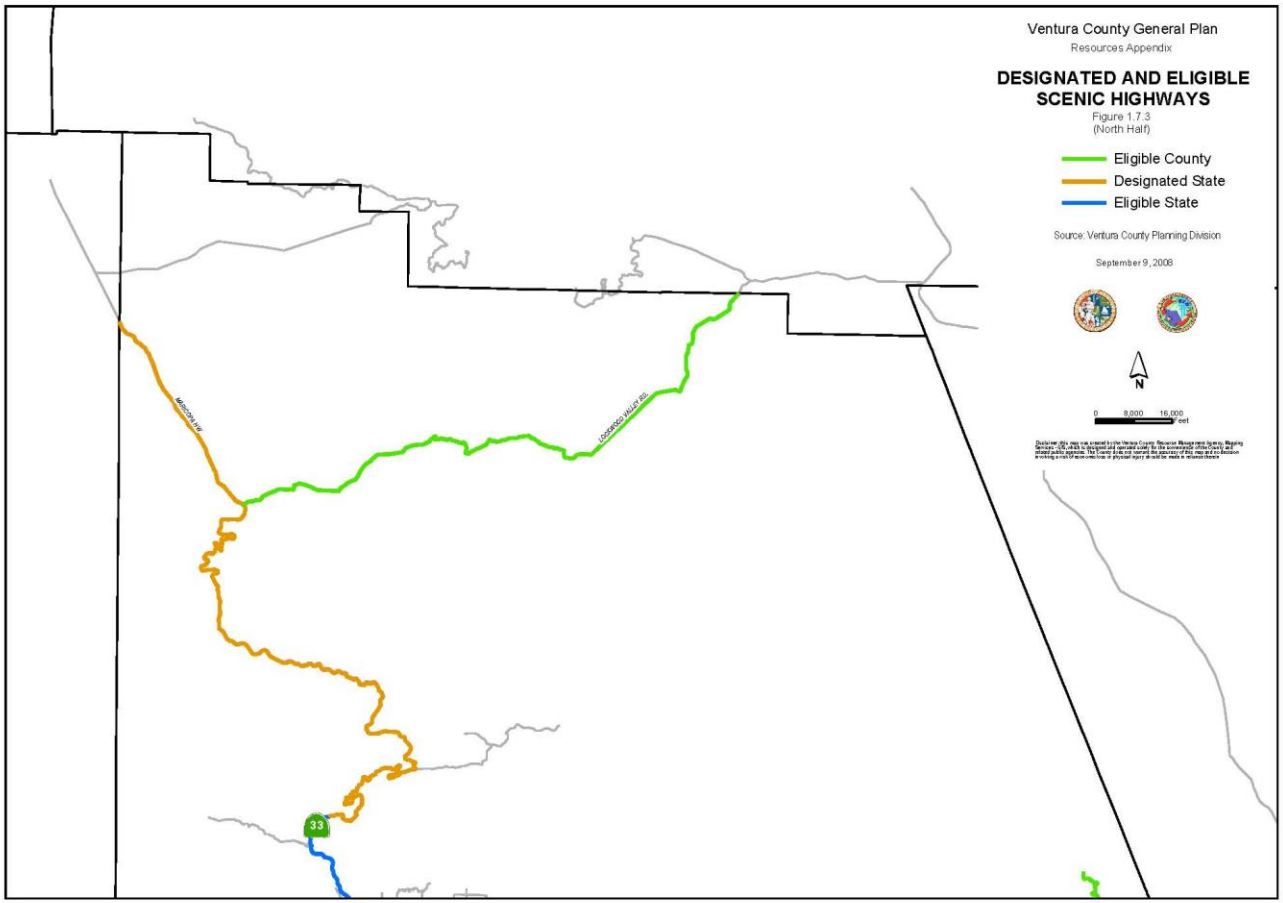
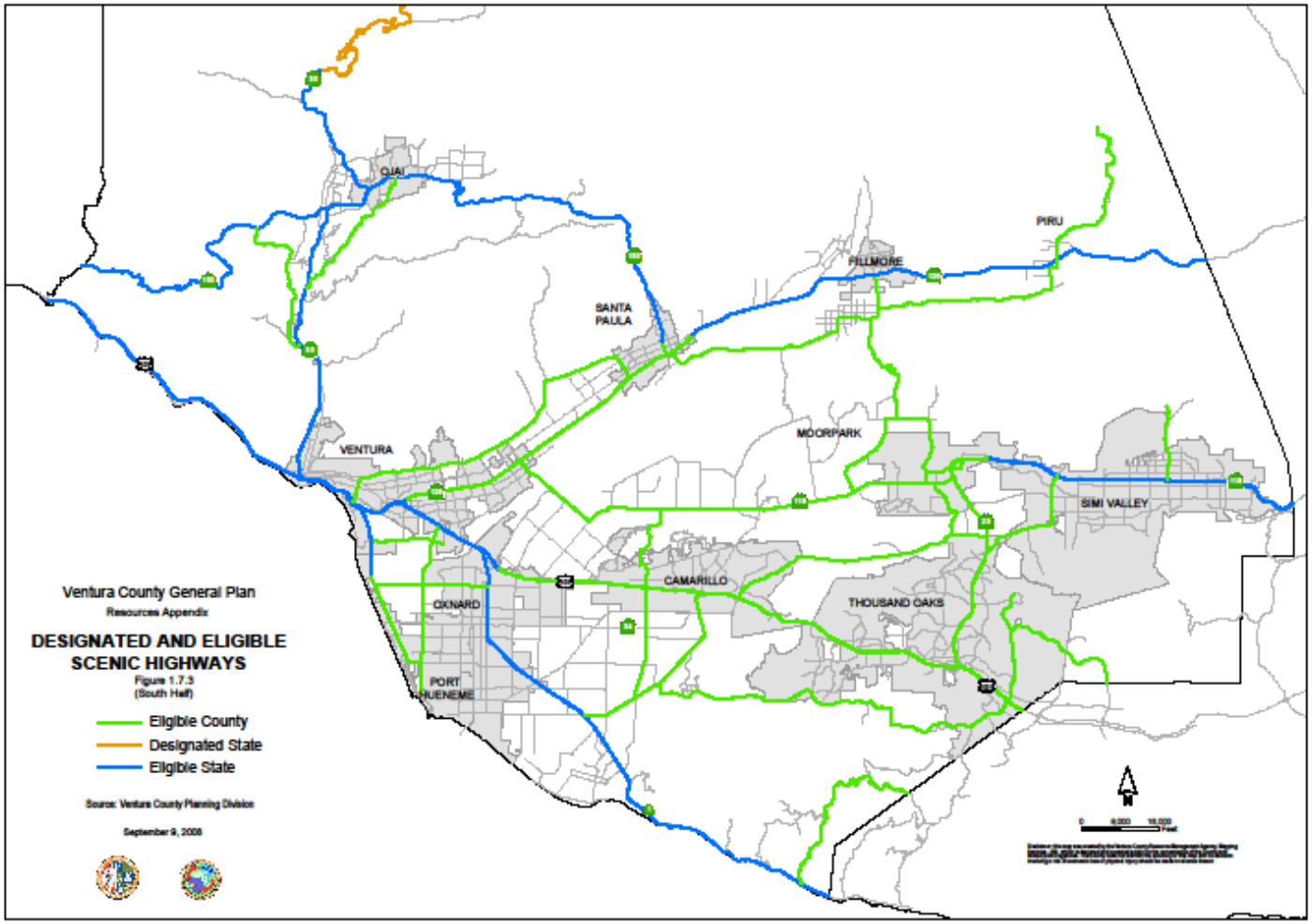


Figure 1.7.3b
Designated and Eligible Scenic Highway Map (South Half)



1.8 Paleontological and Cultural Resources

Paleontological and *cultural resources* include a wide variety of elements which provide information and understanding of our biological, archaeological, historical and Native American heritage. In Ventura County, these resources include geological formations, sites, objects of material culture, buildings and structures, and districts of historical significance, all of which have left us a rich fossil record of millions of years of biological evolution, as well as a legacy of at least 8,000 years of human activity. These resources enable us to gain a greater appreciation for our own place in the continuum of history. And through a well-developed program of paleontological and cultural resource management, these resources can be preserved, managed, and studied for the benefit of future generations of Ventura County residents.

This Appendix examines the various resources in question, beginning with paleontological resources, some of which date back hundreds of millions of years. Next examined are cultural resources which include archaeological sites of great antiquity, historic sites and structures from as early as the initial Spanish occupation, and Native American Resources of our Chumash descendents.

These resources are defined and described in the body of the text below, and the relevant Federal, State, and local legislation which affects these issues is discussed briefly within each section. Finally, relevant issues and policy recommendations are offered which aim to strengthen and promote County policy towards these important and fragile resources.

1.8.1 Paleontological Resources

Paleontological resources refer to the fossilized remains of pre-historic plant and animal life. In Ventura County, paleontological remains include examples from throughout most of geological history, including the Paleozoic (600-225 million years ago), Mesozoic (225-70 million years ago) and Cenozoic (70 million years ago-present) eras. Careful scientific study of the fossilized life forms preserved in the sedimentary and metamorphic rocks of our region can result in identification of local paleoenvironmental conditions and biological evolutionary trends. In addition, certain fossil remains are only found in isolated outcrops in Ventura County and are therefore of unique scientific interest. At the other end of the spectrum, other fossil bearing formations are of economic value as well, including several shell mining operations in the County.

1.8.1.1 Geologic Setting

Ventura County falls into the western half of the Transverse Range, which is mainly composed of diverse sections of Tertiary (70-1 million years ago) sedimentary rocks, in places enormously thick, that were deposited in several large basins. These and associated volcanic rocks rest upon and against older sedimentary rocks, as well as still older crystalline rocks that in part correlate with those exposed in areas farther east in the San Bernardino mountains.

The area as a whole resembles the adjoining Coast Ranges (to the north) and Peninsular Ranges (in the Orange, San Diego and Baja California areas) in several respects, but is distinguished from them by prevailing east-west structural trends. Elongated, generally steep-sided folds, many of which have been ruptured along their axes or on one or both flanks by gently to steeply dipping faults, are characteristic of the basinal areas and those western ranges that consist mainly of sedimentary rocks, such as Ventura County's Pine Mountain. The other ranges are best regarded as great upthrown blocks. The great San Andreas-San Jacinto fault zone slices across the northeastern part of the County at an acute angle.

Several episodes of intense deformation, including a late Mesozoic mountain building episode and accompanying widespread volcanic intrusions, are recorded by the older rocks. The Cenozoic section contains unconformities, some of them extensive, that reflect a variety of disturbances in both basin and source areas. The mid-Pleistocene (ca. 500,000 years ago) orogeny produced intense folding and uplift, and was responsible for development of the major elements of the present topography, including a number of impressive cliffs. Marine terraces of Pleistocene age

are prominent features of the coastal landscape, and lie at elevations of as much as 1,200 feet above sea level. Some of them have been warped and broken by faults (Jahns, 1954: 17).

In terms of paleontological data recovery, the western part of the Transverse Range, of which Ventura County is a primary component, appears to be a particularly inviting area for further study. This is true because of the thick, well-exposed and carefully studied geological cross-sections in this region, well-documented due to the extensive oil exploration activities which have taken place here. Great interest is attached to the Ventura area Pliocene-Pleistocene units (10 million years ago-present) because of their thickness (about 18,000 feet) and because of the depth of deposition indicated by their fossils. Larger fossils are scarce except in obviously shallow-water intervals near the top of the sequence, but Foraminifera are abundant, particularly in the lower part.

1.8.1.2 Paleontological Resource Inventory

Paleontological resources in Ventura County include many widely dispersed outcrops of fossil bearing formations. It is anticipated that a complete inventory of known paleontological sites and formations will be performed, pending adequate funding and staff time.

1.8.1.3 Legislation

Although not specifically addressed in the National Environmental Protection Act (NEPA) or in the California Environmental Quality Act (CEQA), paleontological resources are protected as scarce non-renewable natural resources and are subject to the same environmental review process accorded other biological and cultural resources. The review process requires a responsibility to:

(1) inventory the subject resource; (2) assess its scientific and educational significance; (3) identify potential direct and indirect impacts; and (4) develop appropriate measures to avoid or otherwise mitigate adverse effects. In this light, it is the County's responsibility to assess environmental impacts and resource significance of any paleontological site affected by discretionary projects deemed non-exempt under the provisions of CEQA.

1.8.2 Archaeological Resources

Archaeology may be generally defined as the study and reconstruction of prehistoric human societies. *Archaeological resources* refer to the material remains (artifacts, structures, refuse, etc.) produced purposely or accidentally by human beings. The scientific study of these remains can result in the identification of activities, types of adaptation to the environment, and changes in activities and organization that were experienced by groups of people in the past. Furthermore, these remains often have special significance to Native Americans, ethnic groups, special interest groups (i.e., avocational archaeologists) and the general public.

1.8.2.1 Prehistory in Ventura County

Despite over a century of rapid development, Ventura County retains a high degree of its historic and prehistoric heritage. Large portions of the mountainous North Half of the County are undeveloped and lie within the Los Padres National Forest Boundaries. In the more populous South Half of the County, extensive urbanization has affected a relatively small total land area. However, extensive agricultural practices have altered the landscape and made the reconstruction of our archaeological and historical heritage more difficult to assess.

The Ventura County region is part of a larger regional culture area which includes most of San Luis Obispo and Santa Barbara Counties as well. Within this larger regional area, King (1981) has proposed a culture history sequence which, in general outline, applies to Ventura County's prehistory. This sequence shall be adopted here.

Early Period

Southern California lays claim to several sites which claim great antiquity. Calico Hills, investigated by Leakey, et al. (1972) is claimed to be 200,000 years old or older. Sites on several of the Channel Islands have yielded ambiguous evidence of fire hearths between

40,000 and 30,000 years ago (Moratto, 1984: 54-59). Several other very early sites are claimed for San Diego, Orange, and Los Angeles Counties. However, none of these sites have yielded unequivocal evidence of late-Pleistocene human occupation of Southern California. In addition, no claims for great antiquity have as yet been made for sites in Ventura County.

We have reliable evidence of Holocene (post-10,000 years ago) adaptions in our area, beginning approximately 8,000 years ago. These sites from the E_x Period have been located among the larger of the Channel Islands and involve often extensive remains of milling stones and manos, presumably used for seed grinding. It is inferred that these early residents were mobile hunter-gatherers who focused their subsistence strategies on locally available terrestrial and sea mammals, shellfish, and fish, although there is scant information available regarding their subsistence technology. The people of the E_x Period have also been known as the Oak Grove (Rogers, 1929), Archaic (Olson, 1930), or Millingstone People (Wallace, 1955).

Similar lifeways persist throughout the next several thousand years, becoming better documented after 5,000 years ago. A relatively stable subsistence strategy developed in the Santa Barbara Channel area. Mortars and pestles came to replace the earlier millingstone technology, probably reflecting an increase in the utilization of acorns as a primary foodstuff. In addition, most of the likely maritime resources were now being utilized, as evidenced by the range of artifactual materials unearthed from sites of this period. Larger populations, greater regional integration and evidence of regional economic exchange are also inferred for the Early Period (E_x: 8000-3500 years ago; E_y: 3500-2500 years ago; E_z: 2500-1200 years ago).

Middle Period

Definite differences between coastal and inland adaptations begin to emerge in the Middle Period between 1200 B.C. and 1100 A.D. In the coastal areas, fishing technology improved and it is likely that seagoing craft were already in use. Burial evidence indicates increasing wealth and social stratification. In this period, and as early as 2500 B.C., the inland areas of the region were being peopled (Horne, 1981). These areas present a quite different range of subsistence opportunities which reflect much greater scarcity of resources and, therefore, much smaller and more mobile populations. In contrast to the resource base of the Coastal Chumash, the inland peoples focused on terrestrial resources, such as deer hunting and acorn and sage seed gathering, as well as seasonal salmon runs, which were particularly plentiful on the Ventura River. Stable trade between coastal and inland Chumash is inferred from excavation data in the Santa Monica Mountains area, although greater environmental and archaeological information is required before models of such interaction can be developed. The Middle Period is marked by the following temporal divisions: M_1 (1200 - 500 B.C.); M_2 (500 B.C. - 300 A.D.); M_3 (300 - 800 A.D.); and M_4/M_5 (800 - 1100 A.D.).

Late Period

The Late Period, after 1100 A.D., may definitely be called the Chumash Era, although it is likely that Chumash ancestors have inhabited the region from quite early on. In material culture, the Chumash developed highly evolved basketry, stone work (steatite, for example), shell beads for exchange, and seagoing craft (tomol). It has been said that the Chumash attained a higher degree of social complexity than most other non-agricultural peoples in North America. Certainly, upon the arrival of the Spanish explorers, the Chumash of Ventura County were a highly evolved, numerous and prosperous people. The Late Period is most likely a continuation and elaboration of the technological and social structures already in place in the Chumash area. It is also likely that communication and trade with non-Chumash peoples accelerated during this period. Bead manufacture became more sophisticated, with emphasis on Olivella callus beads and various cylinder beads. Boat manufacture most likely increased in production, with specialization at certain villages apparent from the ethnohistoric record. In particular, Ventura and further north, Carpinteria ("carpenter's shop" in Spanish) were recognized by the Spanish as boat production centers. The Late Period is marked by the

following temporal divisions: L_1 (1200-1500 A.D.); L_2 (1500-1782 A.D.); and L_3 (Historic Chumash).

1.8.2.2 Archaeological Resource Inventory

The accompanying Figure 1.8.1 portrays generalized archaeological site sensitivity areas based on known or suspected prehistoric use areas (Public Works Agency, 1973). Due to the fragile nature of these resources, known or suspected archaeological site locations are not indicated on the map(s). Such information is considered confidential and may be consulted on a need-to-know basis by qualified researchers. The UCLA Archaeological Survey maintains complete archaeological site report and locational data for Ventura County and may also be consulted by qualified persons.

1.8.2.3 Legislation

Federal, State and local governments have developed laws and regulations designed to protect cultural resources under their jurisdiction or that may be affected by the actions they undertake. The activities and procedures of lead agencies in this regard involve the responsibility to: (1) inventory cultural resources within their jurisdictions and/or area(s) of undertaking, (2) assess the scientific and ethnic/social significance of identified resources, (3) identify potential direct and indirect impacts of an undertaking on these resources, and (4) develop appropriate measures to avoid or otherwise mitigate adverse effects.

Federal Cultural Resource Legislation

Federal legislation is important not only because it sets national policy, but because it establishes an historic preservation system which extends to the State and local levels. The significance of cultural resources and their eligibility for the National Register of Historic Places is assessed by uniform criteria and procedures regardless of the jurisdiction in which they are found. Federal legislation is also important because it establishes policy for Federal agencies by which the County may be enjoined on local projects falling within the jurisdiction of these agencies (for example, the Calleguas Creek project - CA-VEN-110).

The Antiquities Act of 1906 was the first piece of historic preservation legislation. It expressed concern over the destruction of important archaeological and historic properties by nonprofessionals, and it established a system of permits for the conduct of archaeological studies on federal lands. Penalties were specified for noncompliance. Some antiquities permits issued under this law are still in effect, though new permits are now being issued under the Archaeological Resources Protection Act of 1979 and its implementing regulations.

A great deal of archaeological survey and excavation was conducted during the 1930's under the public works programs designed to pull the United States out of the Great Depression. Much of this work involved excavations at sites that were to be flooded by reservoirs. After World War II, dam construction proceeded all across the country and numerous archaeological excavations were conducted in conjunction with this construction. This led to the passage of the Reservoir Salvage Act in 1960, which authorized expenditure of federal funds on archaeological salvage at Federally funded reservoir projects. In 1974, the Archaeological and Historical Preservation Act amended the Reservoir Salvage Act. This act deals with the preservation of data, not the preservation of historic properties as physical entities. It authorizes expenditure of up to 1 percent of the construction cost of a Federal action for the purpose of data recovery.

- **The National Environmental Policy Act**

  This law established the requirement that any major Federal actions significantly affecting the quality of the human environment be preceded by a detailed analysis and report on those effects. Such a report is called an environmental impact statement (EIS). NEPA states explicitly that it is a national policy to "preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice." NEPA is important as a

precursor to State environmental legislation (CEQA), and also comes into play when County federal jurisdictions overlap.

- **The Archaeological Resources Protection Act (ARPA)**

  The intent of the Archaeological Resources Protection Act of 1979 is to ensure preservation and protection of archaeological resources on public and Indian lands. ARPA places primary emphasis upon a Federal permitting process in order to control the disturbance and investigation of archaeological sites on these lands. In addition, ARPA's protective provisions are enforced by civil penalties for violation of the Act.

  ARPA mandates consultation procedures prior to initiation of archaeological research on Indian lands or involving Indian archaeological resources. Section 4(c) requires Indian tribes be notified of possible harm to, or destruction of, sites having religious or cultural significance to that group. The Federal land manager must notify affected tribes before issuing the permit for archaeological work. Section (g)(2) specifies that permits to excavate or remove archaeological resources from Indian lands require consent of the Indian or Indian tribe owning or having jurisdiction over such lands. The permit, it is also stipulated, shall include such terms and conditions as may be requested by the affected Native Americans. In regard to the custody of archaeological resources, ARPA stipulates that any exchange or ultimate disposition of archaeological resources excavated or removed from Indian lands shall be subject to the consent of the Indian or Indian tribes which owns or has jurisdiction over such lands.

State Legislation

Protections for cultural resources extend from the federal to State level via the historic preservation system. Continuity between these levels is also found in environmental legislation, such as the California Environmental Quality Act (CEQA) and California Coastal Act (CCA), which essentially extends the policies and intent of NEPA to local regions and communities. State law (California State Executive Order B-64-80) directs agencies to inventory cultural resources under their jurisdiction. Information on these properties, as well as site data gathered for local projects subject to CEQA, are forwarded to the nearest cultural resource data Clearinghouse (the Ventura County Clearinghouse is located at UCLA). There they are recorded, mapped, and assigned an alphanumeric designation appropriate to the County Inventory. These data, along with supporting documentation and other written reports, are made available to official review agencies and/or qualified professionals for the purpose conducting initial studies and other environmental determinations.

- **California Environmental Quality Act**

  All undertakings initiated by County agencies and defined as "projects" under the California Environmental Quality Act (CEQA) are required by law to consider potential impacts on archaeological, historical, and Native American resources. CEQA directs agencies and persons subject to its provisions to identify and mitigate the environmental effects of an undertaking on all cultural properties which may be regarded as significant in California history. CEQA provides protections for both material and nonmaterial resources and, like NEPA, recognizes the importance of the cultural context of these resources.

  Appendix G of the CEQA Guidelines, for example, states that a project will have a significant effect if it will adversely impact "a property of historic or cultural significance to a community or ethnic or social group..." (Section j), or if it will "Conflict with established... religious uses of the area" (Section w). Appendix K of the CEQA Guidelines specifically addresses impact assessments and mitigation measures for cultural resources.

- **California Coastal Act**

  The California Coastal Act (CCA) also recognizes archaeological and historic resources as key environmental issues, and requires the development of mitigation measures in coordination with the California Office of Historic Preservation (SHPO).

1.8.3 Historical Resources

Historical resources refer to the material and non-material expressions of human adaptations which characterized the post-contact or historic period. These resources include historic event or activity sites, historic archaeological sites, standing architecture and other significant properties, documents and other sources of historical information, objects of material culture; and secondarily, the more intangible cultural qualities, such as folklore, social organization, and value systems, which are associated with these properties.

The material and non-material aspects of culture are so closely interwoven that evaluation of historic properties and other material items, especially those currently in use, is incomplete without understanding the values and meaning attached to the material item and the importance of the item or property to the maintenance of a particular aspect of that culture. Because history studies must necessarily address both historic properties currently in use and abandoned historic sites, it is important to differentiate between resources that are part of living cultural systems and those that are not. Both kinds of historic resources can be considered significant for their inherent historic values. However, in the former case, assessment of the significance of these properties must also consider the values placed on them by the community or cultural group and the importance of the property or material item in the maintenance of an aspect of that culture.

The body of cultural resource laws, regulations, and compliance procedures that has evolved over much of this century is generally referred to as the historic preservation system. Historic preservation programs encompass the full range of archaeological, historical and Native American resources, with an emphasis on material remains, or what are sometimes referred to generically as historic properties. The meaning of the word "historic" in this context, then, closely approximates "antiquities," and is not a literal equivalent to "historical" (i.e., relating exclusively to the period commencing with Euroamerican contact).

1.8.3.1 Historical Resource Description

By 1846, most of the arable land in Ventura County had been parceled out into nineteen large ranchos, ranging in size from Rancho Simi (113,000 acres) to the Tico lot in San Buenaventura (29 acres) (Triem, 1985:34). These ranchos involved a hacienda system of economic organization relying for the most part on native labor bound in debt peonage. The primary product of the ranchos was cattle and, to a lesser extent, sheep. Between 1848 and 1856, during the Gold Rush in the Sierra Foothills, the cattle market peaked and generated considerable wealth for many of the Spanish and Mexican rancho families in Ventura County. Thereafter, the ranchos slowly declined with the arrival of Anglo settlers and traders who brought with them a more developed system of resource exploitation. This, combined with the difficulties in providing legal title to the land grants with the advent of the Land Act of 1851, served to weaken Hispanic control over the local economy. By the 1870's, a majority of the rancho lands were in the hands of Anglos who transformed the face of Ventura County. The cattle industry declined and was quite rapidly replaced by agriculture and an increasing interest in oil exploration and production.

Until 1873, Ventura County was attached to Santa Barbara County, but the difficulties of traveling to Santa Barbara and the natural geographic cohesiveness of the Ventura County region was recognized early on. With oil, agriculture and shipping taking the lead, the 1870's gave rise to much of the structure which characterizes the County to this day. Many of the communities were founded during the 1870's, including Santa Paula (which was the second largest town after San Buenaventura by 1879), and Port Hueneme. Thomas Bard, the County's only United States Senator, laid out the port in 1869 and had grand plans for a western rail hub. His wharf, completed in 1871, instead became a focus of harvest time agricultural shipments to the East. (Oxnard did not get its start until 1889 with the completion of the Oxnard Brother's sugar beet factory, and was incorporated in 1903.) The 1870's also saw Nordhoff laid out, later changed back to its original name of Ojai. The railroads, which arrived in 1886, spurred the growth of the Santa Clara River towns of Fillmore, Bardsdale and Piru, and helped increase County population from 5,073 in 1880 to 10,071 in 1890. Santa Paula also prospered from the railroad. The oil industry grew quickly in the 1880's, especially in and around the Ojai and Sespe fields, which continue in production today.

Other important industries established prior to the turn of the century were citrus ranching, especially navel oranges, and tourism, centered on Ojai and Santa Paula's natural hot spring resorts.

A second tier of towns was laid out with the completion of a faster San Francisco - Los Angeles rail link through Santa Susana Pass in 1901. Camarillo, Moorpark and Santa Susana (later, Simi Valley) all were founded and grew up around the Southern Pacific depots of the railroad line. Newbury Park and the Conejo Valley had a somewhat different origin, having developed as dry farming and cattle ranching areas serviced by an overland stage coach line.

In 1916, the Ventura oil field in the Ventura Avenue area, was discovered. This created a development boom in Ventura and to a lesser extent, in the Santa Paula and Fillmore areas which also increased their oil production. The decade of the 1920's saw increased building activity and the development of the California bungalow as a distinct architectural style as large areas were built up for oil field worker housing. The disaster of the stock market crash of 1929 was preceded by another disaster in Ventura County which has yet to be rivaled. On March 12, 1928, the Saint Francis Dam in San Francisquito Canyon near Castaic, gave way, killing 400 people and destroying more than 1,200 homes and 7,900 acres of farmland in the Santa Clara River Valley (Triem, 1985: 127-128).

The Depression of the 1930's, although difficult for Ventura County farmers and businesses, has left the County with a wealth of architectural monuments. Particularly, through the many New Deal relief programs instituted after 1933, a good deal of the County's infrastructure in the form of roads, post offices, fire stations, schools and public art works was created. In addition, an influx of immigrants from the hard hit central and southern United States put down roots in Ventura County during this period. And beginning in 1940 with the completion of the U.S. Navy's deep-water port facilities in Port Hueneme, the military and, to a lesser extent, the fishing industry, became important elements in the rich economic mix of Ventura County's South Half.

1.8.3.2 Inventory of Historical Landmarks

The following inventory of historical landmarks and points of interest (Figure 1.8.2) reflects the diversity of sites, buildings and natural features which have been recognized by the Cultural Heritage Board for their outstanding historical character. Included are Chumash archaeological sites, Spanish and Mexican adobes, Victorian era mansions, banks, trees and innumerable other points of interest. The Cultural Heritage Board is continuing to add to this list as nominations for landmark status are received, researched and reviewed.

1.8.3.3 Legislation

The development of a system of historic preservation laws and regulations spans the last 75 years. Over the past 20 years especially, these statutes have been developed into a well-defined set of procedures for the protection of significant historic properties.

Federal Preservation Legislation:

The Historic Sites Act of 1935 declared that it is national policy to "preserve for public use historic sites, buildings, and objects of national significance." The National Historic Preservation Act of 1966 has provided a broader base for the implementation of this preservation goal. This Act, which created the National Register of Historic Places and the Advisory Council on Historic Preservation, is supported by two implemental statutes. The first, Executive Order 11593, requires in Section 2(a) that federal agencies "locate, inventory, and nominate properties under their jurisdiction or control to the National Register." The second, 36 CFR 800, Protection of Historic and Cultural Properties, establishes procedures to be followed in the environmental impact analysis process under the authority of the Advisory Council. Section 106 of this act requires that federal agencies consult with the Advisory Council prior to engaging in any undertaking that would affect a property on or eligible for the National Register.

State Historic Preservation System:

While there is some variability nationally, all states provide for the equivalent of an Office of Historic Preservation under the direction of a State Historic Preservation Officer (SHPO). The California SHPO (with offices in the State Department of Parks and Recreation) and various State Clearinghouse data repositories serve as a conduit for the inventory and assessment of cultural resources within the State that are eligible or potentially eligible for the National Register. The SHPO may also comment on environmental documents, and take the lead in the development of regional preservation programs and compliance guidelines.

- **Cultural Heritage Board**

  On the local level, the Ventura County Cultural Heritage Board researches and records County history and makes historical landmark designations. The Board was created in 1966 by the County Board of Supervisors and is composed of appointed members from the five supervisorial districts and two members at large. The General Services Agency provides staff support and facilities for the Board which meets monthly. Upon recommendation of the Cultural Heritage Board, the Board of Supervisors makes declarations of landmark status. Landmark status is granted to cultural resources, structures, natural features, and sites or areas of historic merit. The Board operates under the provisions of County Ordinance Nos. 2026, 2737, and 3568. The primary preservation tool at the disposal of the Cultural Heritage Board resides in a requirement that any site designated as an official County Landmark may not be altered or demolished without review by the Cultural Heritage Board. If an owner's application for a Certificate of Appropriateness is disapproved, the property owner is prohibited from taking action for 180 days from the date of the disapproval.

  The Cultural Heritage Board assesses landmarks and makes landmark declarations when any of the following "Criteria for Landmark Status" is met:

  1. Character, interest or value, regardless of age, is significant to the heritage of the community.
  2. A significant historical event occurred at the site.
  3. It is reminiscent of an early state of development.
  4. It is identified with a person who significantly contributed to the culture or development of the County, State or the Nation.
  5. It exemplifies a particular architectural style or way of life.
  6. It is the design or work of a person whose efforts have significantly influenced the heritage of the County.
  7. It demonstrates outstanding architectural design, detail, materials, or craftsmanship.
  8. Its preservation is essential to the integrity of another landmark.
  9. Its location or physical characteristics represent an established visual feature of a neighborhood.
  10. It has potential of yielding significant information of archaeological interest.
  11. It is a natural environment that strongly contributes to the well-being of the community.

1.8.4 Native American Resources

While unique cultural value may be attached to historic properties by several ethnic groups, the vested interests and rights of Native Americans receive special attention in the law. This special status derives from two factors. First, the vast majority of archaeological resources consists of the material remains of populations which are directly ancestral to contemporary Indian groups. In the case of Ventura County, for example, the genealogical links of local Chumash individuals and

families may, in many cases, be traced through the Mission records to specific villages and locations. The treatment of regional archaeological and historic sites which contain the cultural and/or human remains of ancestral populations, therefore, is an issue of deep religious concern and high emotional content. Second, the law provides special protections because Native American culture is a living tradition. That is, contemporary Chumash Indians share a distinct worldview and lifeway which has persisted through time to the present day. Resources important to Native Americans are those material and nonmaterial elements which affect the spiritual well-being of living peoples and which ensure the perpetuation of cultural traditions from present to future generations.

Native American cultural resources may be conceived of as having three primary components: (1) material cultural resources, or cultural properties, (2) nonmaterial cultural resources, and (3) cultural character. Cultural properties refer to tangible aspects of Native American cultures, that is, to regions, areas, features, sites, biota or other land-based resources which are of cultural value to contemporary peoples. These may include such diverse features as former settlements, aboriginal mineral quarries, oak groves, or traditional basketry plants. Nonmaterial cultural resources refer to intangible, spiritual qualities, essences, or beings which may be associated with features of the natural environment, as defined by traditional cosmologies. Such resources may include the sources of power attached to mountain peaks, ritual or ceremonial sites, burial grounds, rock art sites, sacred biota, springs, and ritual objects, where the significance and activity of the resource transcends its material manifestation or dwelling place. Finally, cultural character refers to those qualities of Native American communities which both define them as distinct from non-Indian population segments, and contribute to their persistence. Cultural character includes aspects such as social organization, meaning and cognitive systems, norms, customary behavior patterns, and religion and worldview.

1.8.4.1 Resources

The Ventureno Chumash, linguistically distinct from their neighbors, occupied most of Ventura County when first encountered by the Spanish. Cabrillo in 1542 and Vizcaino in 1602 made the initial contacts and may have had some early epidemiological impacts on the Chumash. However, not until the 1770's and 1780's did Spanish colonization and evangelization efforts begin to impact the established Chumash villages. These villages were sedentary affairs of several hundred persons, known to the Spanish as rancherias. They consisted of hemispherical houses, sweathouses, storehouses, a gaming area, a ceremonial enclosure, and at some remove, a cemetery.

The Chumash were patrilineal and had definite social distinctions based on wealth. Village political power was vested in inherited positions and in the 'antap cult leaders, whose ceremonial powers included typical shamanic elements. The Chumash of Ventura County were also great artisans, and their rock art in the interior region is considered outstanding.

When the Spanish arrived in 1782, an estimated 2,500 to 4,200 Ventureno Chumash lived in the County area. These estimates may be low, given the possibilities of prior population collapse from earlier European contacts. The Spanish intended to place their third Mission midway between Monterey and San Diego in what would become San Buenaventura. This changed; San Buenaventura became the Ninth Mission and lost its potential for Presidio status to Santa Barbara.

Following establishment of the San Buenaventura Mission in 1782, The Spanish Mission system functioned to replace the Chumash economic and social system with an agricultural and craft economy which, at its peak in the second decade of the 19th century, had already established the Ventura County region as a prime agricultural producer of such commodities as peas, apples, plums, figs, pomegranates and apricots. The Chumash retained small river bottom plots of corn, pumpkins and watermelons. This abundance was cut short by devastating epidemics in 1823-24 and 1827 and by the secularization of the Mission System in 1834. Twelve years after Mexico gained control of Alta California from the Spanish in 1846, the Mission was sold and became a part of the Arnaz Ranch, or Rancho Ex-Mission. In 1862, under American sovereignty, the Mission was repatriated to the Catholic Church.

1.8.4.2 Legislation

The legal basis for protection of Native American cultural resources and related concerns derives from varied and distinct legislation. Some of this legislation dates back to early treaties with individual Indian Nations while other legislation is as recent as the American Indian Religious Freedom Act of 1978. Unlike the historic preservation system, the Native American legislation has not yet been drawn together or systematically integrated.

Federal Legislation

Several types of federal mandates are relevant to the participation of contemporary Native American communities in cultural resource preservation programs. These include references in historic preservation and environmental laws, legislation specifically addressing religious freedom, in the special trust relationship existing between the Government and federally-recognized Indian tribes, and in any number of historic treaties. These will be discussed briefly.

In 36 CFR 800(a)1, consultation with Native Americans in the cultural resource inventory process is suggested. This section states, in part, that the agency shall consult:

> . . . individuals or organizations with historical and cultural expertise, as appropriate, to determine what historic and cultural properties are known to be within the area of the undertaking's potential environmental impact.

The direct participation of Native Americans in the inventory, impact assessment, and mitigation process is specifically noted in 36 CFR 800.1:

> Federal agencies and State Historic Preservation Officers should seek assistance from the public, including other Federal agencies, units of local and State government, public and private organizations, individuals and Federally recognized Indian tribes in evaluating National Register and eligible properties, determining effect and developing alternatives to avoid or mitigate an adverse effect. The public has considerable information available that could assist federal agencies and the State Historic Preservation Officer in meeting their responsibilities under these regulations.

National Environmental Policy Act (NEPA) - Direct Native American involvement in the NEPA process is cited in two Sections of the CEQA regulations. Section 1506.6 requires Agencies to "involve the public in preparing and implementing their NEPA procedures," and, in cases where environmental effects (as defined above) are of local concern, to give notice to the public. This includes "Notice To Indian Tribes When Effects May Occur On Reservations" [Section 1506.6(3)(ii)]. In addition, Section 1501.7(a)(1) requires that Native Americans be involved in the scoping process. The lead agency is instructed under this regulation to:

> Invite the participation of affected Federal, State, and local agencies, any affected Indian tribe, the proponent of the action, and other interested persons...

American Indian Religious Freedom Act - The American Indian Religious Freedom Act of 1978 declared it the policy of the United States "... to protect and preserve for American Indians their inherent right of freedom to believe, express and exercise the traditional religions of the American Indians, Eskimo, Aleut and Native Hawaiians. . ." The Resolution specifies the rights of access to sites, use and possession of sacred objects, and to the freedom to worship through ceremonial and traditional rites. The Act, then, protects a wide range of sites, materials and cultural activities.

The American Indian Religious Freedom Act (P.L. 95-341) concerns cultural resources as material objects in that it protects access to sacred sites and enables the use and possession of materials deemed sacred by tradition. However, this law also concerns cultural activities, such as the performance of traditional ceremonies and rituals which are essential to the preservation of Native American religious institutions and lifeways. The Religious Freedom Act thus makes a significant departure from historic preservation law in that it includes practices that contribute to cultural persistence.

Agencies are now required by law to ensure that their actions do not restrict or otherwise infringe upon the customs, ceremonies and traditions of Native American religions. As directed by the President, federal agencies were given one year to examine their policies and procedures, working with Native traditional and tribal leaders to assure that the interference and insensitivity of the past will not be repeated in future practice. To this end, a federal agency Task Force was established, and their final report submitted to Congress August, 1979 (American Indian Religious Freedom Act Report, P.L. 95-341, Federal Agencies Task Force, Department of Interior).

Treaties - Treaties have had relevance in environmental impact assessments in two primary ways: (1) they define aboriginal tribal territories in whole or in part, and hence the contemporary "spheres of influence" of Indian groups over ancestral resources, and (2) they sometimes provide the basis for litigation over the alleged "illegal taking" of land, and renewed Indian ownership claims. Such land claims are often accompanied by expressed concern for the sanctity of the aboriginal territory as a holy land.

In Ventura County, as in other areas of Southern California, the U.S. Government was a relative latecomer in terms of non-Indian settlement. Under the 1848 Treaty of Guadalupe Hidalgo with Mexico, the United States agreed to recognize and protect Indian title land and associated water rights. This obligation was effectively negated by the Act of March 3, 1851, which returned to the public domain all lands for which title claims failed to be presented to the Commissioners within two years. Section 16 of the Act directed the Commissioners to determine the tenure of land held by Indians and to forward this information to the Secretary of Interior, but this report was allegedly never prepared. On March 3, 1853, the title lands and associated water rights of the local Indians were extinguished without compensation and returned to the public domain. Land title claims were settled in Indians of California v. United States, Docket 31, et al., 8 Ind. Cl. Comm. 1 (1959), 13 Ind. Cl. Comm. 369 (1964).

California Legislation

Two separate pieces of legislation have been passed in California which recognize traditional Native American cosmologies as part of an ongoing cultural tradition, and provide protection for places, resources, and ritual activities considered sacred by contemporary Indians.

Native American Historical, Cultural, and Sacred Sites: In 1976, Section 5097.9 of the Public Resources Code took what was at the time a bold step in prohibiting interference with the free expression of Native American religions by any public agency or contracted private party on public land, and by similarly prohibiting the disturbance of any Native American cemetery or sacred site by such parties on public land. Significantly, this State law preceded the Federal American Indian Religious Freedom Act by some two years. This same legislation also established the Native American Heritage Commission, a body composed of nine members (five of which must be traditional elders or spiritual leaders nominated by California Indian tribes) and an Executive Secretary, appointed by the Governor. The Commission, which remains in active status, is charged with a variety of powers and duties relating primarily to the inventory, treatment, and preservation of Native American burial sites and other sacred areas, and to religious freedom issues arising out of access to religious and spiritual areas and resources. The code directs State and local agencies to cooperate with the Commission, and empowers the Commission to conduct investigations of proposed actions by public agencies.

California State Senate Bill 297: Passed in 1982, this bill provides protection for American Indian burials and associated items, and empowers the Native American Heritage Commission to catalogue existing burials and to resolve disputes relating to the treatment and disposition of Indian burials and grave goods. Importantly, SB 297 has been incorporated into the CEQA Appendix K guidelines for assessing cultural resource impacts.

1.8.5 Conclusions

A variety of approaches may be utilized by Ventura County in efforts to preserve and protect our paleontological and cultural resources. These approaches include fundamental resource management tools: inventory, assessment and mitigation. As with any fragile resource, the more we are aware of its nature, the better prepared we are to deal in an effective and enlightened way with it. The following findings and recommendations present possibilities for a comprehensive resource management approach to these issues.

1.8.5.1 Paleontological Resources

Paleontological resources could be protected and preserved in much the same manner as any scarce, non-renewable natural resource. Ventura County is fortunate in that the County contains numerous and unique fossilized life forms spanning most of geologic history in which life has been present. Because of this, the County should take stock of this resource base and act to protect it within the reasonable guidelines pertaining to all such resources. To this end, the Resource Management Agency could:

- Inventory and map all fossil bearing formations, outcrops, and sites with the assistance of qualified professionals in the paleontological and historic geology fields;
- Assess the significance of paleontological sites and determine direct and indirect impacts resulting from discretionary development requests; and
- Develop mitigation measures to minimize or eliminate negative impacts upon these resources, as determined by professionals in this field.

  In addition, the Resource Management Agency has developed a roster of qualified paleontological consultants. When utilized, these consultants are charged with determining impact significance with respect to CEQA Guidelines for non-renewable natural resources, and help determine appropriate mitigation measures with respect to protection, preservation or utilization of subject paleontological resources.

1.8.5.2 Cultural Resources

With regard to *cultural resources* (archaeological, historical and Native American issues), an important area of concern involves the prehistoric and historic data base in the form of sites, components, and artifacts, which are both perishable over time and, to some extent, destroyed during the course of excavation or restoration. For example, in the restoration of an historical property, such as the Faulkner House near Santa Paula, our knowledge of the original interior colors would be destroyed if inadequate analysis was performed prior to repainting. In this light, therefore, it is important that every effort be made to recover data as completely as possible. The preservation and protection of these resources for their scientific, educational and cultural values is important for this reason. This requires that an adequate data base be acquired and maintained by Ventura County and that existing cultural resources be monitored on a continuous basis. The County Planning Division has responsibility with regard to developing standard methodologies and assessment procedures for prehistoric cultural resources, historic archaeology, Native American concerns, and historic preservation sites and issues. Similarly, the data base and monitoring responsibilities for archaeological, Native American and historic resources is maintained by the Planning Division. In all cases, where discretionary development is proposed, the Planning Division retains review functions with regard to all cultural resource entities.

There is a need for cooperation among the County, the cities, special districts and other appropriate agencies and organizations, and with private land owners, in acknowledging and preserving cultural resources. To this end, over and above the various requirements of the California Environmental Quality Act, there needs to be assessment of the functions of the various entities involved and, to some extent, a centralized informational clearinghouse function established at the County level. In addition, a more active cooperative role could be assumed at the County level between the three "Chumash" counties of Santa Barbara, San Luis Obispo and Ventura, since the research problems and archaeological data base are similar. Currently, the

University of California, Los Angeles (UCLA), acts as Clearinghouse for archaeological data for Ventura County, while the University of California, Santa Barbara assumes the Clearinghouse role for the other two "Chumash" counties. This confusion in data repository institutions needs correction with the recommendation that Clearinghouse functions be either: 1) transferred to the University of California, Santa Barbara facility; or 2) transferred, when appropriate, to the University Center at Ventura. The latter option is not feasible until both a permanent campus is selected and built and a qualified Anthropology-Archaeology department is staffed. In the interim, a working relationship with UCLA is desirable and should focus on sharing of data and, where appropriate, literature reviews and record searches through UCLA Archaeological Survey staff. In addition, Ventura County Historical Museum staff and Ventura County Archaeological Society members should be consulted regarding potential site impacts when evaluating discretionary development requests.

CEQA requires site impact avoidance, project redesign, or adequate mitigation for unavoidable impacts with regard to any discretionary development. In addition, mitigation follows guidelines established by the State Office of Historic Preservation (SHPO) and the Native American Heritage Commission. Although these issues are fairly self-evident, in the case of Native American resources, we need to turn to the Native American Heritage Commission for guidelines, which read in part:

> All public agencies and government authorities initiating or approving a project or undertaking are legally obligated..... to coordinate compliance with federal and state environmental law and policy (regarding) the identification and protection of those places and values which have special heritage, religious, or social significance to contemporary California Native Americans.

This advisory document specifies what categories of cultural resources with heritage significance to Native Americans should be considered in the planning process. These include: (1) burial places and cemeteries, (2) heritage sites which are identifiable as archaeological deposits, (3) places of spiritual or social importance, such as prayer sites, ceremonial sites and shrines, areas important in legend or folklore, or areas attributed with special power or sacredness, and (4) native plants and animals used in traditional hunting, gathering, or curing practices.

This legislation also requires the County Coroner to notify the Commission of the discovery of Indian skeletal remains, and further, makes it illegal for private individuals to possess Native American remains or burial goods removed after January 1, 1984.

The issue of destruction or vandalism of archaeological or cultural sites requires that the County strictly limit public access to site records and prohibit publication of site locational data. However, Section 1364-4 of the Ventura County Ordinance Code requires that archaeological site inventories be made available to the public. This requirement precludes the development of a Countywide archaeological inventory, since such data must remain necessarily confidential to avoid destruction by looting. This inconsistency between General Plan policy and Ordinance requirements should be addressed by amending the Ordinance Code to require strict confidentiality of archaeological site locational data. With this alteration of Ordinance requirements, development of a Countywide archaeological inventory and data base may proceed.

In addition, the Planning Division needs to identify any properties likely to be protected by historic preservation legislation during the project review process. Such sites should be evaluated for potential architectural or historical significance and forwarded to the Ventura County Cultural Heritage Board for evaluation and possible nomination to the National Register of Historic Places. National Register nominations also cover prehistoric sites and locations of sufficient significance. Currently, National Register nominations are coordinated by the individual consultants working on particular projects. This system requires that Planning Division staff have sufficient awareness of cultural resource issues to require that nomination papers for all eligible archaeological and historic sites associated with a particular discretionary development be submitted. Project conditions should require the nomination process be carried out whenever warranted with costs borne by the project applicant.

Finally, with respect to all historic preservation issues, the Historic Preservation Element Guidelines (Governor's Office of Planning and Research, September 1976) suggest that in the area of Land Use, the County should:

"1. Recognize landmarks and historic districts, existing and potential, as a special category of land use and should establish, as policy, rezoning historic property to be consistent with use or appropriate potential use;

2. Call for zoning incentives, when downzoning is impossible, to encourage developments that incorporate historic properties into projects or adapt them to new use without damaging the integrity of those properties;

3. Initiate a program to mitigate the detrimental effects of incompatible land use surrounding cultural resources;

4. Encourage adaptive reuse of historic structures when change of use is the only alternative to destruction;

5. State, as policy, that public entities have an obligation to respect the cultural integrity of site, structures, or objects they maintain or occupy;"

In the area of transportation and public works projects the County could:

1. Call for study of proposed street improvements from freeway routing and street widenings to the replacement of street furniture or landscaping, to resolve potential damage or insensitivity to the site or context of cultural resources;

2. Establish as policy the retention of existing historic vegetation, mature street trees or public landscaping of cultural significance;

3. Take steps to avoid introducing excessive traffic into historic area and to correct situations where this is already the case;

4. Develop enhancement techniques to be applied in historic areas with weak streetscape support.

With regard to housing policy, the County could:

1. Reaffirm that historic preservation is a catalyst for neighborhood improvement and community conservation and need not result in any displacement of existing residents;

2. Underline the importance of historic preservation as a strategy for reuse of the existing housing, stressing the advantages of better construction, larger spaces, and greater livability of older homes;

3. Ensure that rehabilitation programs be carried out without damaging the integrity of historic structures by inappropriate alterations;

4. Provide that new housing in historic areas be used as infill and that it complement historic structures;

5. Call for the development of criteria to guide new construction into a form and style compatible with the existing context;

6. Modify code enforcement programs so that code compliance does not conflict with the intent of historic preservation.

In the related areas of conservation and open space planning, the County could try to:

1. Link natural and manmade resources as complementary and vital scarce resources;

2. Insist that, in the management, development, and utilization of natural resources, protection of cultural resources will be given first priority.

3. Direct programs for the protection of existing open space and/or acquisition of new open space to locations most closely related to identified cultural properties to provide buffer space and to preserve historic settings;
4. Affirm the indivisible relationship of both open space and cultural properties as limited resources necessary to the well-being of the community;
5. Provide for the protection of archaeological sites or fragile historic sites by placing them within open space classifications.

And finally, in the areas of seismic safety, noise and safety planning, the County could:

1. Call for review of seismic safety standards in order to prevent unnecessary alteration of the historic or design integrity of older buildings and districts;
2. Recommend that alternative codes for historic structures be developed and utilized when possible and practicable, and that the State Historic Building Code, when issued, be adopted as local policy;
3. Consider adoption of ordinances to minimize the danger of falling objects such as parapets;
4. Coordinate with a base map of cultural resources so that the scenic beauty intent of the element does not damage the livability of historic areas by causing traffic overloads;
5. Coordinate scenic easement acquisitions and development controls with the locations and design criteria of historic properties;
6. Adapt safety standards to sensitize these standards and their effect on the integrity of historic sites and structures;
7. Study and coordinate the location of public safety facilities in conjunction with the intent of Historic Preservation."

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Figure 1.8.1
Archaeological Sensitivity Map (South Half)

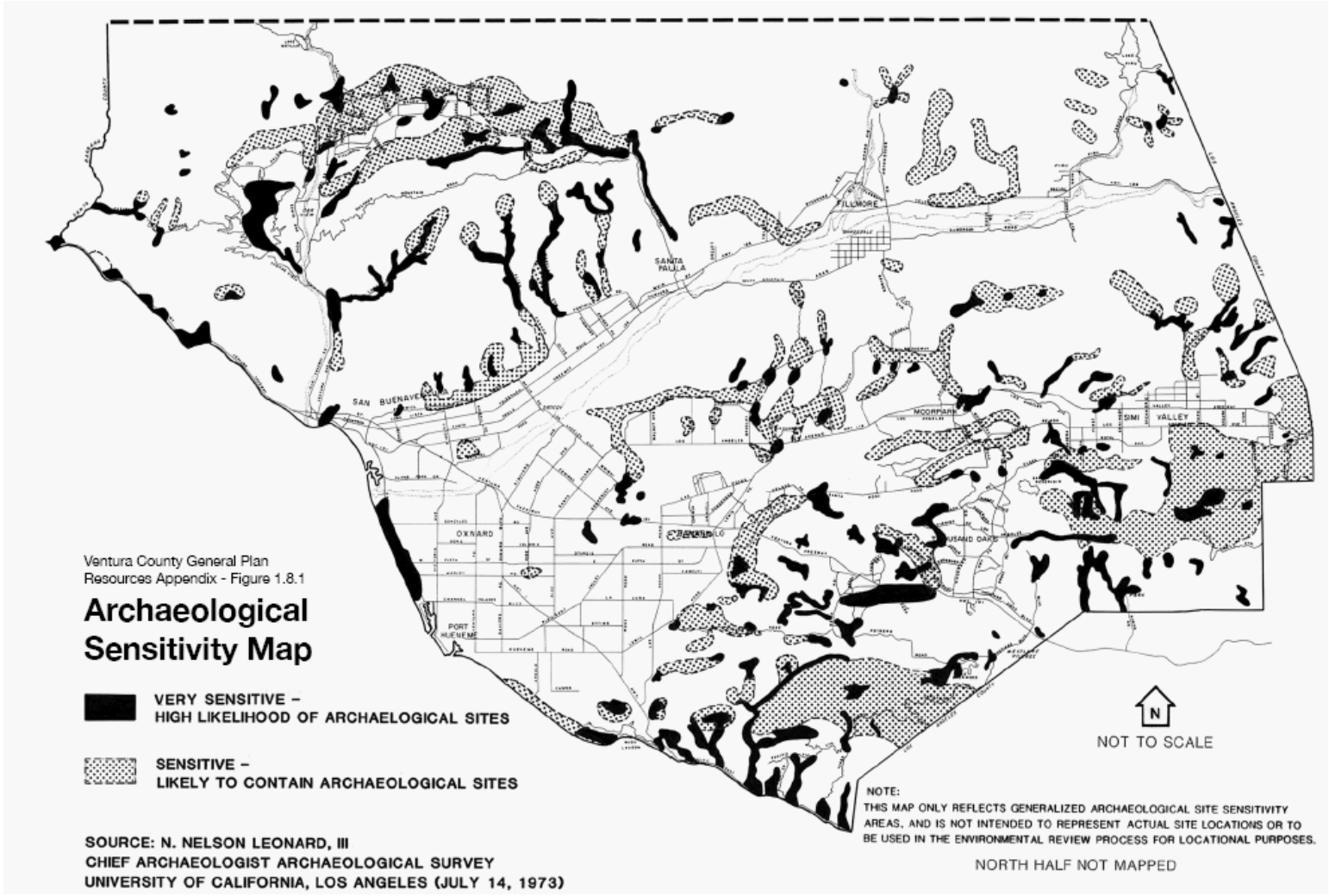

Figure 1.8.2
Ventura County Historical Landmarks (Table)

Landmark No.	Site Name	Location	Declaration Date	Notes
1.	Faulkner Home	Telegraph Rd., Santa Paula	8/5/68	(a)
2.	Designation rescinded (formerly Edwards Abode, Saticoy)		12/13/77	
3.	Eucalyptus Trees	Hwy. 101 East of Camarillo, Camarillo	10/2/78	
4.	Cook's Mansion (aka Piru Mansion)	No. Part St., Piru	1/20/69	(b)
5.	Rancho Arnaz Abode	9504 No. Ventura Ave., Oak View	1/20/69	(a)
6.*	De la Guerra Adobe (aka Strathearn's Home)	Strathearn Historical Park, 137 Strathearn Pl., Simi Valley,	1/20/69	*Placed on National Register, 3/3/78
7.	Sanchez Adobe	Saticoy	4/21/69	(a)
8.	Camarillo Home	Mission Oaks Blvd., Camarillo	4/21/69	(a)
9.*	Santa Clara "Little Red" Schoolhouse	East of Santa Paula	4/21/69	(b)
10.	De la Guerra Abode Ruins	Tapo Canyon, Simi Valley	12/14/70	(b)
11.	Site of Santa Gertrudis Asistencia Chapel Foundation Stones	Off Hwy. 33, North Ventura	12/70	
12.*	Ventura County Courthouse (currently San Buenaventura City Hall)	501 Poli St., Ventura	12/14/70	(c) State Historical Landmark No. 847 *Placed on National Register, 8/19/71
13.*	Oxnard Carnegie Library (aka Oxnard Public Library, currently serves as the Carnegie Cultural Arts Center)	424 South C St., Oxnard	2/3/71	*Placed on National Register, 7/27/71
14.	Point Mugu Recreation Area/State Park	Highway 1, Point Mugu	2/3/71	
15.	Naumann Giant Gum Tree and Eucalyptus Grove	700' east of intersection of Pleasant Valley Rd. and Etting Rd., Oxnard	6/7/71	
16.	Sugar Beet Factory Site	Bordered by Wooley Rd. on south, Industrial Ave. on east, Driffill (warehouse) Blvd. on north and Factory Land on west, Oxnard	6/7/70	
17.	The Pagoda	In center of Oxnard Plaza Park at Fifth St. between B and C Sts., Oxnard	6/7/71	
18.	Japanese Cemetery	East of junction of Etting Rd. and Pleasant Valley Rd., Oxnard	6/7/71	
19.	Port Hueneme Improvement Club	239 Scott St., Port Hueneme	11/15/71	
20.	Bard Memorial	West side of Ventura Rd. at Park Ave., Port Hueneme	11/71	
21.	Reyes Adobe	Located north of Ojai in the Lockwood Valley (two miles from Route 33)	11/15/71	(a)

FOOTNOTES

(a) Private ownership. Do not disturb. Address is confidential.

(b) Private ownership. Shown by appointment only. Owner prefers that street address not be published. (Address is on file at Offices of General Services Agency.)

(c) State of California Historical Landmark.

*** Listed on the National Register of Historic Places.**

Figure 1.8.2, cont'd.

Landmark No.	Site Name	Location	Declaration Date	Notes
22.	Saint Mary Magdalen Church	2532 E. Ventura Blvd. (chapel in front of St. Mary Magdalen School), Camarillo	4/3/72	
23.	The Southern Pacific Railroad Depot	963 E. Santa Barbara St., (Northwest corner of Tenth St. and Santa Barbara St.), Santa Paula	4/3/72	
24.	The Site of the Original Hueneme Wharf	Southwest corner of Port Hueneme Rd. and Seaview St., Port Hueneme	4/3/72	
25.	Matilija Hot Springs	Approximately seven miles northwest of Ojai on Route 33 near Matilija Lake, Ojai	8/7/72	
26.	Post Office Tower and Portico	Southeast corner of Ojai and Signal Sts., Ojai	6/30/75	
27.	Libbey Park Bowl Sycamore	Libbey Park, Ojai	6/30/75	
28.*	Mission Aqueduct (aka San Buenaventura Aqueduct)	off Canada Larga Rd., Ventura	1/6/76	(b) *Placed on National Register, 3/7/75
29.	Santa Susana Southern Pacific Railroad Depot	6503 Katherine Rd. (north edge of Santa Susana Park), Simi Valley	1/6/76	
30.*	The Stagecoach Inn (aka Grand Union Hotel)	51 So. Ventu Park Rd., Newbury Park (near Landmark No. 44)	5/30/76	(c) State Historical Landmark No. 659 *Placed on National Register, 12/30/75
31.*	Bard Home (aka Berylwood, aka The Thomas Bard Estate)	On Guadalcanal at Bard Lane, U.S. Naval Construction Battalion Center, Port Hueneme	11/22/76	(b) *Placed on National Register, 9/15/77
32.	Hueneme Bank Building (aka Port Hueneme Historical Museum)	220 No. Market St., Port Hueneme	11/22/76	
33.	Keene Home	Bell Way, Ventura	1/3/77	(b)
34.	Foster Park Lion Entrance Markers	438 Casitas Vista Rd., Foster Park, Ventura	1/3/77	
35.	W. L. Hardison Home	Ojai Ave., Santa Paula	12/5/77	(b)
36.	First Union Oil Company Building (aka California Oil Museum)	1003 E. Main St., Santa Paula	12/5/77	
37.	Former Port Hueneme Slough	Part of Moranda Park, bordered by Santa Cruz St., Ventura County Railroad, Avalon St. and Flood Control, Port Hueneme	11/23/77	
38.	Universalist Unitarian Church	740 E. Main St., Santa Paula	2/6/78	(b)
39.	Mill Park	Hwy. 150 (west side) at Bedford Street, Santa Paula	8/7/78	
40.	Original Simi Library Building	137 Strathearn Place, Strathearn Historical Park, Simi Valley	3/6/78	

FOOTNOTES

(a) Private ownership. Do not disturb. Address is confidential.

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Figure 1.8.2, cont'd.

Landmark No.	Site Name	Location	Declaration Date	Notes
41.*	Haigh-Talley Colony House	137 Strathearn Place, Strathearn Historical Park, Simi Valley,	3/6/78	*Placed on National Register, 9/18/78
42.	Tapo Citrus Association Packing House Site (Current site of new Civic Center)	3855 Alamo St., Simi Valley	3/6/78	
43.	The Hill Ranch Brick Cistern	Wildwood Park, Thousand Oaks	5/1/78	(a)
44.	Sycamore Tree (near Stagecoach Inn)	51. So. Ventu Park Rd., Newbury Park (Near Landmark No. 30)	5/1/78	
45.	Pederson House and Water Tower	On campus of California Lutheran College, Memorial Parkway/Pioneer Ave., Thousand Oaks	5/1/78	(b)
46.	The Tanner (Linville) Homestead	E. Telegraph Rd., Santa Paula	8/15/78	(b)
47.	Bank of A. Levy (aka Fillmore State Bank)	316 Central Ave., Fillmore	5/8/79	
48.	Fillmore Historical Museum (aka Southern Pacific Depot)	447 Main St., Fillmore	5/18/79	
49.	Trinity Episcopal Church	608 Saratoga St., Fillmore	5/8/79	(b)
50.	Bardsdale Methodist Church	1498 Bardsdale Ave., Fillmore	4/24/79	(b)
51.	Piru Methodist Church and Organ	227 Center St., Piru	4/24/79	(b)
52.	Grandma Prisbrey's Bottle Village	4595 Cochran St., Simi Valley	6/5/79	(c) (Closed to public until renovations are complete)
53.	Brandeis Institute's The House of the Book	1101 No. Pepper Tree Lane, Simi Valley	5/29/79	(b)
54.	Teague Mansion and Originally Developed Grounds	McKevette Heights Rd., Santa Paula	11/5/79	(a)
55.	Moorpark First Baptist Southern Church (formerly Epworth and Simi Churches)	702 Walnut, Moorpark	10/23/79	(b)
56.	Bank of A. Levy	143 W. Fifth St., Oxnard	11/6/69	
57.	Port Hueneme Lightworks (light beam fixture in the lighthouse)	Port Hueneme	1980	
58.	Arundell House	Pole Creek Canyon, Fillmore	7/29/80	(a)
59.	Artists' Barn and Surrounding Grounds, Including 100-Year Old Pepper Tree	Bard St., Fillmore	7/8/80	(a)
60.	Community Church of Fillmore (formerly the Church of Christ Scientist)	461 Third St., Fillmore	7/8/80	(b)
61.	Odd Fellows' Clock (aka The Town Clock)	Main St. at Davis St., Santa Paula	7/7/80	(b)
62.	Ojai Historical Museum (formerly County Fire Station No. 21)	So. Montgomery St., Ojai	9/9/80	
63.	Jungleland Site	Conejo School Rd. and Thousand Oaks Blvd., Thousand Oaks	3/3/81	
64.	Hunt Olive Tree	Hillcrest Dr. and Lynn Rd., Thousand Oaks	1/25/82	

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Figure 1.8.2, cont'd.

Landmark No.	Site Name	Location	Declaration Date	Notes
65.*	The Glen Tavern	134 No. Mill St., Santa Paula	7/6/81	*Placed on National Register, 7/26/84
66.	Saint Rose of Lima Catholic Church	Corner Third and Pacific Sts., (southwest corner), Simi Valley	6/22/81	(b)
67.	Simi Valley Community Methodist Church	3050 Los Angeles Ave., Simi Valley	7/27/81	(b)
68.	The Main House, Brandeis/Bardin Institute	1101 Peppertree Lane, Simi Valley	7/14/81	(b)
69.	The Mill	212 No. Mill St., Santa Paula	5/3/82	
70.	Church of Religious Science (formerly the Church of Christ Scientist)	200 South D St., Oxnard	3/3/82	
71.	Patterson Ranch Buildings	Bennett Rd., Simi Valley	7/14/81	(a)
72.	High Street Pepper Trees	High St., Moorpark	10/20/81	
73.	Declaration refused by owner (Santa Clara Catholic Church in Oxnard was the proposed landmark)			
74.	Henry Levy House	155 So. G St., Oxnard	3/1/82	(a)
75.	Achille Levy House	201 So. D St., Oxnard	3/1/82	(a)
76.	Ebell Club (aka Santa Paula Women's Club)	125 So. Seventh St., Santa Paula	5/3/82	(b)
77.	Teague House	E. Santa Paula St., Santa Paula	7/12/82	(a)
78.	Underwood House	Santa Paula St., Santa Paula	5/3/82	(b)
79.	Moreton Bay Fig Tree	Santa Barbara and Tenth Sts., Santa Paula	7/12/82	
80.	Rice House	Yale St., Santa Paula	7/12/82	(a)
81.	First Christian Church	829 Railroad Ave., Santa Paula	7/12/82	(b)
82.	Balcom House	Pleasant St., Santa Paula	7/12/82	(a)
83.	Baker House	E. Main St., Santa Paula	7/12/82	(a)
84.	Anna M. Logan House	No. Mill St., Santa Paula	7/12/82	(a)
85.	Declaration refused by owner (Whiteside House and Barn in Thousand Oaks was the proposed landmark)			
86.	Maranda Home (aka Fred Gerberding Home)	No. Third St., Port Hueneme	10/4/82	(a)
87.	Farrell Home	Naval Construction Battalion Center, Port Hueneme	10/4/82	(b)
88.	Richard Bard Home	Naval Construction Battalion Center, Port Hueneme	10/4/82	(b)
89.	Chumash Wilderness Park	"Indian Hills", Simi Valley	12/6/82	(b)
90.	Oakbrook Regional Park Archaeological District	Thousand Oaks	2/7/83	(b)

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Figure 1.8.2, cont'd.

Landmark No.	Site Name	Location	Declaration Date	Notes
91.	Chumash Village of Shimiji	137 Strathearn Pl., Strathearn Historical Park, Simi Valley	5/9/83	
92.	Ramello-Willett House (currently known as Rose Holme, a resort bed and breakfast)	Sulphur Mountain Rd., Ventura	6/6/83	(b)
93.	Wood Ranch Barns	863 Madera Rd., Strathearn Historical Park, Simi Valley	6/6/83	
94.	Lathrop Camp (aka Rainbow Valley Ranch, aka Circle B Ranch, aka Hotel Sespe)	19737 Rainbow Valley Road, (on the Upper Sespe 3 miles east of Hwy. 33 on the Rose Valley, Piedra Blanca Rd. and 2 miles north of that road), Ojai	7/31/84	(b)
95.	Pratt House, Ojai	Foothill Rd., Ojai	11/26/85	
96.	Dent House, Ojai	4101 Matilija Canyon Road, Ojai	9/10/85	
97.	Santa Paula High School, Santa Paula	404 North Sixth Street, Santa Paula	2/19/86	
98.*	Wiltfong Home, Port Hueneme	309 N. Second Street Port Hueneme		*Recommended by CHB but pending approval by City of Port Hueneme
99.	Dos Vientos Ranch Buildings, Newbury Park	West Potrero Road, Newbury Park (pending annexation to Thousand Oaks)	5/6/86	
100.	Justin Petit Family Home, Oxnard	1894 Wooley Road, Oxnard	4/8/86	
101.	Piru Train Bridge	Piru Creek, Piru	6/24/86	
102.	Sacred Heart Mission Church	Wells Road and Sixth Street, Saticoy	6/24/86	
103.	Whale Rock Ranch	2116 & 2114 McNell Road, Ojai	9/9/86	
104.	Stagecoach Road	The approach to the east end of Smith Road from Kuehner/Santa Susana Rd., Simi Valley	10/21/86	
105.	Freight Road	The approach to the east end of Smith Road from Kuehner/Santa Susana Rd., Simi Valley	10/14/86	
106.	Mt. McCoy and Cross	A small portion of Parcel No. 500-400-13, the crown of Verde Hill, Simi Valley	10/14/86	
107.	Montgomery Home	182 Highland Avenue, Simi Valley	12/15/86	
108.	King Home	1420 Grimes Canyon Road, Fillmore	10/21/86	
109.	Crowley House	2224 Pleasant Way, Thousand Oaks	12/16/86	
110.	Five Trees	Hills overlooking Ventura	01/20/87	
111.	McKevett School	955 East Pleasant Street, Santa Paula, CA 93060	05/87	
112.	Janss House	482 Greenmeadow Dr., Thousand Oaks	7/87	
113.	Sheldon House	701 E. Santa Paula Blvd., Santa Paula	9/87	
114.	Sharp House	11840 W. Telegraph Rd., Santa Paula	10/87	
115.	Hueneme Elementary School	344 N. 3rd St., Port Hueneme	9/87	
116.	Whiteside House & Barn	1388 W. Portrero Rd., Thousand Oaks	10/87	

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Figure 1.8.2, cont'd.

Landmark No.	Site Name	Location	Declaration Date	Notes
117.	Walnut Growers Assn. Warehouse	1235-55 E. Wells Rd., Saticoy	6/88	
118.	Saticoy Bean Warehouse	10995 Azahar St., Saticoy	5/88	(b)
119.	Farmers & Merchants Bank	1203 Los Angeles Ave., Saticoy	6/88	
120.	Lake Eleanor Dam	Eleanor Creek, S. Westlake Bl., Thousand Oaks	5/88	
121.	Foster Bowl	438 Casitas Vista Rd. (Foster Park), Ventura	11/88	
122.	Palm Trees on Chambersburg Road	South of Guiberson Rd., Fillmore	12/88	
123.	Sanitary Dairy	1680-86 Old Telegraph Rd., Fillmore	2/89	
124.	Piru Hotel	691 N. Main St., Piru	3/89	
125.	Lechler Residence/Museum	3886 Market St., Piru	6/89	
126.	The Hall Ranch	11999 Ojai-Santa Paula Rd., Ojai	9/89	
127.	Pioneer Section, Simi Public Cemetery	1461 Thompson Ln., Simi Valley	1/90	
128.	Pending			
129.	Masonic Temple	402 Central Ave., Fillmore	6/90	
130.	Farmers & Merchants Bank	364 Central Ave., Fillmore	4/90	
131.	Sespe School	627 Sespe Ave., Fillmore	4/90	
132.	Familia Diaz Cafe	249 S. 10th St., Santa Paula	10/90	
133.	Pending			
134.	Grant Coast Live Oak	West of Peppertree Ln., South of Arroyo Simi, Simi Valley	8/90	
135.	Pending			
136.	Pending			
137.	Palm Trees Along Alamo Street	Between Sycamore Dr. & Tapo Canyon Rd., Simi Valley	8/90	
138.	Sycamore Tree, Wood Ranch Parkway	In Center Divider, South of Martha Morrison Rd., Simi Valley	8/90	
139.	Simi Elementary School & Bungalows	2956 School St., Simi Valley	8/90	
140.	Scott/Cameron House & Olive Tree	2043 Royal Ave., Simi Valley	8/90	
VENTURA COUNTY DECLARED POINTS OF INTEREST				
1.	Hopetown Movie Ranch (historically known as "Corriganville")	1601 Keuhner Dr., Simi Valley	1/19/82	
2.	Old Butterfield Grade	Summit of the grade is located approximately one half to one mile south of point on Moorpark-Santa Rosa Rd., about 2 to 3 miles from intersection of Moorpark and Olsen Roads.	1/4/82	

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Figure 1.8.2, cont'd.

Landmark No.	Site Name	Location	Declaration Date	Notes
3.	Port Hueneme Insectary Site	Bounded by Scott St. on the north, Fifth St. on the east and Port Hueneme Rd. on the south, Port Hueneme	5/20/85	
4.	Santa Rosa School Site and School Bell	Santa Rosa Road Camarillo, CA	2/24/87	
5.	Original Hueneme Grammar School Site	344 N. 3rd St., Port Hueneme	1/88	
6.	Saticoy Springs & Chumash Indian Village, Sa'aqtik'oy Site	Telephone Rd. & Saticoy Ave., Saticoy	5/88	
7.	Simi School/Library/Ortega Saloon Site	1958 3rd St., Simi Valley	6/89	
8.	The Original Santa Clara Chapel Site	Sears Building, Esplanade Mall, 301 Esplanade Dr., Oxnard	11/89	

R. 12/10/91

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1.9 Energy Resources

According to California General Plan Guidelines, 1980: "There is little question that the United States has an energy problem. The growing scarcity of traditional energy sources and the actions of the oil- producing and exporting countries have driven the price of oil, natural gas, and electricity rapidly upward. Price is the barometer to which consumers and governments are most sensitive. With the price of natural gas, electricity, and gasoline rising much faster than the rate in inflation, energy claims a bigger and bigger share of household and government budgets. Conservation, in this context, becomes not just an obligation, but an economic necessity. Because conserving energy now costs far less than purchasing it, measures to achieve conservation can reduce present costs and keep future costs down. Planning now for efficient buildings, land use, and transportation patterns is the best hedge against an uncertain and expensive energy future."

Statewide energy consumption patterns are reflected in the table below.

Figure 1.9.1
California Energy - Source/Use (Table)

Use of Primary Energy Sources and Electricity by Sector and Percent of Total Supply in 1977				
	Transportation	**Residential**	**Non-Residential**	**Total**
Petroleum	41%	19%	2%	62%
Natural Gas	*	15%	11%	26%
Electricity	*	8%	4%	12%
Total	41%	42%	17%	100%

*negligible

Source: "Energy Choices for California... Looking Ahead" Introduction to the 1979 Biennial Report of the California Energy Commission, March 1979, in California General Plan Guidelines, 1980.

The following sections discuss energy use and energy conservation.

1.9.1 Energy Use

Ventura County relies primarily on an interrelated energy system. Electricity and natural gas are the primary forms of household energy while petroleum fuels are the primary energy source for most modes of transportation. The utilization of each of these energy sources raises energy resource availability, environmental and conservation issues.

Electricity in Ventura County is supplied by the Southern California Edison Company. Edison's principal sources are the Mandalay and Ormond Beach Generating Stations. These power plants burn oil and gas primarily from local off-shore wells.

Edison's distribution of electricity (for the entire service area) is shown in the table below.

Figure 1.9.2 - Electricity Use by Class of Service, 1986 (Table)

Class of Service	% of	Kilowatt-hours (in Millions)		%
	1986 total	1986	1985	Change
Commercial	31.4	20,145	19,111	5.4
Residential	29.2	18,767	18,583	1.0
Industrial	24.3	15,588	15,707	(0.8)
Public Authorities	7.9	5,078	4,885	3.9
Agricultural/Others	1.3	853	1,016	(16.0)
Total Retail Sales	94.1	60,431	59,302	1.9
Resale to Cities	4.4	2,789	3,875	(28.0)
Sales to Other Utilities	1.5	977	1,808	(46.0)
Total Other Sales	5.9	3,766	5,683	(33.7)
Grand Total	100.0	64,197	64,985	(1.2)

Source: Southern California Edison, 1986 Annual Report.

The County's petroleum resources are discussed in Section 1.4, Mineral Resources. Two uranium deposits have been located in the Los Padres National Forest, but have never been developed. The Sespe Hot Springs and vicinity along Sespe Creek, with seven thermal springs identified, is considered a Federal Geothermal Resource Area.

The Statewide distribution of petroleum use is shown in the table below.

Figure 1.9.3 - California Petroleum Use: 1984 (Table)

Motor Gasoline	40%
Diesel Fuel	10%
Aviation Fuels	11%
Residual Fuels (Marine)	13%
Total Transportation Uses	74%
Industrial	24%
Commercial	1%
Electric Power Plants	1%
Total Other Uses	26%

Source: Save Energy No. 17 (1987), California Energy Extension Service

1.9.2 Energy Conservation

Energy conservation offers a low cost means of forestalling costly development of new energy resources. Energy conservation often offers the ancillary benefits of decreasing pollution and waste production and reducing road congestion.

Energy conservation measures may be divided into three main categories:

- Automobile use reduction
- Energy consumption reduction
- Utilization of alternative energy sources

Automobile use reduction can be achieved through efficient land use planning to reduce the distances between home-work-shopping-recreation and reducing the need for individual automobile use. Providing means of alternative transportation such as public transit, bicycle paths and carpooling is another avenue of energy conservation.

Energy consumption reduction involves tactics such as energy efficient appliances, extra insulation of buildings, smaller cars, waste recycling, and design of projects and buildings to minimize need for heating, cooling and lighting (including decreasing "heat sinks" by decreasing parking lot and street size and planting landscaping).

Alternative energy use includes solar, wind, hydroelectric and geothermal energy, biomass conversion and cogeneration/waste heat reuse. Use of solar lighting and heating is easily incorporated into building design. Large scale commercial use of solar, wind and geothermal energy to generate electricity is currently being pursued throughout the State.

Cogeneration/waste heat reuse is presently being used in small and large industrial projects.

1.9.3 Conclusions

- Conservation of nonrenewable energy sources is a local, state and national goal.
- Energy can be conserved through automobile use reduction, energy consumption reduction and alternative energy use. County goals, policies and programs should call for energy conservation in land use and development and in public facilities.

References:

Governor's Office of Planning and Research, General Plan Guidelines, 1980 and 1987.

Governor's Office of Planning and Research, Save Energy, 1987.

Southern California Edison Company, 1986 Annual Report.

1.10 Coastal Beaches and Dunes

This section discusses beaches and dunes as a resource worthy of conservation. The value of beaches and dunes is described, followed by a discussion of beach formation and degradation. Section 2.11 of the Hazards Chapter deals with Coastal Wave and Beach Erosion, a phenomenon which is often a consequence of failure to conserve beach and dune resources.

1.10.1 Value of Beaches and Dunes

The majority of the Ventura County coastline is sheathed in a protective belt of sandy beach. Beaches and dunes form a protective buffer from the processes of storm and wave erosion. Due to their non-rigid nature, beaches and dunes dissipate energy yet incur little damage. Naturally occurring buffer zones (such as coastal sand dunes) are generally much more effective at reducing wave damage and protecting the coastline than are man-made protective devices (Department of Navigation and Ocean Development, 1979).

In addition to their protective properties, beaches have significant value as a recreation resource. Numerous State, County, city and private beaches are located up and down the coast (see Sec. 4.10, Public Facilities and Services Appendix) and are used extensively by County residents and tourists alike. Ventura County also offers some of the best surfing areas in Southern California. Surf breaks are dependent on maintenance of sandy beaches and several have been lost due to beach degradation.

Beaches and dunes also provide habitat for a wide variety of flora and fauna, many of which are not found elsewhere. In addition to protecting man-made developments, dunes protect coastal salt marshes and wetlands. Dunes provide a nesting habitat for the snowy plover and the California least tern, (a Federal endangered species) and provide roosting habitats for a number of other shore birds.

Coastal dunes are an increasingly rare landform in California. Coastal dunes are formed in areas where local erosional, wind and topographic features have caused sand to accumulate in a series of low hills. Coastal dunes are generally divided into a) foredunes, small hillocks directly facing the ocean, and b) backdunes, usually several series of hills that are higher and more continuously vegetated than the foredunes.

Coastal dune communities support a variety of coastal strand flora including sand verbena, sea rocket, sea fig and other species. Dune vegetation is particularly important to the maintenance of dune habitats, insofar as the vegetation serves to stabilize the dunes and promote dune formation. Many of the plants found in the coastal dune habitat have unusual characteristics that permit them to grow in this relatively harsh environment. Some of these adaptations, such as a low-spreading form and extensive root systems, are important in producing and stabilizing the dunes. Vegetative cover causes wind-blown sand to accumulate, and prevents further sand movement.

The habitat characteristics as well as the protective characteristics of dune communities can be easily altered by human activities, especially development and off-road vehicle use. Additionally, because of the fragility of such plant communities, unrestricted pedestrian access may, on a cumulative basis, result in the trampling of dune vegetation and ultimately, the degradation of the community and "blowout" of the dunes. A single severe winter storm can cause significant dune migration.

The County's major dune communities are found in the McGrath-Mandalay area, Ormond Beach on the South Coast near Point Mugu State Park, and near the mouths of the Ventura and Santa Clara Rivers. In the Mandalay vicinity, some dune areas have been stabilized by the introduction of European beach grass and iceplant.

Dune formations on the coast are also dynamic in nature, migrating and reforming depending on wind and wave patterns and coastal topography. Development in the vicinity of dunes is, therefore, often subject to sand encroachment and the costs of street sweeping, sand removal, storm run-up and damage.

1.10.2 Beach Formation/Degradation

Sandy beaches are nourished largely by the weathering of coastal bluffs and dunes, and by river transport of sediment to the sea. Ventura County has three major sources of beach sand: the Santa Clara River (contributing 60%), the other rivers and streams (10%), and beaches upcoast of Ventura River (30%). It is estimated that 30% of the river-borne sediment transported to the Coast is sand and that one-fourth of all sand produced by land surface erosion is eventually delivered to the shore (Scripps Institute of Oceanography in Survey for Beach Erosion Control, Army Corp of Engineers, 1980). The total volume of sand contributed by these sources is estimated to vary from 200,000 to 1,700,000 cubic yards or 1,000,000 cubic yards per year average (Ventura County Flood Control District, 1979).

Ventura County is part of the South Coast *littoral cell*. A littoral cell is defined as a section of coastline where the transport of sediment is isolated from adjacent sections of the coastline. A cell is composed of one or more sediment sources, and sediment sinks. The beach acts as a conduit between the sources and sinks. The South Coast littoral cell runs from the mouth of the Santa Ynez River, north of Point Conception, to the Mugu Submarine Canyon, near the mouth of Mugu Lagoon.

Sediment sources, which include dune and cliff erosion and silt from rivers and streams, add to the net volume of sand within the littoral cell. Losses, which include transport down submarine canyons, wind transport into onshore sand dunes, and sand impoundment in lagoons and harbors, reduce the net volume of sand within the cell. Under normal conditions, longshore and on-offshore transport neither adds to nor subtracts sand from the cell. Instead, the longshore transport carries sand through the cell while the on-offshore transport modulates the width of exposed sand beach.

Within the South Coast littoral cell, major sand sources include the Santa Ynez, Ventura, and Santa Clara Rivers. Minor sources include cliff erosion and the numerous streams within Santa Barbara County. Major sand sinks for the littoral cell are Hueneme and Mugu Submarine Canyons, while minor sinks include the sand dunes near the mouths of the Santa Ynez and Santa Clara Rivers. In principle, the Santa Barbara, Ventura, and Channel Islands harbors act as temporary sand sinks, however, in reality all of them have collected semi-permanent volumes of sand since they were built.

Prevailing ocean waves cause the net sand transport to be from the northwest to southeast. Temporary reversals in the direction of sand transport do occur, primarily during the late summer months. Nevertheless, sand entering the littoral cell at the mouth of the Santa Ynez River eventually makes its way through the cell and is finally lost into the Mugu Submarine Canyon (South Coast Regional Beach Erosion Control Group, 1986).

Though coastal erosion is a natural process, man's actions have exacerbated the problem. Construction of the Santa Barbara, Ventura, and Channel Islands harbors has created sediment sinks. To the degree that these harbors are not fully dredged on a continuing basis, they contribute to downcoast beach erosion. Construction of flood control structures and reservoirs on the rivers and streams in Santa Barbara and Ventura counties has reduced peak waterflows, indirectly reducing the amount of sand reaching the coast. In addition, sediment that is impounded behind the dams cannot reach the coast. Extreme rainfall years with heavy runoff produce a disproportionate amount of sand supply to the coast. For the past several decades weather patterns have been unusually mild, thus large influxes of sand have not reached coastal beaches. A gradual rise in sea level over the last century has reduced the size of the exposed sand beach. These causes have combined in different ways to produce an uneven pattern of beach erosion along the South Coast. Some of these causes, such as long-term weather patterns, are unavoidable, while others, such as flood control structures, represent a trade-off between conflicting public objectives.

BEACON (Beach Erosion Authority for Control Operations and Nourishment) was created in 1986 by a joint powers agreement between Ventura and Santa Barbara Counties and all the coastal cities to promote beach sand replenishment and coordinate government funding efforts to fight

beach erosion. BEACON is presently studying the erosion problem and will release a study containing recommendations for further action.

1.10.3 Conclusions

- Beaches and dunes are valuable as shoreline protection, natural ecological habitat, and as recreation areas.
- The formation and degradation of beaches and dunes is a complex process greatly influenced by man's activity both on and off-shore. County goals, policies and programs should be adopted to protect and conserve dunes and beaches by regulating development which could have a deleterious effect on these resources, and by participation in regional programs of coastal conservation.
- To protect dunes in coastal high hazard floodplains, Section 5.2.5.2 of the County of Ventura Floodplain Management Ordinance 3841 (February 2, 1988) specifies that all new construction shall be located on the landward side of the mean high tide line.

References:

Army Corps of Engineers, Survey for Beach Erosion Control in Ventura County, 1980.

South Coast Regional Beach Erosion Control Group, Pamphlet, 1986.