City of Commerce

Hazard Mitigation Plan

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Section 1 – Introduction

Executive Summary

To summarize, this document contains:

- The City of Commerce Hazard Vulnerability Analysis;
- Prioritization of City of Commerce Hazards for mitigation activities;
- Hazard Mitigation Strategy Goals and Objectives;
- City-wide Hazard Mitigation efforts and plan input;
- Coordination with local interest groups and citizens;
- Proposed strategies and actions to reduce short and long term vulnerability to the identified hazards; as recommended by the City of Commerce Multi-Hazard Mitigation Planning Team, its sub-committees and the general public
- Methods of implementing, monitoring, evaluating, and updating this DMA 2000 Hazard Mitigation Plan;
- Constraints to implementing Hazard Mitigation strategies and recommendations;
- The establishment of the City of Commerce Multi-Hazard Mitigation Planning Team to assist in the further development, prioritization and implementation of the recommended Hazard Mitigation strategies.

This document also provides a framework for the identification and coordination of Hazard Mitigation strategies developed in the City of Commerce with other plans; especially those developed by City departments, agencies and organizations as well as those plans developed in order to file for Federal disaster assistance, as required by P.L. 106-390 (as amended) of the Disaster Mitigation Act of 2000.

Definition of Hazard Mitigation

Hazard Mitigation is any sustained action taken to eliminate or reduce long term risk to human life, property and the environment posed by a hazard.

Hazard Mitigation Planning is the process of developing a sustained course of action taken to reduce or eliminate long-term risk to people and property from both natural and technological hazards and their effects. The planning process includes establishing goals and recommendations for mitigation strategies.

Hazard Mitigation may occur during any phase of a threat, emergency or disaster. Mitigation can and may take place during the *preparedness* (before), *response* (during), and *recovery* (after) phases.

The process of hazard mitigation involves evaluating a hazard's impact and identifying and implementing actions to minimize or eliminate the impact.

Purpose of the Plan

The purpose of this plan is to integrate Hazard Mitigation strategies into the day-to-day activities and programs of the City of Commerce.

This plan identifies and evaluates specific strategies to be considered by the City of Commerce and its agencies. It offers a City-wide support document as well as a planning support tool for those strategies developed by the City's political subdivisions, agencies, departments, special districts and organizations.

The strategies presented are deemed appropriate and effective by recommendation of the City of Commerce Multi-Hazard Mitigation Planning Team and the City's agencies, departments and private groups.

Upon acceptance by the California Governor's Office of Emergency Services (OES) and the Federal Emergency Management Agency (FEMA), selected strategies will be further developed for funding and implementation by the lead City agencies and departments. This plan describes the potential sources of Hazard Mitigation Strategy funding, and general procedures to obtain that funding.

This plan is based upon the City of Commerce Hazard Vulnerability Analysis (HVA) that considers natural, technological, and human-caused risks to which the City and its political subdivisions are vulnerable. The plan describes strategies that government and private sector organizations may utilize to develop their capabilities to mitigate those hazards.

It is understood that the mitigation strategies adopted in this plan are recommendations only, and they must be approved by the Mayor and City Council and funded in order to be implemented as official Hazard Mitigation Strategies.

Mission Statement

: "The City of Commerce is dedicated to providing the finest in municipal services as sensitively, courteously, efficiently and effectively as possible to ensure the well-being of the residential and industrial communities and to respond to the needs of the people."

Plan Adoption

DATE: OCTOBER 19, 2004

TO: HONORABLE CITY COUNCIL

FROM: CITY ADMINISTRATOR

SUBJECT: AUTHORIZATION TO SUBMIT THE CITY'S DRAFT DMA 2000 STANDARD MULTI HAZARD MITIGATION PLAN TO THE CALIFORNIA GOVERNOR'S OFFICE OF EMERGENCY SERVICES (OES)

RECOMMENDATION:

To authorize staff to submit the Draft DMA 2000 Standard Multi Hazard Mitigation Plan to the California Governor's Office of Emergency Services.

MOTION:

Move to approve the recommendation

BACKGROUND:

On March 2, 2004 the City Council authorized the appropriation of funds in order to prepare a Standard Multi Hazard Mitigation Plan and directed the City Administrator to execute and sign a service agreement with Dimensions Unlimited, Inc (Consultant).

Since March 2, 2004 the Consultant has been meeting with staff, and various other agencies to complete the draft document.

ANALYSIS:

The draft document is now complete, and ready to be submitted to the Governor's Office of Emergency Services for its review and comment. As soon as OES returns their comments on the Draft Plan, the Consultant will then incorporate them into the Draft Plan. Once incorporated, then Staff will schedule a public hearing before the City Council for the formal adoption of the DMA 2000 Standard Multi Hazard Mitigation Plan.

BUDGET IMPACT: None.

Recommended by: Respectfully submitted,

Stanley Smalewitz Thomas Sykes

Director of Community Development City Administrator

Prepared by:

Bob Zarrilli

City Planner

c2dma2000smhmp

Legal Authority

Federal Laws

Federal legislation has historically provided funding for disaster relief, recovery, and some hazard mitigation planning. The Disaster Mitigation Act of 2000 (DMA 2000) is the latest legislation to improve this planning process (Public Law 106-390). The new legislation reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur. As such, DMA 2000 establishes a pre-disaster hazard mitigation program and new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP).

Section 322 of DMA 2000 specifically addresses mitigation planning at the state and local levels. It identifies new requirements that allow HMGP funds to be used for planning activities, and increases the amount of HMGP funds available to states that have developed a comprehensive, enhanced mitigation plan prior to a disaster. States and communities must have an approved mitigation plan in place prior to receiving post-disaster HMGP funds. Local and tribal mitigation plans must demonstrate that their proposed mitigation measures are based on a sound planning process that accounts for the risk to and the capabilities of the individual communities.

FEMA prepared an Interim Final Rule, published in the Federal Register on February 26, 2002 (44 CFR Parts 201 and 206), which establishes planning and funding criteria for states and local communities.

The Plan has been prepared to meet FEMA and COESS requirements thus making the County eligible for funding and technical assistance from state and federal hazard mitigation programs.

State Laws

California has many laws and programs relating to hazard mitigation, the most effective of which include:

- California Earthquake Hazards Reduction Act of 1986
- Caltrans' Seismic Retrofit Program
- California Fire Alliance
- California Earthquake Authority's Seismic Retrofit Program
- NFIP, administered by the DWR
- State planning law and OPR's general plan guidance documents
- CDI Residential Retrofit Program

The following are state laws and executive orders related to hazard mitigation:

- Executive Order W-18-19

- Executive Order W-9-91
- Health & Safety Code §19211
- Health & Safety Code §19181.
- Public Resources Code §2621, et seq. (the Alquist-Priolo Earthquake Fault Zoning Act)

Identified Mitigation Constraints

Environmental

While protection of endangered species and historic buildings is a mitigation consideration for this jurisdiction it must also be noted that the Federal Cost Benefit Analysis does not allow for a specific value for either the historic status of a structure of the endangered distinction of a species.

Railroads

Derailment, runaway trains and their containment are of concern to Commerce LASD. Union Pacific's internal policy appears to discourage release of information to the public. Lack of cooperation hinders LASD's ability to identify/contain damage and to notify appropriate agencies. Would like railroads to give employees OK to cooperate with emergency response teams, and want some type of statement issued for public safety purposes.

Chapter 95

There are currently 32 million square feet of privately owned un-reinforced masonry building in the City of commerce. The city adopted a program to assist the private owners of the building to seismic retro fit the buildings. The City of Commerce adopted new building codes to upgrade the un-reinforced masonry building in 5 years. They have not been able to accomplish this due to lack of funding. There is no money available to start the program or personnel to manage the day-to-day operations.

CHAPTER 95

EARTHQUAKE HAZARD REDUCTION FOR

EXISTING CONCRETE TILT-UP BUILDINGS

SECTION 9501 -- PURPOSE

The purpose of this Chapter is to promote public safety and welfare by reducing the risk of death or injury which might otherwise result from earthquake damage to concrete tilt-up buildings constructed, under construction, or for which a building permit was issued prior to April 13, 1975. Such buildings have been widely recognized as having a potentially significant risk of sustaining life-hazardous damage, including partial or complete collapse during moderate to strong earthquakes, due to inadequate wall anchorage to the horizontal diaphragm.

This Chapter provides systematic procedures and standards for identification of such concrete tilt-up wall buildings, and time periods under which these buildings are required to be structurally analyzed and anchored. Where analysis finds deficiencies, this Chapter requires the building to be strengthened or demolished.

This Chapter sets forth minimum standards for structural seismic resistance to reduce the risk of loss of life and injury by the installation of wall anchors and connections to the horizontal diaphragms. Compliance with these standards will not necessarily prevent loss of life or injury, or prevent earthquake damage to rehabilitated buildings. This Chapter does not require existing electrical, plumbing, mechanical or fire safety systems to be altered. (Ord. 99-0040 § 74 (part), 1999.)

SECTION 9502 -- SCOPE

The provisions of this Chapter shall apply to all publicly- and privately-owned buildings constructed, under construction, or for which a building permit was issued prior to April 13, 1975, and which on the effective date of this ordinance have concrete tilt-up bearing walls as defined herein. (Ord. 99-0040 § 74 (part), 1999.)

SECTION 9503 -- DEFINITIONS

For purposes of this Chapter, the applicable definitions in Sections 1602 and 1627 of this Code and the following definitions shall apply.

ESSENTIAL BUILDING is defined as any building conforming to the definition of essential facilities as set forth in Section 1627 of this Code.

TILT-UP CONCRETE WALL is a form of pre-cast concrete panel construction, where the panel is either cast at the construction site in a horizontal position, or offsite and, after curing, incorporated into the structure of the building, in a vertical position. (Ord. 2002-0076 § 146, 2002: Ord. 99-0040 § 74 (part), 1999.)

SECTION 9504 -- ADMINISTRATION

9504.1 Service of Order. The Department of Public Works shall attempt to identify those buildings within the scope of this Chapter and shall take reasonable measures to issue an

Earthquake Hazard Reduction Compliance Order as provided in this Section. (Ord. 99-0040 § 74 (part), 1999.)

9504.2 Contents of Order. The Earthquake Hazard Reduction Compliance Order shall be in writing and shall be served either personally or by mail, postage prepaid, upon the owner as shown on the last equalized assessment, or by posting on the building. The order shall specify that the building appears to be within the scope of this Chapter and, therefore, is required to meet the minimum seismic standards of this Chapter. The order shall also specify the time limits for appeal of and compliance with the order. (Ord. 2002-0076 § 147, 2002: Ord. 99-0040 § 74 (part), 1999.)

9504.3 Appeal from Order. The owner may appeal the Building Official's initial determination that the building is within the scope of this Chapter to the Building Board of Appeals established by Section 105. Such appeal shall be filed with the Board within 60 days from the service date of the order described in Section 9504.2. Any such appeal shall be heard by the Board no later than 90 days after the date that the appeal is filed. Such appeal shall be made in writing and the grounds thereof shall be stated clearly and concisely. All materials which the appellant wishes considered by the Building Board of Appeals shall be submitted to the Board 14 calendar days before the hearing.

Appeals and requests for modifications from any other determinations, orders or actions of the Department of Public Works pursuant to this Chapter shall be made in accordance with the normal appeal procedures established in Sections 104.2.7 and 105. (Ord. 2002-0076 § 148, 2002: Ord. 99-0040 § 74 (part), 1999.)

9504.4 Recordation. At or about the time that the Earthquake Hazard Reduction Compliance Order is served, the Department of Public Works shall file with the Office of the County Recorder a certificate stating that the subject building appears to be within the scope of Chapter 95. The certificate shall state that the owner thereof has been ordered to structurally analyze the building and, if necessary, to structurally alter or demolish the building as set forth in Chapter 95. The certificate shall also state that the owner has 60 days from the date of the order to appeal the determination that the subject building is within the scope of Chapter 95 and that if such an appeal is not submitted, the determination will be final and binding.

If the building is subsequently determined by the Department of Public Works not to be within the scope of this Chapter, or is demolished, or is modified so as to meet the requirements of this Chapter, the Department of Public Works shall file with the Office of the County Recorder a certificate terminating the status of the subject building as being classified within the scope of Chapter 95. (Ord. 2002-0076 § 149, 2002; Ord. 99-0040 § 74 (part), 1999.)

9504.5 Enforcement. If the owner of the subject building fails to comply with any order issued by the Department of Public Works pursuant to this Chapter, the Department of Public Works may order the entire building vacated and maintained vacated until such compliance has been accomplished. If, within 90 days after the date the building has been ordered vacated, or within such additional time as may have been granted by the Building Board of Appeals, the owner or other person in charge or control of the subject building has still not complied with any order issued pursuant to this Chapter, the Department of Public Works may order demolition of the building in accordance with the provisions of Section 102 of this Code. (Ord. 2002-0076 § 150, 2002: Ord. 99-0040 § 74 (part), 1999.)

9504.6 Prosecution. In case the owner shall fail, neglect or refuse to comply with the directions in the Earthquake Hazard Reduction Compliance Order (if neither the owner nor

any other person requests a hearing) or with any order of the Building Board of Appeals, the owner shall be guilty of a misdemeanor and the building official may cause such owner of the building or property to be prosecuted as a violator of this Code. (Ord. 2002-0076 § 151 (part), 2002.)

9504.7 Other Abatement Procedures. The provisions of this Chapter shall not in any manner limit or restrict the County or the District Attorney from enforcing County Ordinances or abating public nuisances in any other manner provided by law. (Ord. 2002-0076 § 151 (part), 2002.)

SECTION 9505 -- GENERAL REQUIREMENTS

The owner of each building within the scope of this Chapter shall, upon service of an Earthquake Hazard Reduction Compliance Order, cause a structural analysis of the building to be made by a civil or structural engineer or architect licensed by the State of California to conduct structural analysis and shall submit such analysis to the Department of Public Works for review. The structural analysis shall state whether or not the building meets the requirements of this Chapter. If such a structural analysis indicates that the building does not meet the requirements of this Chapter, the owner shall either obtain a demolition permit and demolish the building or submit plans for structural alterations of the building so that it will comply with the provisions of this Chapter together with a structural analysis so indicating, and perform the work.

The owner shall submit the required structural analysis, obtain any necessary permits and commence and complete the required alteration or demolition within the time limits set forth in Table 95-A. These time limits shall run from the date the Earthquake Hazard Reduction Compliance Order is served.

Once an Earthquake Hazard Reduction Compliance Order has been served, buildings within the scope of this Chapter may not be structurally altered, remodeled or added to without first complying with the provisions of this Chapter unless the Building Official determines that the alteration is minor in nature. (Ord. 2002-0076 § 152, 2002: Ord. 99-0040 § 74 (part), 1999.)

SECTION 9506 -- ANALYSIS AND DESIGN

9506.1 Wall Panel Anchorage. Concrete walls shall be anchored to all floors and roofs which provide lateral support for the wall. The anchorage shall provide a positive direct connection between the wall and floor or roof construction capable of resisting a horizontal force equal to 45 percent of the tributary wall weight for essential buildings, and 30 percent of the tributary wall weight for all other buildings, or a minimum force of 250 pounds per linear foot (3.65 kN/m) of wall, whichever is greater. The required anchorage shall be based on the tributary wall panel assuming simple supports at floors and roof. (Ord. 99-0040 § 74 (part), 1999.)

9506.2 Special Requirements for Wall Anchors and Continuity Ties. The steel elements of the wall anchorage systems and continuity ties shall be designed by the allowable stress design method using a load factor of 1.7. The one-third stress increase permitted by Section 1612.3.2 shall not be permitted for materials using allowable stress design methods.

The strength design specified in Section 1923.2, using a load factor of 2.0 in lieu of 1.4 for earthquake loading, shall be used for design of embedments in concrete.

Wall anchors shall be provided to resist out-of-plane forces, independent of existing shear anchors.

EXCEPTION: Existing cast-in-place shear anchors may be used as wall anchors if the tie element can be readily attached to the anchors and if the engineer or architect can establish tension values for the existing anchors through the use of approved as-built plans or testing, and through analysis showing that the bolts are capable of resisting the total shear load while being acted upon by the maximum tension force due to earthquake. Criteria for analysis and testing shall be determined by the Building Official.

Expansion anchors are not allowed without specific approval of the Building Official. Attaching the edge of steel decks or plywood sheathing to steel ledgers does not comply with the positive anchoring requirements of the Code. (Ord. 99-0040 § 74 (part), 1999.)

9506.3 Development of Anchor Loads into the Diaphragm. Development of anchor loads into roof and floor diaphragms shall comply with Section 1633.2.9, item 4 of this Code.

EXCEPTION: If continuously tied girders are present, then the maximum allowable spacing between the continuity ties is 36 feet (10 973 mm).

In wood diaphragms, anchorage shall not be accomplished by use of toenails or nails subject to withdrawal, nor shall wood ledgers, top plates or framing be used in cross-grain bending or cross-grain tension. The continuous ties required by Section 1633.2.9, item 4 shall be in addition to the diaphragm sheathing.

Lengths of development of anchor loads in wood diaphragms shall be based on existing field nailing of the sheathing unless existing edge nailing is positively identified on the original construction plans or at the site.

At re-entrant corners, continuity collectors may be required for existing return walls not designed as shear walls, to develop into the diaphragm a force equal to the lesser of the rocking or shear capacity of the return wall, or the tributary shear, but not exceeding the capacity of the diaphragm. Shear anchors for the return wall shall be commensurate with the collector force. If a truss or beam other than rafters or purlins is supported by the return wall or by a column integral with the return wall, an independent secondary column is required to support the roof or floor members.

Seismic design of return walls and fins/canopies at entrances shall ensure deflection compatibility with the diaphragm by either seismically isolating the element or attaching the element and integrating its load into the diaphragm. (Ord. 99-0040 § 74 (part), 1999.)

9506.4 Anchorage at Pilasters. Anchorage of pilasters shall be designed for the tributary wall anchoring load per Section 9506.1 of this Code, considering the wall as a two-way slab. The pilasters or the walls immediately adjacent to the pilasters shall be anchored directly to the roof framing such that the existing vertical anchor bolts at the top of the pilasters are by-passed without causing tension or shear failure at the top of the pilasters.

EXCEPTION: If existing vertical anchor bolts at the top of the pilasters are used for the anchorage, then additional exterior confinement shall be provided.

The minimum anchorage at a floor or roof between the pilasters shall be that specified in Section 9506.1 of this Code. (Ord. 99-0040 § 74 (part), 1999.)

9506.5 Evaluation of Existing Structural Conditions. If the structural analysis submitted pursuant to Section 9505 indicates that the building does not meet the requirements of this Chapter, the engineer or architect shall include in said analysis a report of any observed structural conditions, including, but not limited to, cracks, structural damage or alterations, that may have a substantial effect on the seismic integrity of the building and shall include provisions for the repair of these conditions in the plans submitted to the department for review and approval. (Ord. 99-0040 § 74 (part), 1999.)

9506.6 Miscellaneous. Existing mezzanines relying on the tilt-up walls for vertical and/or lateral support shall be anchored to the walls for the tributary mezzanine load. Walls depending on the mezzanine for lateral support shall be anchored per Sections 9506.1, 9506.2 and 9506.3.

EXCEPTION: Existing mezzanines that have independent lateral and vertical support need not be anchored to the walls.

Existing interior masonry or concrete walls, not designed as shear walls, which extend to the floor above or to the roof diaphragm shall also be anchored for out-of-plane forces per Sections 9506.1, 9506.2 and 9506.3 of this Code. In the in-plane direction, the walls shall be isolated or developed into the diaphragm to resist a lateral force equal to the lesser of the rocking or shear capacity of the wall, or the tributary shear, but in no event to exceed the diaphragm capacity. (Ord. 2002-0076 § 153, 2002: Ord. 99-0040 § 74 (part), 1999.)

9506.7 Symmetry. Symmetry of anchorage systems is required. Non-symmetrical anchorage systems may be allowed when it can be shown that all components of forces are positively resisted as determined by calculations or tests. (Ord. 99-0040 § 74 (part), 1999.)

9506.8 Minimum Roof Member Size. Wood members used to develop anchorage forces to the diaphragm shall not be less than 3-inch (76mm) nominal thickness when damaged members are replaced. All such members must be checked for earthquake loads as part of the wall anchorage system in addition to dead and live loads. For existing buildings, the member check shall be without the one-third stress increase per Section 1612.3.2. (Ord. 99-0040 § 74 (part), 1999.)

9506.9 Combination of Anchor Types. The maximum allowable combined load resisted by a combination of different types of anchors that exhibit different behavior or stiffness is not the sum of the allowable load for each anchor. The combined capacity of the new and existing connectors shall be taken as the allowable load of the stiffest anchor.

EXCEPTION: Existing anchors may be combined with new anchors for retrofit projects where existing anchors are undamaged and will resist loads equally with a new anchor of identical manufacture, type and installation. The combined allowable load shall be twice the allowable load of a single anchor.

(Ord. 99-0040 § 74 (part), 1999.)

SECTION 9507 -- MATERIALS OF CONSTRUCTION

All materials permitted by this Code may be utilized to meet the requirements of this Chapter. (Ord. 99-0040 § 74 (part), 1999.)

SECTION 9508 -- PLANS

9508.1 General. Plans submitted pursuant to the provisions of this Chapter shall be signed by the licensed civil or structural engineer or architect responsible for the seismic analysis of the building and shall comply with the requirements of this Code and this Section. (Ord. 99-0040 § 74 (part), 1999.)

9508.2 Plans and Specifications. Plans, engineering calculations, diagrams and other data shall be submitted in two or more sets with each application for a building permit. (Ord. 99-0040 § 74 (part), 1999.)

9508.3 Information on Plans and Specifications. Plans and specifications shall be drawn to scale upon substantial medium and shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that the proposed work will conform to the provisions of this Chapter and all relevant Codes, laws, ordinances, rules and regulations. (Ord. 99-0040 § 74 (part), 1999.)

9508.4 Existing Construction. The following information shall be made part of the approved plans:

1. The type and dimensions of existing walls and the size and spacing of existing floor and roof members.

2. The extent and type of existing wall anchorage of floors and roof members.

3. Accurately dimensioned plans and/or elevations of existing floors and concrete walls showing dimensioned openings, piers, wall thicknesses and heights.

4. The location and extent of any structural conditions as specified in Section 9506.5. (Ord. 99-0040 § 74 (part), 1999.)

TABLE 95-A -- TIME LIMITS FOR COMPLIANCE WITH

EARTHQUAKE HAZARD REDUCTION COMPLIANCE ORDER[1,2]

Submit Plans Within	Obtain Permit Within	Commence Alteration or Demolition Within	Complete Alteration or Demolition Within
12	**18**	**24**	**36**

[1] All dates are measured from the date the Earthquake Hazard Reduction Compliance Order is served pursuant to Section 9504.

[2] For any work required by this Chapter, the time limits shown herein shall supersede the time limits specified in Section 106.5.4.

(Ord. 2002-0076 § 154, 2002: Ord. 99-0040 § 74 (part), 1999.)

Title 26 of the Los Angeles County Code is amended by adding Chapter 96, entitled "POTENTIALLY EARTHQUAKE HAZARDOUS BUILDINGS," to read as follows:

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Section 2 - Planning Process

Hazard Mitigation Planning Participation

Steering Committee Members

Bob Zarrilli Community Development, City Planner	(323) 772-4805; Ext. 2337 Robertz@ci.commerce.ca.us
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Larry Garcia Public Services	
Michael Pyles Sr. Waste Management Engineer	(323) ; Ext. 4456 Mikepyles@ci.commerce.ca.us
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Raul Berroteran Code Enforcement Officer	(323) 595-2184; Ext. 2316 Raulb@ci.commerce.ca.us
Robert Leon Community Services	(323) ; Ext. 2809 Robertle@ci.commerce.ca.us

Adjunct Contributors

Janice Rogala, Consultant	Dimensions Unlimited, Inc.
Theresa Hayes, Consultant	Dimensions Unlimited, Inc.
Kristel Arnott, Consultant	Dimensions Unlimited, Inc.

Hazard Mitigation Planning Committee By-laws

1. The CITY OF COMMERCE Hazard Mitigation Planning Team was organized in March 2004, as reflected by the minutes of that meeting, and agreed to meet monthly to identify hazard vulnerabilities, identify hazard priorities and review, identify and implement feasible hazard mitigation strategy recommendations.

2. The CITY OF COMMERCE Hazard Mitigation Planning Team agrees to make and pass policy recommendations by a vote of a simple majority of those members present at the scheduled meeting.

3. Any single Hazard Mitigation Planning Team member may request, at a scheduled meeting of the CITY OF COMMERCE Hazard Mitigation Planning Team, an adoption of, or amendment to any part of the plan or process.

4. The CITY OF COMMERCE Hazard Mitigation Planning Team may form subcommittees to review and develop those feasible hazard mitigation strategy recommendations identified that will be reviewed by the Hazard Mitigation Planning Team as a whole.

5. Sub-committees or members will identify and bring forward hazard mitigation strategies from existing recommendations contained in plans and documents, and from the input of inter-city jurisdictions, private citizens and organizations.

6. The CITY OF COMMERCE Hazard Mitigation Planning Team will identify constraints to mitigation strategies that affect represented jurisdiction's ability, authority and responsibility to implement those strategies.

7. Public input will be implemented in the following manner: To be decided

Hazard Mitigation Planning Tasks

1. Coordinate multi-hazard mitigation planning tasks and activities with the City's administrative staff and departments to develop a multi-hazard disaster mitigation plan and support the CITY OF COMMERCE Hazard Mitigation Planning Team's chair's oversight of the planning process.

2. Assist in carrying out the goals and objectives of the CITY OF COMMERCE's All-Hazard Mitigation Plan in compliance with FEMA DMA 2000 Hazard Mitigation Act.

3. Prioritize risks for implementing mitigation strategies.

4. Select designated Critical Facilities owned by and in proximity to those owned by the CITY OF COMMERCE and develop a risk exposure analysis for those facilities.

5. Select highest priority and most-desired mitigation recommendations and develop those recommendations for further action by each member of the CITY OF COMMERCE Hazard Mitigation Planning Team.

6. Review mitigation planning drafts, recommendations and updates.

7. Develop and implement long- and short-term goals.

8. Integrate the plan with all phases of each of the CITY OF COMMERCE Comprehensive Emergency Management Plan and the General Plan Safety Element.

9. Provide for the implementation of CITY OF COMMERCE Hazard Mitigation Planning Team decisions.

10. Encourage development of, coordinate and implement a methodology for the implementation of public input.

11. Establish Hazard Mitigation Planning Team responsibilities to include but not be limited to the following:

    a. Determine implementation ability and constraints for proposed Hazard Mitigation planning steps and development of strategies
    b. Bring forward community concerns through private and public input
    c. Identify implementation resources
    d. Identify lead departments for implementation of strategies
    e. Provide for the update of the CITY OF COMMERCE All Hazard Mitigation Plan on a regularly scheduled basis
    f. Evaluate and carry out mitigation activities, as feasible.
    g. Assist in implementation of funding identification and procurement

Hazard Mitigation Planning Goals

1. Support the priorities of the CITY OF COMMERCE; its mandates, employees, citizens and the business community.

2. Promote economic development strategies consistent with seismic, floodplain and risk management guidance as developed by the CITY OF COMMERCE and its agencies and/or departments.

3. Provide for an effective public awareness program for natural and technological hazards present in the CITY OF COMMERCE.

4. Encourage scientific study and the development of data to support mitigation strategies for those hazards that are a threat to the CITY OF COMMERCE.

5. Promote the recognition of the real value of hazard mitigation to public facilities, public safety and the welfare of all citizens of the CITY OF COMMERCE.

6. Support the mitigation efforts of local governments, private citizens, non-profit organizations and private businesses throughout the CITY OF COMMERCE.

Hazard Mitigation Planning Objectives

1. Identify mitigation actions to reduce loss of lives and property.

2. Implement feasible mitigation actions that reduce loss of lives and property.

3. Identify mitigation strategies that will allow the CITY OF COMMERCE to perform its primary mission and goals.

4. Identify mitigation opportunities for short- and long-range planning considerations.

5. Maintain safe building and zoning codes that support scientific findings of a known risk.

6. Identify lead CITY OF COMMERCE Departments, Organizations and Agencies that have an interest in mitigation of specific hazards.

7. Develop a standard mitigation program utilizing authorities, policies and programs of the CITY OF COMMERCE.

8. Organize, train and maintain an effective and ongoing CITY OF COMMERCE Hazard Mitigation Planning Team that will facilitate implementation of the CITY OF COMMERCE All-Hazard Mitigation Plan.

9. Review and update CITY OF COMMERCE programs to identify current and future mitigation goals and objectives in compliance with city, county, state and Federal requirements.

10. Gain support from the CITY OF COMMERCE administration for the All-Hazard Mitigation Plan implementation.

11. Achieve the overall goal of developing a comprehensive mitigation program with Federal, state, local and other appropriate adjacent jurisdictions.

12. Support identified hazard mitigation strategies as set forth in the CITY OF COMMERCE's Safety Element and all other represented plans that contain Hazard Mitigation Strategies.

Hazard Mitigation Planning Team Meeting Minutes

CITY OF COMMERCE

HAZARD MITIGATION PLANNING TEAM MEETING MINUTES

March 9, 2004

Meeting Called to Order

First meeting of the City of Commerce Hazard Mitigation Planning Team called to order at 10:17 AM in the City Hall Planning Conference Room.

Members Present

Robert Leon	Community Service Ext 2809	robertle@ci.commerce.ca.us
Denise Miley	Code Enforcement Ext 2338	Denisem@ci.commerce.ca.us
Bob Zarrilli	City Planner 323-722-4805 Ext. 2337	robertz@ci.commerce.ca.us
Hector Orozco	Trees/street Supervisor 323 8887 4469	hectoro@ci.commerce.ca.us
Raul Berroteran	Code Enforcement Officer Ext. 2316	raulb@ci.commerce.ca.us
Michael Pyles	Sr. Waste Management Eng Ext. 4456	mikepyles@ci.commerce.ca.us

Larry Garcia (Public Services) and Pat Torango (Building Official) were absent.

DMA 2000 Overview

Jan Rogala (Consultant) gave a 55 minute overview of the Hazard Mitigation Planning Process.

New Business

The group elected to call itself the City of Commerce Hazard Mitigation Planning Team. Bob Zarilli was elected chair of the City of Commerce Hazard Mitigation Planning Team. The team agreed to meet every second Tuesday at 1030.

Jan distributed the Hazard Matrix and gave instructions on how to fill it out. It is to reflect the opinions of the stakeholders and the results will be compiled and compared with the scientific data and research that will be completed for the city Hazard Analysis. Matrices are to be completed and turned into the chair who will forward them to the consultant for compiling.

Jan requested that the city provide GIS information to help in mapping risks for the City.

The chair reported that the city is approximately 95% built-out and will have very limited development.

Jan distributed the Hazard Mitigation Program and Project Form with instructions and explained that these are to be used as a guide when developing hazard mitigation strategies.

Jan asked for information on known risks: Discussion was held on Earthquake, Flood, Hazardous Materials, and transportation with special attention paid to the industry and rail yards.

<u>By Laws for the team were proposed and adopted. They are:</u>

1. The CITY OF COMMERCE Hazard Mitigation Planning Team was organized in March 2004, as reflected by the minutes of that meeting, and agreed to meet monthly to identify hazard

vulnerabilities, identify hazard priorities and review, identify and implement feasible hazard mitigation strategy recommendations.

2. T he CITY OF COMMERCE Hazard Mitigation Planning Team agrees to make and pass policy recommendations by a vote of a simple majority of those members present at the scheduled meeting.

3. Any single Hazard Mitigation Planning Team member may request, at a scheduled meeting of the CITY OF COMMERCE Hazard Mitigation Planning Team, an adoption of, or amendment to any part of the plan or process.

4. The CITY OF COMMERCE Hazard Mitigation Planning Team may form subcommittees to review and develop those feasible hazard mitigation strategy recommendations identified that will be reviewed by the Hazard Mitigation Planning Team as a whole.

5. Sub-committees or members will identify and bring forward hazard mitigation strategies from existing recommendations contained in plans and documents, and from the input of inter-city jurisdictions, private citizens and organizations.

6. The CITY OF COMMERCE Hazard Mitigation Planning Team will identify constraints to mitigation strategies that affect represented jurisdiction's ability, authority and responsibility to implement those strategies.

7. Public input will be implemented in the following manner: *To be decided*

Agreed to form an Executive Planning Group of Bob Zarilli, Robert Chavez and Tom Sykes (City Administrator) who will review the recommendations of the Team

Bob said that outreach to neighboring communities will be done similarly as is done with environmental planning. Bob said that team members can attend associations and have interaction with existing groups and citizen groups. This can be classified as public outreach.

<u>Hazard Mitigation Planning Team Tasks were proposed and adopted. They are:</u>

1. Coordinate multi-hazard mitigation planning tasks and activities with the City's administrative staff and departments to develop a multi-hazard disaster mitigation plan and support the CITY OF COMMERCE Hazard Mitigation Planning Team's chair's oversight of the planning process.

2. Assist in carrying out the goals and objectives of the CITY OF COMMERCE's All-Hazard Mitigation Plan in compliance with FEMA DMA 2000 Hazard Mitigation Act.

3. Prioritize risks for implementing mitigation strategies.

4. Select designated Critical Facilities owned by and in proximity to those owned by the CITY OF COMMERCE and develop a risk exposure analysis for those facilities.

5. Select highest priority and most-desired mitigation recommendations and develop those recommendations for further action by each member of the CITY OF COMMERCE Hazard Mitigation Planning Team.

6. Review mitigation planning drafts, recommendations and updates.

7. Develop and implement long- and short-term goals.

8. Integrate the plan with all phases of each of the CITY OF COMMERCE Comprehensive Emergency Management Plan and the General Plan Safety Element.

9. Provide for the implementation of CITY OF COMMERCE Hazard Mitigation Planning Team decisions.

10. Encourage development of, coordinate and implement a methodology for the implementation of public input.

11. Establish Hazard Mitigation Planning Team responsibilities to include but not be limited to the following:

    - Determine implementation ability and constraints for proposed Hazard Mitigation planning steps and development of strategies

    - Bring forward community concerns through private and public input

    - Identify implementation resources

    - Identify lead departments for implementation of strategies

    - Provide for the update of the CITY OF COMMERCE All Hazard Mitigation Plan on a regularly scheduled basis

    - Evaluate and carry out mitigation activities, as feasible.

    - Assist in implementation of funding identification and procurement

The chair will forward an electronic copy of the City's Mission Statement to the consultant.

<u>Proposed and adopted Hazard Mitigation Planning Goals. They are:</u>

- Support the priorities of the CITY OF COMMERCE; its mandates, employees, citizens and the business community.

- Promote economic development strategies consistent with seismic, floodplain and risk management guidance as developed by the CITY OF COMMERCE and its agencies and/or departments.

- Provide for an effective public awareness program for natural and technological hazards present in the CITY OF COMMERCE.

- Encourage scientific study and the development of data to support mitigation strategies for those hazards that are a threat to the CITY OF COMMERCE.

- Promote the recognition of the real value of hazard mitigation to public facilities, public safety and the welfare of all citizens of the CITY OF COMMERCE.

- Support the mitigation efforts of local governments, private citizens, non-profit organizations and private businesses throughout the CITY OF COMMERCE.

<u>Proposed and Adopted Hazard Mitigation Planning Objectives. They are:</u>

- Identify mitigation actions to reduce loss of lives and property.

- Implement feasible mitigation actions that reduce loss of lives and property.
- Identify mitigation strategies that will allow the CITY OF COMMERCE to perform its primary mission and goals.
- Identify mitigation opportunities for short- and long-range planning considerations.
- Maintain safe building and zoning codes that support scientific findings of a known risk.
- Identify lead CITY OF COMMERCE Departments, Organizations and Agencies that have an interest in mitigation of specific hazards.
- Develop a standard mitigation program utilizing authorities, policies and programs of the CITY OF COMMERCE.
- Organize, train and maintain an effective and ongoing CITY OF COMMERCE Hazard Mitigation Planning Team that will facilitate implementation of the CITY OF COMMERCE All-Hazard Mitigation Plan.
- Review and update CITY OF COMMERCE programs to identify current and future mitigation goals and objectives in compliance with city, county, state and Federal requirements.
- Gain support of the CITY OF COMMERCE administration for the All-Hazard Mitigation Plan implementation.
- Achieve the overall goal of developing a comprehensive mitigation program with Federal, state, local and other appropriate adjacent jurisdictions.
- Support identified hazard mitigation strategies as set forth in the CITY OF COMMERCE's Safety Element and all other represented plans that contain Hazard Mitigation Strategies.

Jan reiterated that these items can be revisited at any time and added too, edited or changed.

*A discussion was held regarding Montebello School District and including them in this planning process. It was determined that the school district is too big to participate and will probably not be able to help with their input.

Other than local celebrations, there are no BIG gatherings of people that would be considered a target of WMD or Terrorism. Raul Berroteran provided a list of local celebrations.

Jan requested that a copy of the WMD/Terrorism assessment be provided to review.

Denise Miley said that the City owns a camp facility at Lake Arrowhead and asked if it be included in the list of assets. Jan said yes and that it needs to be noted on any mitigation strategies that would affect it.

<u>The following subcommittees were established:</u>

- Earthquake and Flood Sub Committee – Robert Leon, Bob Zarilli
- Hazardous Materials Sub Committee – Michael Pyles
- Public Input Sub-Committee – Denise Miley and Raul Berroteran.

The team discussed the issue of Contracted County Services for mitigation strategy. Jan said a listing of contracted services would be required to reflect in the continuity of government.

The City's refuse incinerator/power generator is a joint powers venture regulated by EQMD and EPA. The board is made up of city representatives (mayor and one other city manager), along with representatives from neighboring cities. The plant generates no revenue to the city. Advantage of the plant is that it sells electricity and evens out the city's cost of usage. Jan said that since they have their own commission/board, they should have their own plan in order to remain eligible for Hazard Mitigation money. It may be to the City's advantage to have them on the Team. The Team will give it some thought and the issue will be revisited next meeting.

Meeting adjourned - 1136

CITY OF COMMERCE
HAZARD MITIGATION PLANNING TEAM
2535 COMMERCE WAY
COMMERCE, CALIFORNIA 90040

APRIL 13, 2004

Meeting Called to Order

Second meeting of the City of Commerce Hazard Mitigation Planning Team called to order at 10:10 AM in the City Hall Conference Room.

Members Present

Bob Zarrilli	City Development	Ext. 2337	robertz@ci.commerce.ca.us
Robert Leon	Community Service	Ext. 2809	robertle@ci.commerce.ca.us
Denise Miley	Community Service	Ext. 2338	denisem@ci.commerce.ca.us
Raul Berroteran	Code Enforcement Off.	Ext. 2316	raulb@ci.commerce.ca.us
Patrick Tarango	Building & Safety	Ext. 4458	ptarango@ci.commerce.ca.us ptarango@ladpw.org
Mike Pyles	Building & Safety	Ext. 4456	mikep@ci.commerce.ca.us
Jan Rogala	Dimensions	916.712-1697	janrogala@aol.com
Theresa Hayes	Dimensions	626.286-8305	theresa@dimensionsui.com

Larry Garcia (Public Services) was absent.

Consideration of minutes: March 9, 2004 meeting minutes were review and adopted by the team.

Old Business

The team reviewed and prioritizes the City of Commerce's hazard risks into high, moderate and low categories.

High	**Moderate**	**Low**
Earthquake	Aviation Disasters	Special Events
Explosions	Severe Weather	Sinkholes
Transportation	Drought	Volcanic
Economic Disruption	Floods	Winds
Transportation Accident	Substations	Dam Failure
Incidents, Pipelines		
WMD/Terrorism	Biological/Health, Small Pox, SARS Disease clusters	
Utility Loss	Data/Telecommunications Losses	
Water/Wastewater Disruption		Wild land/Urban Fire in the City.

Wild land/Urban Fire (Camp Commerce, Arrowhead, California)

Jan reiterated to the team that the ratings can be changed at any time.

The team discussed and commented on the following risks:

- There are 32 million square feet of privately owned un-reinforced concrete tilt-up masonry building in the City of Commerce. The city adopted a program to assist the private owners of the building to seismic retro fit the buildings. The City of Commerce adopted new building codes to upgrade the un-reinforced masonry building in 5 years. They have not been to accomplish their goals due to

lack of funding. There is no money available to start the program or man power to manage the day to day operations.

- Water System is owned by the city. There are concerns of contamination due to the Whittier Narrows Superfund Plume moving towards the City of Commerce.
- Hazardous Materials from the industrial area is a concern.
- Joint Power Incinerator is a risk. It was built without permits or inspections. It has passed emissions tests by the Environmental Protection Agency (EPA). The waste reduction safeguards have won awards.

New Business

Robert Leon provided a current Aerial Topographical Map of the city. Pat Tarango provided a list of all the un-reinforced masonry buildings and Liquefaction Maps

Jan advised the team to consider asking the Los Angeles Hazard Mitigation DMA Advisory Committee to support the City of Commerce's Earthquake Hazard Reduction Chapter 95 efforts to provide funding to implement this program. This would enable the City of Commerce to assist the owners of the un-reinforced masonry building to seismically retrofit the masonry buildings to current building codes.

Commerce and Dimensions will work together to identify the hazardous materials in the city. The team commented that each Los Angeles Fire Station has current MSDS sheets for each business in their areas. Dimensions will obtain the LEPC Plan from the Los Angeles County Fire Department Hazardous Materials Division.

A copy of the cities property asset list will be given to the team members for review and critical status identification. Team members will need to identify privately owned critical facilities as well.
There are school, health care, county, state, or federally owned facilities within the boundaries of Commerce which need to be identified and labeled. Their risk to the city will be addressed in the plan.

Jan suggested placing an article in the City of Commerce Report to the People monthly publication for the residents of Commerce. The article will contain information about the DMA 2000 Plan. The team agreed on an introductive style article for the month of May. Another article in be placed in the June issue asking for citizen input. Bob approved of Jan sending the May article directly to Jason Stinnett-Media Specialist of the Report to the People newspaper. Jan will email and fax the article to Jason by noon Friday, April 16, 2004.

Commerce has 5 designated emergency shelters. The shelters are:

- Bristow Park, occupancy inside is 100 and 1000 outside
- Veterans Park, occupancy inside is 100 and 500 outside
- Rosewood Park, occupancy inside 500 and 1500 outside
- Bandini Park, occupancy inside 100 and 500 outside
- The Teen Center, occupancy 75 inside and 200 outside

Please be thinking about mitigation strategies for next months meeting. Invitations will be sent or extended to Los Angeles Fire Department, Los Angeles Sheriff's Department and the Los Angeles Public Works Department to attend the June City of Commerce Hazard Mitigation Planning Team Meeting.

Meeting Adjourned at 11:30 AM.

CITY OF COMMERCE
HAZARD MITIGATION PLANNING TEAM
2535 COMMERCE WAY
COMMERCE, CALIFORNIA 90040

MAY 11, 2004

Meeting Called to Order

Third meeting of the City of Commerce Hazard Mitigation Planning Team called to order at 10:00 AM in the City Hall Kitchen Room.

Members Present

Bob Zarrilli	City Development	722-4805	robertz@ci.commerce.ca.us
Patrick Tarango	Building & Safety	323.887-4455	Patrickt@ci.commerce.ca.us
Denise Miley	Code Enforcement	372-4045	denisem@ci.commerce.ca.us
Raul Berroteran	Code Enforcement	595-2184	Raulb@ci.commerce.ca.us
Jan Rogala	Dimensions	707.374-6529	janrogala@aol.com
Theresa Hayes	Dimensions	626.286-8305	theresa@dimensionsui.com

Consideration of minutes: The April 13, 2004 Meeting minutes were reviewed and adopted with one correction**; un-reinforced masonry to concrete tilt ups**.

Old Business

Jan and Bob reviewed the CJPIA Property Schedule City of Commerce list for the city's critical facilities.

The team revisited the Chapter 95 Project. New mitigation strategies will be addressed to assist their citizens in compiling with current building codes. The team will define the list of concrete till ups and un-reinforced buildings in the City of Commerce.

Bob will contact and invite the Los Angeles Fire Department, Los Angeles Sheriff's Department and a CARE representative to the Planning meetings. LA County Fire Department Fire Station 89 and Old 27 house inventory. New Station 27 and 50 are activity Fire Stations for the City of Commerce.

Bob will provide the City of Commerce's Mission Statement for Dimensions.

The Report to the People newspaper, May 2004 issue, published an article "Commerce Announces Formation of Hazard Mitigation Planning Team". Jan asked the team for a CD of the article "NTSB Docket Report for Residents Affected by the Derailment" featured on the front page of the Report to the People newspaper in the May 2004 issue.

Critical Facilities

Non-City Facilities

• Casino	Sales and Liquor Tax	
• Citadel Shopping Center	Economic value	
• Ashland Chemical	Tax base	Hazard risk
• Univar Chemical	Blend chemical	Hazard risk
• Am Vac Chemical	Tax base	Very High Risk
• Wyndham Hotel	Economic value	

Non-City Facilities

- Crown Plaza Hotel Economic value
- Super 8 Motel Economic value
- Iron Mountain
- File Keepers
- Safe Shred
- Data Page

Schools

- Rosewood Park Elementary School
- Bandini Elementary School
- Laguna Nueva Elementary School
- Bell Gardens High School
- Montebello Intermediate School
- YMCA Day Care Center
- International Brothers Electrical Workers – Electrical Train School

Utilities and Communication

- Water is owned by the City of Commerce. Cal Water operates the water system and is responsible for storage and treatment.
- Sanitation is maintained by Los Angeles County and the City of Los Angeles Hyperion Treatment Plant.
- Electricity – Southern California Edison, A substation is located at Gage and Garfield Ave.
- SBC switching station
- Montebello Transmitter
- Waste to Energy Plant
- High pressure gas lines – Owned/ Operated by Chevron, Mobile, and BSI

Critical Facilities and Operations in the Day- to- Day Operations during a Disaster

- Infrastructure - Bridges and roads; I-5 & the 710 Freeway corridor
- HAM Radio Operators; REACT
- Search and Rescue Team
- Citizens Com Cat
- Hospitals; USC & Santa Marta Hospitals, and Garfield Medical Center
- ATC20 – Rapid Evaluation
- Food Suppliers – Unified Grocers, Smart & Final Distribution Center, Gelson's Distribution Center, Vons, Safeway's Dairy and Bakery Warehouse, Gallo Wine Distribution Center, Wine/Beer Warehouse, Garvey Nut, Water Filtering Company's bottling plant, and Golden Luck Foods
- CAN Communication System – Citizen's warning system
- Radio Tower
- Hotels – housing for displaced community

Response Assets

Search and Rescue Team

- Ham Radios
- Com Cat Public Safety volunteers have 25 2-way radios, which operates off the repeater. This enables the team to investigate calls.
- Urban Search Rescue Team consists of four 5 man teams
- Fire department has a Swift Water Rescue Team

Review of Risk Prioritization

The team discussed the Hazard Risk Analysis and decided to add drought as a low risk hazard.

Public Input

Dimensions brought a two page questionnaire and cover letter for the team to review for public input. Once the team reviews and adopts the public input questionnaire it will be published in The Report to the People newspaper July issue. The questionnaire will be in English and Spanish language for the citizens of Commerce.
The team agreed to invite a representative of the Industrial Council for business input to the July meeting.

New Business

Mitigation Strategies

The Emergency Broadcast system is only showed on cable television. The cable station has been upgraded to a digital format. There is a possibility some of Commerce's citizens will not be alerted to a disaster because they are not receiving digital cable television.

Mitigation strategies need to be developed to assist the City of Commerce and their citizens with upgrading concrete tilt up buildings. The city has the Chapter 95 Project, but has not been able to successful complete the project due to lack of funds to fully implement the process. The estimated cost is 4 million dollars to the City of Commerce. The city would hire an inspector and clerk for the Chapter 95 project. The inspector's duties would be to inspect, enforce codes, and over see the day-to-day operations of the project. The clerk would be creating a list, research, and record the day-to-day transactions. The citizens have three years to comply with codes after starting the process.
There has been Los Angeles County support for concrete till up building mitigation in City of Carson, City of Industry, and Santa fe Springs.

The team will ask for information concerning the train hazard risks from the Railroad Task Force. The Railroad Task Force meets every other month. The task force includes citizens and railroad company representatives. The task forces address safety, pollution and weed hazards. Bob will provide the Railroad Task Force meeting minutes.
North Santa Re Railroads operates 4 lines and Union Pacific 3 lines through the City of Commerce.

Meeting Adjourned at 11:18 AM.

City of Commerce
Hazard Mitigation Planning Team
2535 Commerce Way

Commerce, California 90040
June 8, 2004

Meeting Called to Order

Fourth meeting of the City of Commerce Hazard Mitigation Planning Team called to order at 10:00 AM in the City Hall Conference Room.

Members Present

Brian Hudson, *LA Sheriff Dept.*	323.216-1898	BLHudson@lasd.org
Charles Gates, *LA. Sheriff Dept.*	323.264-4151 323.981-5015	CEGates@lasd.org
Bob Zarrilli, *City Development*	323.722-4805	RobertZ@ci.commerce.ca.us
Patrick Tarango, *LACO DPW Bldg & Safety*	323.887-4455	PatrickT@ci.commerce.ca.us
Raul Berroteran, Community Services	323.545-2184	RaulB@ci.commerce.ca.us
Denise Miley, *Community Services*	323.722-4805 x2338	DeniseM@ci.commerce.ca.us
Robert Leon, *Community Services*	323.722-4805	RobertLe@ci.commerce.ca.us
Pauline Holley, *Consultant, Dimensions, Inc.*	626.286.8305	P.Holley@sbcglobal.net
Jan Rogala, *Consultant, Dimensions, Inc.*	707.374.6529	JanRogala@aol.com

Consideration of Minutes:

The May 11, 2004 Meeting Minutes were reviewed and adopted with the following spelling corrections**:**

- **AMVAC Chemical**
- **CAER**

Old Business

Mission Statement: Bob Zarilli provided the Committee with the City's Mission Statement, which reads as follows: "The City of Commerce is dedicated to providing the finest in municipal services as sensitively, courteously, efficiently and effectively as possible to ensure the well-being of the residential and industrial communities and to respond to the needs of the people."

Un-reinforced Building Issue: 50 out of 400 buildings have been voluntarily retrofitted. The retrofitting needs of the remaining buildings will be included in the hazard mitigation plan so it becomes a part of the City's mitigation strategy. It will be identified in the plan as the City's

"structural mitigation" process. The Committee's structural mitigation goal is to enforce building codes within the City of Commerce. The strategy to facilitate this process is to raise $300,000, from outside sources, to fund 2 people (one building code inspector and one technical person) to manage/carry out this task.

NTSB Docket Report for Residents Affected by the Derailment: Dimensions was provided with a copy of report.

Industrial Contact List: Dale Frisk**,** CAER CEO and Industrial Representative, has been invited to attend next Committee meeting and list will be provided at that time.

Critical Facilities/Assets List and Risk Prioritization: The Committee discussed critical facilities/assets and risk prioritization. What was deemed "critical" or "high risk" to one department was not necessarily categorized in the same manner by another department. Jan addressed these seemingly contradictory concerns by defining critical facilities as follows:

> For hazard/emergency mitigation plan-writing purposes, there are three ways to define "critical" facilities/assets. They are as follows:
>
> 1) City-owned facilities that are critical to the continuity of government, and/or plays a significant response/relief role during an emergency/disaster occurrence.
> 2) Non-city-owned or "outside" facilities that can impact the city from an economic standpoint if destroyed during an emergency/hazard situation. Statistically, 40% of all businesses close following major disasters.
> 3) City-owned or non-city-owned facilities that draw a high concentration of people and are defined as "targets" by Fire/Sheriff's Depts.
>
> For grant/funding purposes, the mitigation plan should identify critical facilities/assets based on whether the facility/asset will: 1) Adversely impact the City's economic health, if destroyed during an emergency/hazard situation; and 2) Require funding/grant to rebuild following an emergency/disaster occurrence.

Public Input: Public input form is OK as is. Dimensions will call Bob and he will e-mail Spanish translation version to them.

New Business

Mitigation Strategies:

On 5/25/04, Commerce LASD conducted a joint exercise with AMVAC Chemical to test 1st response capabilities. The goal of the exercise was to twofold. LASD's goal was to: 1) Test the response capability of their personnel under hazard containment situations, and 2) See how unified the response would be from the following departments/units. For AMVAC Chemical, the goal was to test their emergency preparedness procedures.

The following departments/units were involved in the LASD exercise:

1) LA County Fire Dept.
2) California Highway Patrol
3) County Health HAZMAT
4) LASD's Emergency Ops Bureau
5) LASD's Aero Bureau
6) AMVAC Chemical
7) LAPD*

8) Vernon LAPD*
9) Union Pacific Railroad Police*

Based on the exercise conducted, Commerce LASD identified a need for City to have a road-closure plan.

Other Mitigation Strategies: On 4/22/04, the Fire Department conducted its yearly exercise with the Police Department at the EOC.

Capabilities Assessment: Discussion was held on the Capabilities Assessment of the Plan.

Stakeholders/LA Sheriff Department: Per the requirements of DMA2K, plans must show that stakeholder concerns and recommendations are addressed, reviewed and agreed upon. The LA Sheriff's Department was identified as a stakeholder in the City of Commerce. Input and recommendations were solicited from Sergeants Brian Hudson and Charles Gates – "resident" sergeants-in-charge, and their concerns and recommendation were addressed, reviewed and agreed upon as follows:

1) Chemical Plants – LASD would like each chemical plant to provide local fire/police depts. with contingency/emergency plans. *Discussion*: Plans produced by chemical plants are provided to the Fire Dept., who then turns it over to the petro/chem inspector. These plans should ultimately reside with Robert who, in turn, can provide to LASD. Necessary data is currently available.

2) Civil Unrest – *Discussion*: Civil unrest has been identified as a threat in L.A. County (Sergeant Hanley is LASD point-person for L.A. County), but this threat may or may not exist in Commerce. If Commerce LASD has recommendation for civil unrest, they will go back and contact Sergeant Hanley as well as Bob Zarelli.

3) Railroad – Derailment, runaway trains and their containment are of concern to Commerce LASD. Union Pacific's internal policy appears to discourage release of information to the public. Lack of cooperation hinders LASD's ability to identify/contain damage and to notify appropriate agencies. Would like railroads to give employees OK to cooperate with emergency response teams, and want some type of statement issued for public safety purposes. *Discussion*: Committee agrees it is highly unlikely that representative from railroads will attend and/or participate in Hazard Mitigation Planning process. However, as a result of Union Pacific Railroad's derailment, Sheriff's department has become the central contact for the City of LA, and it's Emergency Ops' Bureau has been charged with notifying appropriate agencies. Per Bob Zarilli, railroad is trying to build a block wall encompassing 1700 linear feet, to help contain derailment/runaway trains. Bob will contact the railroads to see whether more cooperation with emergency response teams will be forthcoming.

4) Airplanes – Planes from LAX are suspended over City of Commerce when circling to land. Air traffic accidents could result in high casualties. *Discussion*: The airport declined to give take-off and landing patterns to the City of Commerce.

5) Traffic - Commerce LASD has identified a number of traffic issues, particularly with the following intersections:
   a. "Mixmaster"
   b. Garfield/Telegraph
   c. Slauson/Eastern
   d. Bandini/Garfield
   e. All of Washington, west of Atlantic

   Discussion: The City of Commerce is trying to address traffic issues and there are several proposals on the table as follows:

a. Bandini/Atlantic on/off ramp to go directly to rail yards;
b. Loop Bandini/Atlantic ramp so it doesn't let out on intersection but lands on Bell;
c. Shut down ramps @ Washington from I710 to eliminate truck traffic;
d. Expand I710 freeway;
e. Reroute all truck traffic to eliminate truck traffic during the day.

The City hasn't reached consensus on what needs to be done. Resolution requires cooperation from other cities, the COG (Council of Governments – comprised of 27 cities, 14 of which are involved in this program) as well as SCAG (Southern California Association of Governments). The City is relying on federal grant money to push this process forward.

Meeting Adjournment: Meeting adjourned at 11:00am.

Next Meeting:

The next City of Commerce Hazard Mitigation Planning Team Meeting will be held on Tuesday, July 13at 10:00AM.

*Note: Signifies departments/units that were involved at one point, but dropped out when the participation grew out of hand. (The City of Commerce was not involved in this drill.)

CITY OF COMMERCE
HAZARD MITIGATION PLANNING TEAM
2535 COMMERCE WAY
COMMERCE, CA 90040

JULY 13, 2004

Meeting Called to Order

Fifth meeting of the Ciyt of commerce Hazard Mitigation Planning Team called to order at 10:15 A.M.

Members Present

Brian Hudson *LACO Sheriff Dept.*	323.216-1898	BLHudson@lasd.ogr
Bob Zarrilli Robertz@ci.commerce.ca.us *City Planner*	323.722-4805	
Patrick Tarango PatrickT@ci.commerce.ca.us *LACO DPW Bldg & Safety*	323.887-4455	
Robert Leon RobertLe@ci.commerce.ca.us *Community Service*	323.722-4805	
Raul Berroteran RaulB@ci.commerce.ca.us *Community Service*	323.545-2184	
Denise Miley DeniseM@ci.commerce.ca.us *Community Service*	323.722-4805x2338	
Dayle Frisk Tic4Dayle@industrialcouncil.org *Industrial Council*	323.728-7222	
Theresa Hayes theresa@dimensionsui.com *Consultant/Dimensions*	626.286-8305	

Considerations of Minutes:

The June 8, 2004 Meeting Minutes were reviewed and adopted with no corrections.

Old Business

Industrial Contact List: Dayle Frisk, Industrial Council, provided a C.A.E.R Group/Committee Roster by Representative List to Robert Leon. The committee reviewed the list and determined it was incomplete. Bob will contact Los Angeles County Fire Department for the California Accidental Release

Prevention list from their Health Hazardous Materials Division. Bob received the list and emailed to Dimensions July 14, 2004. This will complete the Non-City Owned Industrial Critical Facilities list.

City Critical Facilities and Asset List: The committee agreed the lists are complete at this time.

Day-to-Day Operations and Disaster Response Lists: The committee agreed the lists are complete at this time.

Los Angeles County Sheriff's Department: Brian will supply the committee with their asset list at the August 9, 2004 meeting.

Capability Assessment:

Budget: There are budget constraints for mitigating concrete tilt-up buildings. The committee discussed the City of Commerce ability to respond to any disaster. The group agreed the City would be financial ability to response for up to 72 hours and possibly longer.

Financing is needed to structural upgrade Veteran's Park Building. Veteran's Park is an emergency shelter.

Staffing: The City of Commerce's employment application states" All City employees are required to perform assigned Civil Defense duties in the event of an emergency or disaster." Upon being hired by the city they take an oath to respond to emergencies and disasters. It is estimated 50% of the City's work force would be able to assist in a disaster, which would be approximately 200. They have up to 30 Civil Defense volunteers as needed.
The City has a Mutual Aid Agreement with neighboring jurisdictions.
The Los Angeles Sheriff's Department would have sufficient staffing to protect and assist the City.

Equipment: The City owns emergency equipment and has vendors to supplement what might be needed to adequately respond during an emergency or disaster. The committee will review the City's equipment and vendors list for updates.

Hazard Risk Analysis: The committee voted and adopted "Civil Unrest/Disorder" to the City's Hazard Risk Analysis as a moderate risk. The Risk Analysis will be amended and reissued to committee members.

Update- Stakeholders: Sheriff's update stated above, no others at this time.

Mitigation Strategy: No at this time

New Business

Questionnaire: The English and Spanish Questionnaire will be available for public input until August 31, 2004. It will be posted on the City's website, City Hall counter, and "Report to the People" newspaper. Dayle will take the questionnaires and distribute to the business representatives at the Industrial Council meeting.

Documents:

- Employment Opportunity Application: Civil Defense definition
- Administrative Manual County of Los Angeles Dept of Public Works Building and Safety Division; Emergency Response/damage Reporting Procedures
- Industrial Council/Chamber of Commerce Group/Committee Roster by Rep June 21, 2004

Adjourned at 10:15 A.M.

CITY OF COMMERCE
HAZARD MITIGATION PLANNING TEAM
2535 COMMERCE WAY
COMMERCE, CA 90040

AUGUST 10, 2004

Meeting Called to Order

Sixth meeting of the City of Commerce Hazard Mitigation Planning Team called to order at 10:15 A.M.

Members Present

Raul Berroteran	Code Enforcement	323 722-4805	Raulb@ci.commerce.ca.us
Denise Miley	Code Enforcement	323 722-4805	denism@ci.commerce.ca.us
Robert Leon	EPO	323 722-4805	robertle@ci.commerce.ca.us
Bob Zarrilli	City Planner	323 722-4805	robertz@ci.commerce.ca.us
Jan Rogala	Dimensions	707 374-6529	janrogala@aol.com
Theresa Hayes	Dimensions	626 286-8305	Theresa@dimensionui.com
Kristel Arnott	Dimensions	626 286-8305	kristel@dimensionsui.com

Considerations of Minutes:

The July 13, 2004 Meeting Minutes were reviewed and adopted with no corrections.

Old Business

Capabilities Assessment:

The Committee reviewed their critical services regarding emergency response and discussed communication

- Dispatch to the Sheriff's Department, Fire Department, the City and a Mobile Command Unit.

A staffing pattern from human resources will be provided by the Committee to include in the Plan.

The Lake Arrowhead Camp facility discussed during the July meeting will be referred to in the plan a cultural importance rather than a critical asset.

The City has their own water service that is run by another company.

Questionnaires:

The following methods will be implemented to distribute the questionnaires to the public:

- Newspaper Report to the Community
- Mail first class (Cost would be $2,000-4,000)
- Recreation and Park Service meetings
- Hire a service to go door to door

Mitigation Strategies:

Part of Commerce is built on a River bed that was filled in, exposing the City to liquefaction and was discussed by the Committee

- The Department of Geology has liquefaction maps for the City.

New Business

Recently a sinkhole was found behind Smart and Final, under the Railroad tracks and will be discussed at next month's meeting when more information is available.

A presentation was given to the public regarding DMA 2000, about 30 people attended.

Next Month's Meeting:

- Addresses for concrete tilt-up buildings
- Battalion Chief will be invited
- Invite public and post agendas

Documents Given:

- Draft of the City's Hazard Mitigation Plan

Documents:

- Railroad Task Force minutes.

Adjourned:

Adjourned at 11:00 A.M.

CITY OF COMMERCE
HAZARD MITIGATION PLANNING TEAM
2535 COMMERCE WAY
COMMERCE, CA 90040

SEPTEMBER 14, 2004

Meeting Called to Order

Sixth meeting of the City of Commerce Hazard Mitigation Planning Team called to order at 10:15 A.M.

Members Present

Denise Miley	Code Enforcement	323 722-4805	denism@ci.commerce.ca.us
Robert Leon	EPO	323 722-4805	robertle@ci.commerce.ca.us
Brian Hudson	L.A. Sheriff	323 264-4151	blhudson@LASD.org
Theresa Hayes	Dimensions	626 286-8305	Theresa@dimensionui.com
Kristel Arnott	Dimensions	626 286-8305	kristel@dimensionsui.com

Considerations of Minutes:

The August 10, 2004 Meeting Minutes were reviewed and adopted with no corrections.

Old Business

Mitigation Strategies:

The following Mitigation Strategies were developed and will be added to the Mitigation Strategies Matrix:

Project/Program Title	Joint Training with the EOC and Police Department
Cost	$3,000
Timeline/Schedule	Ongoing – two drills per year
Responsible Agency/Department	
Financing	EOC Budget
Goal Addressed	
Related Hazard	All Hazards
Prioritization	1

Traffic

Project/Program Title	Freeway Closure Plan
Cost	Cost would be specific to each individual disaster
Timeline/Schedule	Six Months
Responsible Agency/Department	Sheriff Department
Financing	Sheriff Department
Goal Addressed	Traffic
Related Hazard	All Hazards
Prioritization	2

The Committee suggested the following strategies for further development at the next meeting:

- Electronic Warning Signs and Barricades
- 911 to East Los Angeles
  If Commerce fails there would be two fall back stations in Pico Rivera
- Grant Writer

The Committee went over the DMA 2000 and review process and what would be expected.

New Business

A meeting was set up for Tuesday September 21, 2004 at 10:00am to develop more Mitigation Strategies. Dimensions will send a second Mitigation Strategies Matrix that includes their recent strategies.

Documents:

- Mitigation Strategies Matrix

Adjourned:

Adjourned at 10:40 A.M.

Hazard Mitigation Planning Public Participation

Dear Resident:

Los Angeles County is currently developing an All-Hazard Mitigation Plan as required in the Disaster Mitigation Act of 2000 (DMA-2000). This project addresses:

Safety of Life & Property by:

Implementing activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to losses from all hazards.

Reducing losses and repetitive damages for chronic hazard events.

Public Awareness by:

Developing and implementing education and outreach programs to increase public awareness of the risks associated with these hazards.

Providing information on tools; partnership opportunities, and funding resources to assist in implementing mitigation activities.

Natural Systems

Balancing natural resource management, and land use planning with natural hazard mitigation to protect life, property, and the environment.

Preserving, rehabilitating, and enhancing natural systems to serve natural hazard mitigation functions.

Foster Partnerships and Implementation by:

Strengthening communication and coordinate participation among and within public agencies, citizens, non-profit organizations, business, and industry to gain a vested interest in implementation.

Encouraging leadership within public and private sector organizations to prioritize and implement local and regional hazard mitigation activities.

Enhancing Emergency Services by:

Establishing policy to ensure mitigation projects for critical facilities, services, and infrastructure.

Strengthening emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, business, and industry.

Coordinating and integrating hazard mitigation activities, where appropriate, with emergency operations plans and procedures.

In accordance with that law, it is our intent to solicit input regarding hazards from the communities we serve. We have enclosed a short questionnaire designed to gather information vital to an effective Hazard Mitigation Planning Project. Please take a few minutes to fill out the questionnaire and return it, no later than _____ to:

Please place contact information here

Thank you for supporting our commitment to making Los Angeles County a safe place to live.

Estimado Colega:

_____esta/están actualmente desarrollando un Plan para la Reducción de Peligros, como es requerido en la Acta de Ley del 2000 para Reducción de Desastres. Este proyecto aborda:

Seguridad de la vida y de la Propiedad al:

Aplicar actividades que ayudan en proteger vidas al hacer casas, negocios, infraestructura, instalaciones críticas, y otras propiedades resistente a perdida por eventos peligrosos.

Reducir las perdidas y daños repetitivos de eventos crónicamente peligrosos.

Conocimiento Público al:

Desarrollar y aplicar programas de educación y extensión para aumentar el conocimiento público de los riesgos asociados con estos peligros.

Proveer información sobre herramientas, oportunidades de participación, y recursos para fondos para ayudar en aplicar las actividades de reducción.

Sistemas Naturales

Balancear la administración de recursos naturales, y la planificación de uso de tierras con la reducción de peligros naturales para proteger la vida, propiedad, y el ambiente.

Preservar, rehabilitar, y incrementar los sistemas naturales para cumplir con las funciones de reducción de peligros naturales.

Fomentar la Participación y Ejecución:

Fortalecer la comunicación y coordinar participación con y dentro de dependencias públicas, ciudadanos, organizaciones sin fines de lucro, negocios, y la industria para obtener un interés adquirido en la ejecución.

Alentar el liderazgo dentro de organizaciones en el sector público y privado para priorizar y ejecutar actividades locales y regionales para la reducción de peligros.

Incrementar Servicios de Emergencia al:

Establecer política para asegurar proyectos de reducción para instalaciones, servicios y infraestructura crítica.

Fortalecer operaciones de emergencia al aumentar colaboración y coordinación entre las dependencias públicas, organizaciones sin fines de lucro, negocios, y industria.

Coordinar y integrar actividades para la reducción de peligros, donde sea indicado, con planes y procedimientos de operaciones de emergencia.

En conforme con la ley, es nuestro intento solicitar información sobre peligros a nuestra propiedad y gente de nuestras comunidades vecinas y de otras partes interesadas en el proceso de reducción. Si tiene usted información que pueda incrementar o de otra manera dar un beneficio a nuestro Proyecto de Planificación para la Reducción de Peligros, favor de enviar dicha información, a no más tarde del,_____ a:

Favor de indicar su información para contacto

Gracias por apoyar nuestro compromiso para que _____ sea un vecino seguro.
Atentamente,

A Jurisdictional & Stakeholder Invitation Letter was mailed out to the following:

- City of Bell Gardens
- City of Downey
- City of Maywood
- City of Vernon
- East Los Angeles Sheriff's Office
- City of Bell
- City of Montebello
- Los Angeles County Fire Department

City of Commerce

September 1, 2004

Rosalina G. Lopez
Mayor

Hugo A. Argumedo
Mayor Pro Tem

Jesus M. Cervantes
Councilmember

Ray "Gordy" Cisneros
Councilmember

Nancy M. Ramos
Councilmember

Thomas Sykes
City Administrator

City Administrator
City of Bell Gardens
7100 S. Garfield Avenue
Bell Gardens, CA 90201

Dear City Administrator:

The City of Commerce is currently involved in writing a Disaster Hazard Mitigation Plan under the 2002 amendment to the Robert Stafford Act (PL 93-288) for reduction of damage from both natural and man caused risks that can affect our City. Commerce shares common borders with your jurisdiction and our jurisdiction may share some mutual corresponding risks, such as earthquake, flood, dam failure, wild-land/urban interface fire, and other disaster hazards.

We are inviting your comments and input into City of Commerce Hazard Mitigation Planning Team would/will consider projects that you may want the City to participate in for the reduction of risks between our two cities. Attached for you consideration is the list of Disaster Risk priorities in the order they were ranked by the Planning Team and are being considered for mitigation strategies by the City.

Bob Zarrilli, the City Planner, is the Chairperson for the City of Commerce Hazard Mitigation Planning Team. The team meets the 2nd Tuesday of each month in the City Hall Conference Room at 10:30a.m. You are welcome to be our guest at a regular meeting or you may contact Bob Zarrilli at 323-722-4805 Ext. 2337

Your concerns and Hazard Mitigation Strategy input would be both helpful and welcome. Thank you for your consideration.

Sincerely,

Bob Zarrilli
City Planner

/lr

Attachment

2535 Commerce Way
Commerce, CA 90040
Phone 323•722•4805
Fax 323•887•0841

"Where Quality Service Is Our Tradition"

Synopsis of Public Input

1. The majority of respondents does have internet access and rent their residences.

2. The respondents' concern about disasters affecting their community were:

    - Flood – somewhat concerned
    - Levee Failure – not concerned
    - High Winds – somewhat concerned
    - Dam failure – not concerned
    - Health Emergency – moderately concerned
    - Landslides – somewhat concerned
    - Earthquake – moderately concerned
    - Biological – somewhat concerned
    - Transportation Loss – somewhat concerned
    - Fire – moderately concerned
    - Telecommunications Failure – moderately concerned
    - Radiological Incident – somewhat concerned
    - Special Events – somewhat concerned
    - Terrorism – moderately concerned
    - Utilities Interruption – moderately concerned

3. The majority of respondents receive information from radio and television news.

4. The majority of respondents responded to participating in disaster preparedness as follows:

    - Attend meetings & receive information – have not done
    - Talked with family members – have done
    - Develop a household emergency plan – have not done
    - Prepare a disaster supply kit – have done
    - Been trained in emergency care – have not done

5. The majority of respondents are willing to spend 2-3 hours per year in disaster preparedness.

6. The majority of respondents did consider the occurrence of a natural hazard when the moved into their home.

7. The majority of respondents would be willing to spend more money on a safe home.

8. The majority of respondents do not carry flood insurance.

9. The majority of respondents would be willing to make their home more disaster resistant.

10. The majority of respondents has made non-structural modifications and has made structural modifications to their homes to make them more disaster resistant.

11. The majority of respondents prioritize disaster preparedness in the following manner:

    - Protecting Property – very important
    - Protecting Critical Facilities – very important
    - Preventing Development in Hazard Areas – very/somewhat important
    - Protecting Environment – very important
    - Protecting Landmarks – somewhat important

- Promoting Cooperation – very Important
- Protecting Utilities – very Important
- Strengthening Emergency Services – very Important

12. The majority of respondents offered the following opinions on strategies to reduce risk:

- Support regulatory approach – Agree
- Support non-regulatory approach – Agree
- Support development prohibition policies – Agree
- Support use of tax dollars – Agree
- Support protecting historical structures - Neutral
- Willing to make their home more resistant – Agree
- Support steps to safeguard economy – Agree
- Support improving disaster preparedness in schools – Agree

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Section 3 – Demographics & Statistics

History

How a Huge Ranch and a 1950's Tax Rebellion Gave Birth to a Thriving City

Nearly two decades before Californians passed Proposition 13, triggering a national re-examination of taxation, residents and business leaders in an unincorporated area just east of Los Angles banded together in a tax rebellion of their own. Their effort gave birth to the City of Commerce. Now home to a bustling mix of industrial parks, retail stores, entertainment establishments, and residential property.

Today, more than 40 years after it attained cityhood, Commerce still boasts some of the lowest taxes found in any California city. It also continues to be guided by a forward-looking partnership between a local government and a business community united by a joint commitment to foster prosperity.

And far from resulting in a reduction of services for residents, low business taxes have enabled Commerce to consistently attract quality business tenants, producing a broad tax base which has served to provide excellent services for residents. These include, among a municipal library system, a baseball stadium, a swimming pool complex known as the Aquatorium and since 1962, the nation's first free municipal bus system.

The tax rebellion that ushered in the birth of the City of Commerce began in 1959, when Commerce was still an unincorporated area of Los Angeles County. Residents and business leaders launched their campaign for cityhood to stave off attempts by neighboring cities to annex Commerce in order to secure its thriving tax base.

Following a vigorous petition drive, a multitude of hearings, and a spirited municipal election, Commerce became California's 67th city in January 1960. It was a defining moment, to be sure, but only a milestone in a long rich history.

From a time dating back to about 1200, the area that includes Commerce was home to a native people that later came to be known as the Gabielinos, after the San Gabriel Mission established by Spanish missionaries in 1771. The area provided an ample source of fruit and game for the native inhabitants and became the site of scores of villages and trading centers.

Spanish domination of the region, beginning in the late 1700's brought a dramatic end to a way of life that had spanned centuries. But for all the upheaval it generated, Spanish control proved to be relatively short-lived giving way first to Mexican government authority and ultimately to America's westward expansion. A figure in that expansion was Massachusetts Yankee named Abel Stearns, a Spanish-speaking naturalized Mexican citizen who, as a secret agent for Washington, worked quietly to bring California under U.S. rule. Stearns who traced his ancestry to the pilgrims, was complex character who, besides being a secret agent, was also at one time a smuggler and, at most times, a shrewd businessman, ultimately becoming California's biggest landowner. He started small, settling in Los Angeles in 1833, establishing himself as a store keeper and merchant at a time when the pueblo was a small outpost conducting business mostly with Mexico.

From 1859 until his death in 1871 at the age of 73, Stearns owned most of the land that comprises what is now that comprises what is now the City of Commerce, a sprawling ranch, Rancho Laguna, on which he raised cattle, horses, and sheep. After Stearns' death , his widow, Arcadia Bandini de Stearns, 26 years his junior, held onto the land tenaciously for about 30 years, renting it to farmers. Only in 1900 did she agree to part with any of the land, selling parcels on the advice of her attorney,

Henry W. O'Melveny, who felt she should not save her holdings for her heirs at the risk of her own discomfort. To that decision can be traced the beginnings of the industrialization of Commerce.

One of the first industrial facilities established in the area was s brickyard, the Simons Co. Plant No. 3, which opened in 1905, billed as "the largest brickyard in the world." Aided in part by the advent of the railroad, which began running through Commerce in 1888, industrialization expanded steadily, most dramatically form 1914 to 1929.

Industrial giants, including The Chrysler Corporation and Goodyear Tire and Rubber Company, permanently changed the area, displacing cottonwoods and walnut trees with modern brick buildings. By World War II, Commerce formed the hub of a major manufacturing effort for the war. Later came freeways, and, with the postwar baby boom fueling expansion, residential development and more industry.

By 1970, 10 years after the attainment of cityhood, virtually all land in Commerce had been developed, and in 1976 Fortune magazine reported that 101 of the nation's top 500 corporations operated in the city. But the years brought inevitable changes to the steel, rubber, automobile and other heavy industries, forcing the closure of many factories. Another partial redevelopment began. Obsolete factories gave way to service-oriented uses, such as warehousing, distribution centers, office complexes, financial institutions, and light industry.

What did not change was local government's commitment to creating conditions conducive to economic expansion, and in 1977, the City's new Economic Development Department began to offer such programs as site selection assistance and employment referral service – the first West Coast city to provide such services.

Emblematic of the City's commitment to helping the business community capitalize on existing conditions through such measures as a streamlined permitting process is The Citadel. Enclosed by a spectacular wall inspired by ancient Assyrian architecture, the site had housed first the Samson Tire and Rubber Co. and later Uniroyal Tire and Rubber Co. After Uniroyal ceased operations in Commerce, the City's Community Development Commission purchased the property and selected the Trammell Crow Company to redevelop it.

Thanks to close cooperation between the City and the business community, a highly ambitious $ 90 million redevelopment plan was implemented on one year. In November 1990, The Citadel opened as a 35-acre site housing dozens of fashion outlets, restaurants, offices, and a hotel complex. Drawing thousands from throughout the region, The Citadel is as much an architectural landmark as it is a triumph for business and for the community.

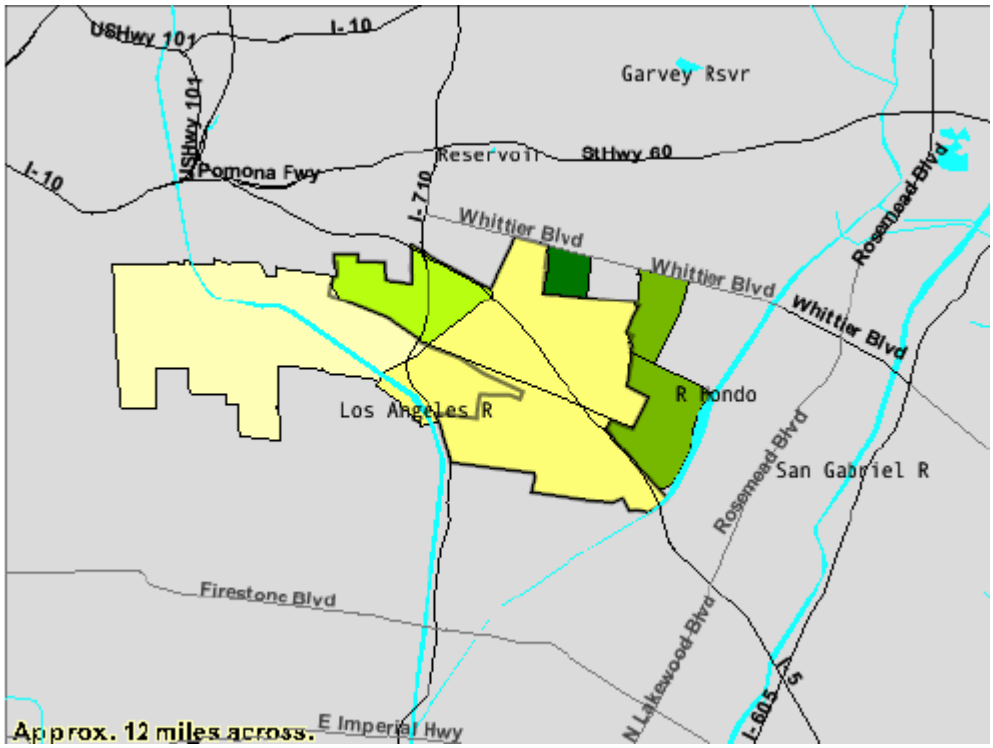
Today, what was once a huge ranch is a 6.6 square mile city that houses a resident population of over 13,000 and more than 1,800 businesses, including some of the world's best known companies. To its residents, Commerce – fulfilling the promise of those who founded it more than 40 years ago – is " The Model City." And to its diversified business community, Commerce – as it's name implies and its slogan states -is the city "Where Business Works."

(City of Commerce: An Enterprising Heritage, Hacienda Gateway Press, 1991, by Charles Elliot)

General Data

Area

The City of Commerce covers 6.6 square miles (4,160 acres), and is located in the southeast section of Los Angeles County, approximately six miles east of downtown Los Angeles.



Population

Total resident population is 13,033 (2000 Census)

Ethnicity

The ethnic makeup of the City of Commerce is as follows:

- Hispanic (93.6%)
- Other race (46.9%)
- Two or more races (4.8%)
- White Non-Hispanic (4.1%)
- American Indian (2.0%)
- Black (0.8%)

Education

SCHOOL ENROLLMENT		
Population 3 years and over enrolled in school	**4,566**	**100.0**
Nursery school, preschool	268	5.9
Kindergarten	209	4.6
Elementary school (grades 1-8)	2,124	46.5
High school (grades 9-12)	1,023	22.4
College or graduate school	942	20.6

Employment

EMPLOYMENT STATUS		
Population 16 years and over	**8,789**	**100.0**
In labor force	4,726	53.8
Civilian labor force	4,718	53.7
Employed	4,013	45.7
Unemployed	705	8.0
Percent of civilian labor force	14.9	(X)
Armed Forces	8	0.1
Not in labor force	4,063	46.2
Employed civilian population 16 years and over	**4,013**	**100.0**
OCCUPATION		
Management, professional, and related occupations	632	15.7
Service occupations	521	13.0
Sales and office occupations	1,177	29.3
Farming, fishing, and forestry occupations	7	0.2
Construction, extraction, and maintenance occupations	523	13.0
Production, transportation, and material moving occupations	1,153	28.7
INDUSTRY		
Agriculture, forestry, fishing and hunting, and mining	8	0.2
Construction	276	6.9
Manufacturing	886	22.1
Wholesale trade	367	9.1
Retail trade	497	12.4
Transportation and warehousing, and utilities	272	6.8
Information	51	1.3
Finance, insurance, real estate, and rental and leasing	92	2.3
Professional, scientific, management, administrative, and waste management services	219	5.5
Educational, health and social services	638	15.9
Arts, entertainment, recreation, accommodation and food services	260	6.5
Other services (except public administration)	262	6.5
Public administration	185	4.6
CLASS OF WORKER		
Private wage and salary workers	3,064	76.4
Government workers	670	16.7
Self-employed workers in own not incorporated business	274	6.8
Unpaid family workers	5	0.1

Housing

Total housing units	**3,380**	**100.0**
UNITS IN STRUCTURE		
1-unit, detached	1,946	57.6
1-unit, attached	551	16.3
2 units	133	3.9
3 or 4 units	195	5.8
5 to 9 units	172	5.1
10 to 19 units	30	0.9
20 or more units	349	10.3
Mobile home	4	0.1
Boat, RV, van, etc.		
Specified owner-occupied units	**1,448**	**100.0**
VALUE		
Less than $50,000	22	1.5
$50,000 to $99,999	107	7.4
$100,000 to $149,999	528	36.5
$150,000 to $199,999	578	39.9
$200,000 to $299,999	206	14.2
$300,000 to $499,999	7	0.5
$500,000 to $999,999	0	0.0
$1,000,000 or more	0	0.0
Median (dollars)	156,000	(X)

Housing Element (City of Commerce General Plan)

1.0 Introduction

1.1 State Requirements

Within the last 10 years, the State Legislature has focused increased attention on housing issues in California. The State's growing population, particularly in the heavily urbanized areas of Los Angeles County, has placed increasing demands on the housing stock available to all income levels.

In recognition of the need of all persons to have sound, safe and affordable housing, the State has established definitive guidelines for General Plan Housing Elements. The Commerce General Plan Housing Element is contained in two documents which together fulfill the requirements of the State Law. These documents are the Commerce General Plan Housing Element and the Housing Element Technical Report. This element is organized in a manner which will facilitate updating in accordance with State General Plan guidelines.

The Housing Element provides an over view of existing conditions, projects five year housing needs, and proposes goals and policies which will work toward making safe and sound housing available to all income groups in the City. The Technical Report contains necessary background data. Table H-1 summarizes the State requirements for housing elements and indicates how the Element and the Technical Report together fulfill those requirements.

State Law is very specific concerning the preparation and content of housing elements. The Stat Legislature understands their importance in implementing statewide goals for providing decent and suitable housing for all persons. The Legislature also recognizes the importance of providing affordable housing to households with low or moderate incomes. State Law makes it clear that provision of affordable housing is the responsibility of all local governments and, using vested powers; local governments should make a conscious effort to see that there are housing opportunities for all income groups (Section 65580). The intent of the State housing element requirements is based on the following concerns (Section 65581):

- Local governments should recognize their responsibilities in contributing to the attainment of the State's housing goals.
- Cities and counties should prepare and implement housing elements coordinated with State and Federal efforts required to attain the State's housing goals.
- Each local government must cooperate with other local governments to address regional housing needs.

State requirements for the preparation of housing elements outline the types of analysis needed to assess existing and projected housing needs. In addition to the analysis, State Law specifies the nature of the community goals and the detail required in objectives and policies as they relate to housing. Finally, the State Law contains very specific information

concerning the content and effect of programs identified to implement the housing element.

The Commerce Housing Element fulfills State requirements for housing element content. More importantly, however, the Element defines very specific programs which will satisfy the identified housing needs for all income groups. Furthermore, the Element proposes programs to protect the City's unique housing resources.

The citizens of Commerce played an important role in developing the goals and plicies presented in the Housing Element. First, many citizens responded to a General Plan questionnaire which was distributed to all households. Second a citizen's advisory group met five times early in the planning process to discuss, among other things, the future of the City's residential neighborhoods. The group was instrumental in identifying housing issues, in preparing goals and policies and in establishing land use policy for the City's five distinct neighborhood areas.

Once a preferred land use policy alternative was developed, City staff held four neighborhood meeting to discuss proposed residential land use policy. The meetings to discuss proposed residential land use policy. The meetings were well attended. Many residents also attended the General Plan public hearings held before the Planning Commission and City Council. Commerce citizens provided input fromt eh beginning to the end of the General Plan process.

1.2 Issues Identification

Virtually all of the land area within the City limits was developed when the City incorporated in 1960. Over the years, the lack of available land has presented unique challenges to the City in its efforts to provide housing for its growing population. Innovative redevelopment projects and strong housing rehabilitation programs have quality of available housing. However, the average household size continues to grow, placing increased pressures on the existing housing stock.

Nearly 95 percent of the City's residents live in five well defined neighborhoods. The neighborhoods are scattered throughout the City. Most housing units in these neighborhoods were built before 1960, and some units show signs of age and wear. In general, however, the housing stock is in good condition.

- A detailed analysis of demographic and population characteristics in the City of Commerce reveals the following issues and trends:

- The average household size is increasing due to trends towards larger families. In 1980, the US Census reported the average household size to be 3.59 perons. By 1986, the average household size had increased to 3.81 persons as reported in population estimates prepared by the State Department of Finance.

- Hispanics continue to comprise high percentage (85 percent) of the City's population.

- There has been an increase in the number and percentage of elderly residents (over 65) in the City. The City's population as a whole has aged, although the median age (24.1 years) remains lower than the County median (29.8 years).

- The number of overcrowded households continues to increase.

- The median incomes for families in the City are lower in the relation to Los Angeles County as a whole and higher when compared to the median household incomes of surrounding communities.

- Housing costs in Commerce are lower than housing costs in the surrounding region.

- Both the number and percentage of multi-family units has increased over time.

- Approximately 10 percent of the City's housing stock could be considered as candidates for participation in rehabilitation programs.

- The City has a historic low vacancy rate for housing units.

Although the City's population is increasing and limited physical space exists for residential expansion, many opportunities are available for improving and expanding the housing stock. These opportunities include:

- Housing Set Aside – The City Redevelopment Agency maintains an active residential set aside program which continues to provide new housing for low to moderate income groups.

- Civic Responsibility – City residents have great pride in ownership and take advantage of available housing rehabilitation programs. These programs are outlined in detail in Section 2.3 of this element.

- Code Enforcement – the City has a strong code enforcement program which works to improve the condition and appearance of single and multiple – family units.

1.3 Housing Constraints

The City of Commerce recognizes the need for sound, decent housing that is accessible to all income levels. However, numerous constraints must be over some to produce the quantity and quality of housing required to satisfy the City's housing needs.

Land Inventory: The City of Commerce is completely developed with a limited number of vacant parcels available with a limited number of developments. In the past, new development has consisted of infill and replacement construction in existing residential neighborhoods. Within recent years the City Redevelopment Agency has sponsored major housing projects on lands converted from industrial uses to residential areas. However, similar opportunities no longer exist due to the growing strength and rehabilitation of industrial areas. Land use policy calls for existing land use patterns to remain. New residential development will occur only as infill or recycling of existing older units to higher density developments.

Market Constraints: As land values, construction costs and finance charges increase over time, the cost of all new housing will rise accordingly. In recent years the high cost of financing new construction and new home purchases has tempered private residential development in the City.

The City has no control over the market fluctuations which affect housing costs because market conditions result from a complex interplay of national economic policies and

general economic conditions. The City Redevelopment Agency, however, has implemented projects and programs which encourage new construction and housing rehabilitation even during periods of a sluggish economy.

Housing costs in Commerce are relatively low compared to the average price of a home or average rental rate in Los Angeles County as a whole. In 1980, the median house value in Commerce was $60,000, compared to $87,000 for Los Angeles County. Median rent was $185 in Commerce and $244 in the County.

Governmental Constraints: Governmental constraints may be administrative or financial. While administrative constraints serve to protect the community and to guide sound development, development can be hindered if policies and permit requirements are inconsistently applied and enforced.

The City's General Plan and zoning ordinance are the administrative tools used to establish residential land use patterns and residential densities. General Plan land use policy generally calls for existing land use densities to be retained. Higher densities will be permitted in the Ferguson and Southeast neighborhoods. However, land use policy will not provide for an increase in new units in the Bandini-Rosini, Rosewood or Northwest neighborhoods other than those used for infill or replacement housing. The unit count in the Northwest neighborhood will also remain stable as code enforcement activities and redevelopment issues continue to implement policies calling for Medium Density Residential development.

State law requires zoning ordinance land use requirements to be consistent with general plan land use policy. In Commerce, the residential zone district density regulations conform to land use categories identified in the Land Use Element. The current balance of land use is not overly restrictive and will accommodate moderate growth in residential development in the General Plan.

While the local community effort to lower cost continues, some constraints have been added by the State. Energy conservation standards add expense to the per – unit housing cost. These additional costs may serve to disqualify low and moderate income home-buyers.

The State of California Energy Resources Conservation and Development Commission, Conservation Division, has established guidelines used by building code enforcement officials to implement energy regulations established by the California Energy Commission. All new development must demonstrate an effort to comply with regulations concerning energy consumption, and if necessary, implement specific design measures that will reduce energy consumption to what is considered "an acceptable level." The original regulations and subsequent amendments serve as an important mitigation device to reduce the potential electrical energy and natural gas consumption over what might be expected if the regulations did not exist.

In spite of the ongoing efforts to reduce the nation's dependence on nonrenewable energy resources and the conservation of energy, increased development will place greater demands on energy resources.

The City's current permit processing fees and procedures do not place significant financial constraints on residential development. The City does not charge any fees for site plan approval for either new single family or multi – family units. Permit processing time ranges from a few days for single family homes to three or four weeks for multi-family projects.

The Los Angeles County Department of Building and Safety provides structural plan check and building permit fees as of October 1986 are summarized on Table H-29 in the Housing Element Technical Report. These figures can be expected to change over the lifetime of this element.

Included in table H-29 are fees which may be assessed by school districts. State law may be assessed by school districts. State law authorizes school districts to collect fees for all new residential development, including the expansion or reconstruction of existing housing units. Although State law places a cap on fee rates, the rates may be high enough to discourage unit construction. Those persons particularly affected may include residents seeking to add onto their homes to relieve household overcrowding.

Environmental Constraints: No known earthquake faults traverse Commerce, and the City is not exposed to natural environmental hazards such as flooding, slope erosion and land sliding. Commerce does lie within the dam inundation area of the Garvey Reservoir in Monterey Park. Dam rupture could result in the flooding of areas between Eastern Avenue and Garfield Avenue. The Ferguson Neighborhood and portions of the Rosewood neighborhood could be affected by the flooding.

Within the City limits, there are several man-made hazards which could constrain residential growth. These hazards include noise and industrial activities.

The industrial operations located throughout the City produce unpleasant dusts and odors which may be irritating and harmful to residents. Moreover, some industries produce and store toxic materials. Figures included in the Public Safety Technical Report highlights those industries identified as “high risk” industries. Both existing and new residential development should be protected from these potential health hazards.

2.0 Proposals

2.1 Identification of Housing Needs

A primary goal of the City of Commerce is to ensure that all social and economic segments of the community have adequate housing to meet present and future needs. To implement this goal and the policies related to this goal, the City must target its housing and assistance programs must target its housing and assistance programs toward those households with the greatest need. This section of the Housing Element identifies those categories of need as defined by Feral and State law. The four major need categories include: 1) housing needs which result from increased population growth; 2) housing needs which result form the deterioration of existing units; 3) housing needs which result from households paying more than they can afford for housing; and 4) housing needs which result from large families or female-headed households. Some households may fall into one or more of these categories. For example, a low income household may also be a single-parent household residing in a substandard housing unit.

Regional Housing Allocation: Since 1980, the population of Commerce has increased 16 percent. Much of the growth can be attributed to an increase in the average household size and the addition of new housing units to the housing stock. Since the 1980 Census was conducted, approximately 276 new units have been constructed in the City.

It is anticipated that population growth within the next five years will be attributed to two primary factors: 1) immigration attracted to the City by new housing opportunities; and 2) increased household size due to natural increases in the population and

demographic trends which favor younger families with greater numbers of dependent children. Because the City is largely built-out, it can be expected that increased household size will be a major component of growth.

Since 1980, the average household size in Commerce has increased by about .22 persons per household (form 3.59 in 1980 to an estimated 3.81 in 1986). Demographic data for Hispanic communities in Los Angeles County indicates that household sizes will continue to increase as greater numbers of immigrants settle in the metropolitan Los Angeles area. Information provided by the Southern California Association of Governments (SCAG) indicates that the population of the East Central Los Angeles area is increasing at an average annual rate of 1.2 percent. If Commerce alone were to grow at 1.2 annual percentage rate, an estimated 14,068 people would live in Commerce by 1992 and by the year 2000, the population would swell to 15,836.

To fulfill the growing demand for housing in the Southern California region, Commerce will continue to provide additional single and multiple-family housing units for all income groups. The SCAG 1983 Regional Housing Allocation Model (SCAG-RHAM) calls for Commerce to provide 319 units in the next five year period (1987-1992). (The 1982 SCAG-RHAM has been updated as provided in SCAG's July 9, 1984 letter to SCAG region planning directors.) Table H-2 shows how the units should be distributed among the various income groups according to the SCAG-RHAM. The SCAG-RHAM figures serve as guidelines not mandates, for the provision of new housing.

Because limited space is available in Commerce for new residential development, it may be difficult for the City to provide housing in accord with SCAG's regional housing goals. The City's land use policy, market demands for new housing, and population growth are also important consideration in determining housing needs within the next five year period.

In the past, Commerce has aggressively pursued regional housing goals through a series of aggressive and innovative housing programs. Between 1981 and 1986, the City exceeded its housing allocation. The 1981 Housing Element predicted a need for 262 units over a five year planning period. During that time, approximately 276 new units were provided. A majority of the units were built for low and moderate income.

Substandard Housing: A housing condition survey was conducted by Cotton/Beland/Associates, consultants to the City, in March of 1986. The survey identified a total of 226 units in poor condition, that is, units requiring minor to substantial rehabilitation. In addition 32 units were determined to be as blighted and in need of replacement.

The Northwest Neighborhood contains the highest percentage of substandard and dilapidated units with over 20 percent of the units in some state of despair. In March of 1985 the City adopted the Northwest Neighborhood Specific Plan for the purpose of improving housing conditions in this neighborhood. The Specific Plan is presently being implemented as City resources permit.

The age of the housing stock is a major contributor to overall housing conditions in the City. Over 50 percent of the existing units were constructed prior to 1950. Only 12 percent have been built in the past 16 years (1970 – 1986). The majority of the new units were constructed in the Village Homes subdivision, a Redevelopment Agency project which provided 140 single –family homes for low to moderate income households and 96 multi-family units for senior citizen households.

Housing Affordability: The Federal Government has adopted a national standard that is used to identify households with housing costs in excess of the amount the households are able to afford. These standards indicate that a household paying more than 30 percent of its gross monthly earnings for housing may be paying more than it can afford. The Federal standard assumes that any greater proportion paid for housing will result in less money available for food, clothing, health care and other necessities.

Data supplied by the 1980 U.S. Census indicates that 21 percent of all Commerce households, or 606 total households, are paying more than 30 percent of their gross monthly income for hosing. Approximately 507 lower income households (those earning less than or equal to 80 percent of the median County income) are overpaying for hosing, Renters comprise 394 (78 percent of these lower income households. Low income renters are particularly vulnerable to the effects of rising housing costs because low income wages generally do not increase in proportion to increases in the cost of living.

Special Needs Groups: State Housing Law requires housing elements to address housing needs of the following special needs groups: the handicapped, elderly, large families, farmworkers, families with female heads of households, and families and households, and families and persons in need of emergency shelter. A single household may fall into one or more of the special needs categories.

Handicapped – The 1980 U.S. Census reported 162 handicapped households in Commerce. Handicapped households do not necessarily require specialized grouip or institutional quarters. Rather, many handicapped persons and households have ambulatory disabilities which can be accommodated in standard housing units adapted to meet handicapped needs. Title 24, Part II of the California Administrative Code constructed to be handicapped adaptable (e.g. larger bathrooms wider halls, structural provisions for handrails).

Elderly – The elderly comprise 5.4 percent (155 total households) of the City's household population. Over 13 percent of these elderly households are classified as impoverished. Because many elderly persons live on fixed incomes, increases in housing costs can significantly impact the percentage of monthly income which elderly households pay for housing.

In the past, the Commerce Redevelopment Agency has responded to the elderly housing need by increasing low-cost housing opportunities for senior citizens. Redevelopment monies in part have financed the Heritage Village Senior Apartments (96 rental units) and the Lanto Senior Complex (7 condominium units). The Redevelopment Agency currently is preparing plans for a 76 unit senior citizen apartment development in the Southeast neighborhood.

Large Families: A total of 837 households (29 percent of all households) in Commerce have five or more persons living in a single household. This is a high percentage compared to comparable statistics reported for the region and in part may explain why Commerce has an equally high percentage of overcrowded households. In 1980, the average household size in Commerce was 3.59 persons, whereas Los Angeles County as a whole averaged 2.75 persons per household. By 1986, the average Commerce household increased in size to 3.81 persons, up 6.1 percent from 1980. Large families and overcrowded households place unusual strains on the existing housing stock. Many of the City's older homes are small two and three bedroom units. To accommodate large families, residents have constructed room additions and second units on small single family lots, thereby exacerbating overcrowding problems throughout entire neighborhoods.

Many of the additions have been constructed illegally. Poor construction techniques have contributed to the premature dilapidation of many housing units.

Farmworkers: Most Commerce residents (89 percent) work in the Los Angeles 0 Long Beach Metropolitan area in non-agricultural occupations. The SCAG 1983 Regional Housing Allocation Model identified seven (7) farmworker households in the City, accounting only 0.2 percent of total households in the City. Six of the seven households, according SCAG, qualify for housing assistance.

Female Headed Households: Female-headed households account for 15.9 percent (458 total) of the City's household population. One hundred twenty – five (125) of these households have been identified as impoverished.

The City has not established programs particularly aimed at female-headed households. In many instances, female-headed households qualify for assistance under other needs.

Families and Persons in Need of Emergency Shelter: Recent amendments to State housing law require jurisdiction to assess the housing needs of local homeless populations.

The transient habits of the homeless make accurate needs assessments difficult. Estimates of the number of homeless in Los Angeles County range form 25,000-75,000. Almost half of the homeless population is believed to be concentrated in the Skid Row area of downtown Los Angeles.

No independent studies have been performed to determine the extent of homelessness in Commerce. The churches in Commerce do not offer emergency shelter to individuals or families, and the County does not maintain shelters in the City, therefore it is believed that the homeless population in Commerce is low. Vagrancy reports do not provide an accurate picture of the homeless population because state laws limit the ability of government officials to county these persons among the homeless.

As the homeless problem continues to become an increasing concern in Southern California, Commerce will obtain a clearer picture of its own need for emergency shelters. Ongoing public and private studies will produce a better understanding of the extent of homelessness and its impact on individual cities within the Los Angeles area.

2.2 Programs and Goals

A variety of housing assistance programs are available though the City's Redevelopment Agency. These programs are designed primarily to assist special needs groups with home maintenance and home improvement. Some program funds may also be used to construct room additions, thereby relieving unit overcrowding.

The City Redevelopment Agency also maintains several ongoing programs which provide new housing units and assist in financing home and neighborhood improvements throughout the City.

The Agency uses redevelopment set-aside funds to acquire vacant lots and to purchase substandard and dilapidated housing units. Where possible, residential lots are consolidated to facilitate development of higher density projects. Redevelopment funds have also been used to lower income households. Several of the existing loan and rebate

programs utilize redevelopment monies to supplement available State and Federal housing program funds.

The Redevelopment Agency will continue to use a minimum of 20 percent of tax increment revenues to finance housing programs for low and moderate income households. Implementation of the Greenwood Neighborhood Development Plan will continue with the Agency acquiring lots for recycling to higher densities. The Agency will also continue to replace nonconforming and dilapidated units in the Northwest area through implementation of the Northwest Neighborhood Specific Plan.

The City's existing housing programs are described below. Housing program goals are summarized in table H-3.

Handyman Program – The Maravilla Foundation, a non-profit service organization, administers the City's Handyman Program. The program provides yard clean-up services for low income elderly and disabled households. Handyman funds are provided though the Community Development Block Grant (CDBG) program. Through the Handyman Program the City seeks to upgrade the appearance of the City's neighborhoods.

The City does not anticipate continued CDBG funding from existing sources. However, the Handyman Program will remain available to qualifying households through financing provided by the Redevelopment Agency, which will fund the program using tax increment revenue.

Low Interest Loans – The Low Interest Loan Program is available to anyone who meets the eligibility requirements. The maximum loan amount is $15,000 with a maximum 30 year repayment schedule at a six percent yearly interest rate. Loan funds may be used for the rehabilitation of privately – owned housing structures consisting of one to four units and must be at least 10 years old. Units must be in a less than adequate condition due to their neglected maintenance.

The City actively solicits homeowner participation in the low interest loan program to ensure that existing housing units provide safe and decent shelter for residents. Through code enforcement activities the City will continue to identify units in need of repair. Households qualifying for the program will receive assistance and guidance from Community Redevelopment staff. A total of 94 households participated in the Low Interest Loan Program between 1980 and 1986. this program will be continued with an annual goal of 19 households participating in the program during the next five – year period (1987-1992).

Deferred Loans – This program provides deferred loans up to $12,500 for persons who are 1) 62 years of age or older, and receiving social security benefits; 2) disabled or handicapped; or 3) members of a very low income family, as per Section 8 definition. Also, loans may be issued to persons living in units which "manifest a clear and present risk of harm to the health and safety of the occupants or neighboring residents."

Deferred loans, like low interest loans, are designed to assist special needs households with unit maintenance. By encouraging improvement and maintenance of the existing housing stock, the City can reduce the cost to the community of providing housing for these special needs groups. Code enforcement and Community Redevelopment staff efforts will continue to encourage participation in the deferred loan program. Funding is provided by redevelopment.

During the 1980-1986 period, 44 households participated in the Deferred Loan Program. This program will be continued with a 1987-1992 goal of 40 additional households per year.

Rebate Program – The Rebate Program permits homeowners and property owners to receive a 40 percent rebate on the cost of building materials for unit rehabilitation or room additions. Rebate amounts are limited to $7,500, and applicants; incomes cannot exceed 80 percent of the County median income to qualify for the program.

Again, the rebate program is targeted at lower income households. The rebates enable homeowners to construct room additions which can ease household overcrowding. Funds may also be used to perform home improvements. Like the loan programs, program implantation will be the responsibility of code enforcement and Community Redevelopment staff members. The City plans to continue financing the rebate program with redevelopment funds.

The Rebate program assisted 495 households during the period between 1980 to 1986. This program will continue to provide assistance to 500 during the next five – year period (1987-1992).

Section 8 Housing Assistance – The County of Los Angeles provides Section 8 rental assistance to lower-income renters through the Los Angeles County Housing Authority. The County will continue to administer the program as long as funding is available. Whenever possible, City staff will refer potential section 8 households to the County for housing assistance. Section 8 housing assistance was provided to 42 households between October 1982 and March 1986. This program will continue as along as Federal funds are available to implement the program.

Elderly Housing – The Redevelopment Agency has made the provision of affordable housing through financing for the elderly residents in the City. During the five-year period between October 1982 and March 1986, 300 units were financed for exclusive use by elderly persons through the Redevelopment Agency. An additional 76 units will be constructed during 1987. The City remains committed to the goal of ensuring that elderly residents have access to sound, safe, and decent housing. The City of Commerce Redevelopment Agency will provide financing for 45 new units for qualifying elderly persons during the five-year period beginning in 1987 through 1992.

Funding for the development of elderly housing will come form a variety of sources. The primary responsibility for these projects will continue to be with the City of Commerce Redevelopment Agency.

Housing Relocation Programs – the City of Commerce Redevelopment Agency will implement the Land Use Element and Housing Element goals that call for the relocation of housing units in industrial areas to areas that are more compatible with residential development. Much of this activity has occurred in the Northwest Planning Area though these efforts will be expanded to include residential development in the Atlantic/Washington Planning Area. Ongoing housing relocation efforts in the Northwest Planning Area will be continued.

The City will replace units lost due to the implementation of the land use policy. The implementation of the land use policy will be long-term in nature and will not result in any significant or immediate increase in the demand for housing. The Redevelopment Agency provided 475 new units for replacement housing during the five-year period between 1981

and 1986. The goal for replacement housing during the next five year period will be 100 new units.

Principal funding for the relocation program will come from the Redevelopment Agency, which will commit 20 percent of its tax increment revenue to housing related projects.

New Housing – the City of Commerce will encourage new residential development in those areas where such development is appropriate and permitted under land use policy. Virtually all new development will involve infill or replacement housing according to "build-out" projections. The City could accommodate additional units with the implementation of the Land Use Policy.

The new housing will include projects financed by both public and private sources. Many of these new units will be provided by the programs discussed previously. The Redevelopment Agency has been very active in the past ten years and has provided much of the required capital to finance new residential development during this period.

In addition, the Redevelopment Agency will target 32 units identified as being dilapidated for demolition and subsequent construction or replacement housing.

During the past five-year period, the Redevelopment Agency has assisted in the financing, rehabilitation or construction costs for 437 households. During the 1987-1992 period, the Redevelopment Agency anticipates that an additional 50 new units will be constructed with Agency assistance. This number does not include new units constructed under the programs cited above.

New housing starts undertaken by the private sector are difficult to project given the many factors that may affect the "housing market." An estimated 235 residential building permits were issued during the five-year period beginning in 1981 and this included a significant number of units that received some form of assistance.

The City of Commerce will encourage new residential development in htose areas of the City where such development is appropriate. An estimate 1,130 additional units are possible under the land use policy described in the Land Use Element. Much of the new residential development will occur in the Ferguson and Southeast Planning Areas where "High Density Development" is permitted which, overall, exceeds the existing densities.

Code Enforcement – The City employs a full-time Poperty Maintenance Officer who responds to maintenance complaints. The Officer also surveys the neighborhoods to look for units requiring rehabilitation or replacement. The Community Redevelopment staff and property owners to identify units in need of housing assistance.

In order to address the continuing problem of illegal units, the maintenance officer surveys the City to identify illegal units, to notify property owners that they are in violation of City law and the steps necessary to bring their properties into compliance with City codes. These efforts result in improved maintenance of housing units throughout the City. Housing policies call for code enforcement staffing to be maintained at a level which will allow all residential properties to be inspected on a regular basis.

Other Programs – In the past, the City has used UDAG funds and an SB 99 bond issue to subsidize construction of 140 new single –family homes in the Rosewood neighborhood. Senior citizen housing projects have been funded by the California Housing Finance

Agency and the Federal Section 8 NOW Construction Program. The City will continue to use available Federal and State resources to supplement City housing programs.

The City's zoning regualations in a sense offer low-cost housing programs. Provisions for manufactured homes, "granny flats" and density bonuses present homeowners and developers with opportunities for building lower cost residential units.

Manufactured homes, or mobile homes, typically are less expensive than standard stick-built units. The zoning code indicates that manufactured homes may be placed on R-3 lots, provided that the units conform to all R-3 zoning requirements (e.g. setbacks, parking spaces). The City may require homeowners to modify manufactured homes to resemble surrounding conventional units.

The zoning code permits more than one unit to be built on an R-1, single family lot. These second units, commonly referred to as "granny flats," may provide housing for relatives of persons living in the primary unit; granny flats cannot be rented. Such units may help fulfill the housing needs of the City's elderly residents.

Density bonuses are incentives the City may offer to private developers in exchange for increased low and moderate income housing units. Developers may be permitted to exceed zoning density caps by 25 percent if proposed housing projects guarantee a number of new units will be affordable to low and moderate income households.

2.3 Land Use Policy and Housing and Future Population

Projecting the population for Commerce is not an easy task given the fact that historic growth rates fail to reflect the direction of more recent trends. From 1960 to 1970 the City experienced a gradual population increase, although in the decade following 1970 the population actually declined. Within the past six years, however, the number of people living in the City has increased substantially, from 10,509 persons in 1980 to an estimated 12,192 in 1986. Much of this growth can be attributed to an increase in the number of dwelling units and to an increase in average household size. Commerce has absorbed a significant number of residents migrating into Los Angeles from Mexico and South America in recent years. A complete discussion of growth trends is provided in the Housing Element Technical Report.

Four separate and distinct population forecasts have been made for Commerce using the following data sources: the 1980 U.S. Census; the 1986 Census of Central Los Angeles County, Department of Finance (DOF) population estimates; and preliminary SCAG population policy forecasts. Additionally, population projections have been made based on General Plan land use policy. Land use policy places a theoretical limit on the number of housing units which can be provided in the City given the amount of land available and the building intensities permitted. This in turn may establish a population cap, assuming the household size remains constant.

Residential Development in Land Use Policy:

The Commerce General Plan Land Use Policy Map recognizes three categories of residential land use. Theses categories are described in the Land Use Element as follows:

Low Density Residential: This category is characterized by single-family residential development. Low density development corresponds to the R-1 zoning designation.

Densities may range from 0-11 dwelling untis per acre. Assuming that the average household size for the individual neighborhoods determined in the 1980 Census remains constant, the build-out population for this category will be 5,193 persons living in 1,431 units. If only 80 percent build-out is achieved, which is considered likely by SCAG, the total population in this category will be 4,156 persons living in 1,192 units.

Medium Density Residential: This designation corresponds to the R-2 zoning designation. Duplexes and detached single-family units may be constructed in medium density areas. The units may be built within a density range of 0 to 17 units per acre. Given the same assumptions considered in the "Low Density Category," the build-out is achieved, 1,110 units are possible in this category with a total population of 7,388.

High Density Residential: This category of land use allows for multiple family residential development, similar to R-3 zone designation. Development may include condominium and townhome projects. Densities may range form 0 to 27 units per acre. Under a build-out scenario that considered 80 percent build-out, the total number of units possible in this category is 1,059 units with a corresponding population of 7,388 persons.

Because the City's neighborhoods are completely developed and the General plan Land Use Policy map does not provide for substantial additions to the residential land inventory, large population increases are not anticipated. Land use policy generally calls for retention of existing residential densities and preservation of existing single-family neighborhoods in most areas. Additions to the housing stock will result from limited infill construction and future long-term recycling of housing units throughout the City.

Over time, notable increases in the City's housing stock may result form redevelopment and new development activities in the Southeast and Ferguson neighborhoods. Land use policy permits high density residential development in both areas. Continued implementation of the Greenwood Neighborhood Development Plan will encourage recycling to higher densities throughout a large portion of the Southeast Planning Area.

More significantly, land use policy will allow for some existing industrial properties to convert to high density residential land uses in two areas of the City. Approximately ten acres of industrially developed land (comprised of 42 separate lots) in the Ferguson neighborhood may be redeveloped with residential uses. As indicated above, land use policy calls for a specific plan to be prepared for the neighborhood.

The total dwelling unit count and maximum population which could be expected it the residential neighborhoods were developed and occupied to capacity is significantly greater than the existing population and number of housing units. This theoretical capacity assumes that all parcels would be developed to the maximum allowable densities. A second measure of capacity is referred to as "effective capacity" which recognizes those factors that may affect future development including those neighborhoods that will not recycle to higher desities. The Southern California Association of Governments (SCAG) supports the idea that effective capacity generally may be calculated to be 80 percent of theoretical capacity.

Population Projections:

A series of population projections were prepared for the City of Commerce to ascertain when the City would achieve "theoretical capacity." Population projections generally rely

on historical population data to "project" the future population growth. Three types of population projections or models were employed in this instance: shift, share, linear models. These projections are then compared to SCAG population projections for the City as well as the "build-out" projections discussed in the preceding section.

Figure H-1 graphically compares three separate population projections to the population cap suggested by Table H-4. The 1980 Census and 1975 and 1985 Department of Finance data were made using shift, share and linear projection models. The SCAG data presented represents SCAG's policy projections for the years 2000 and 2010.

Linear projections assume that a city will continue to grow at historic rates. Shift and share models, however calculate growth as a percentage of regional (in this case, County) population growth.

Population projections utilized Department of Finance data for 1985 rather than Census data form the Special Central Los Angeles Census conducted in 1986. Inherent problems arise in using the latter to project the population for Commerce. First, a review of the Census's report for Commerce reveals that data for a census tract not with the incorporated City limits were included in population and dwelling unit enumeration for Commerce, leading to an assumed over count of 198 persons. Secon, by coincidence, the total number of dwelling units reported (including those in the erroneous Census tract) matched the 1985 DOF unit estimate, indicating possible data manipulation. Finally, most undocumented persons living in the City are not recorded in Census figures; therefore, the actual population may be higher than reported. In sum, 1986 the Census figures do not provide optimum base data for making population projections.

Assuming that total build-out is achieved, the City's housing stock would increase to 5,453 units with a corresponding population of 19,565 persons, assuming that average household size identified in the 1980 Census remains constant. In effective capacity, (80 percent build-out) is achieved; the City's housing stock would increase to 4,362 units with a corresponding population of 15,652 persons.

If the land use policy was implemented to such an extent that "effective capacity" were achieved, an additional 1,108 units beyond the estimated 3,254 which already exist would result. The City's population would increase by 3,460 persons under an "effective capacity" development scenario.

The actual rate of population growth in Commerce will be correlated to increases or decreases in average household size. Also, the City's long range ability to provide new housing will allow the gradual growth. Land use policy does call for the conversion of approximately 10 acres of industrial land to high density residential land uses. However, specific plans and redevelopment plans may require many years to adopt and implement. Priority will be placed on implementing existing plans (the Northwest Neighborhood Specific Plan and the Greenwood Neighborhood Detailed Development Plan).

3.0 Goals and Policies

It is the primary goal of the City to provide all residents with sound, safe, decent and affordable housing. To move toward this goal, the City will continue to:

- Improve the quality of the existing housing stock;
- Provide new housing wherever possible: and

- Ensure the highest possible quality of living for all social and economic groups.

GOAL 1.0 – Provide a wide range of housing by location, type and price to meet the existing and future needs of the City.

Policy 1.1 – Maintain the lower residential densities in the Bandini-Rosini and Rosewood neighborhoods.

Policy 1.2 – Restrict further construction of multiple family units to only those areas designated on the Land Use Policy Map for high density residential development.

Policy 1.3 – Increase the amount of housing available to senior citizens by providing developers with density bonuses, by using Redevelopment set-aside funds, and by using available State and Federal housing assistance programs.

Policy 1.4 – The City will make every effort to meet the goals for new and rehabilitated housing units in Commerce established by the Housing Element.

Policy 1.6 – Vacant lands within residential areas will be developed with residential housing units in conformance with the Land Use Policy Map.

Policy 1.7 – The majority of new development in the Southeast Land Use Planning Area will consist primarily of medium and high density residential projects.

Project 1.8 – New housing for low and moderate income households should not be concentrated in any single planning area.

GOAL 2.0 – Encourage the maintenance of the existing housing stock.

Policy 2.1 – Continue to rehabilitate existing substandard housing units pursuant to the existing Building and Safety Code.

Policy 2.2 – Enforce the existing Building and Safety Code and the Zoning Ordinance to prevent the construction of illegal housing units.

Policy 2.3 – Continue to use CDBG and other Federal and State funding sources to upgrade the existing housing stock.

Policy 2.4 – Continue to implement the Northwest Neighborhood Specific Plan to ensure that all units within this neighborhood provide residents with sound, decent housing.

Policy 2.5 – Prepare a Specific Plan for the Ferguson neighborhood. The Specific Plan will permit substandard units to be upgraded, thereby enhancing the appearance and condition of the neighborhood.

GOAL 3.0

Policy 3.1 – Housing units requiring demolition must be replaced with units constructed at densities no to exceed those limits prescribed by the General Plan.

Policy 3.2 – New higher density residential projects should be kept at scale (number of units, height, etc.) compatible in design with adjacent residential areas.

Policy 3.3 – Those areas designated High Density Residential on the General Plan Land Use Map shall be buffered from adjacent lower density residential land uses with medium density residential projects.

GOAL 4.0 – Encourage quality construction in new residential development and require all properties to be maintained to the greatest extent possible.

Policy 4.1 – Housing for low and moderate income households should have the same standards for design, construction, and maintenance found in more expensive housing.

Policy 4.2 – Employ adequate code enforcement staff to ensure that residential properties are inspected on a regular basis.

Policy 4.3 – Property owners will be required to maintain properties to the greatest extent possible.

Policy 4.4 – Assist low and moderate income households with property maintenance by informing residents about the Handyman program, available low interest and deferred loans, and the City's home improvement rebate program.

Policy 4.5 – Establish a "House-of-the-Quarter" program which recognizes and rewards property owners for exemplarily property maintenance.

GOAL 5.0 – Protect residential properties from the hazards and health risks associated with industrial development.

Policy 5.1 – Prohibit the establishment of high risk industrial operations adjacent to residential neighborhoods.

Policy 5.2 – Prior to the development of new residential projects in those areas that were occupied by nonresidential land uses, the development sites should be investigated to determine whether or not previous onsite uses present potential health risks.

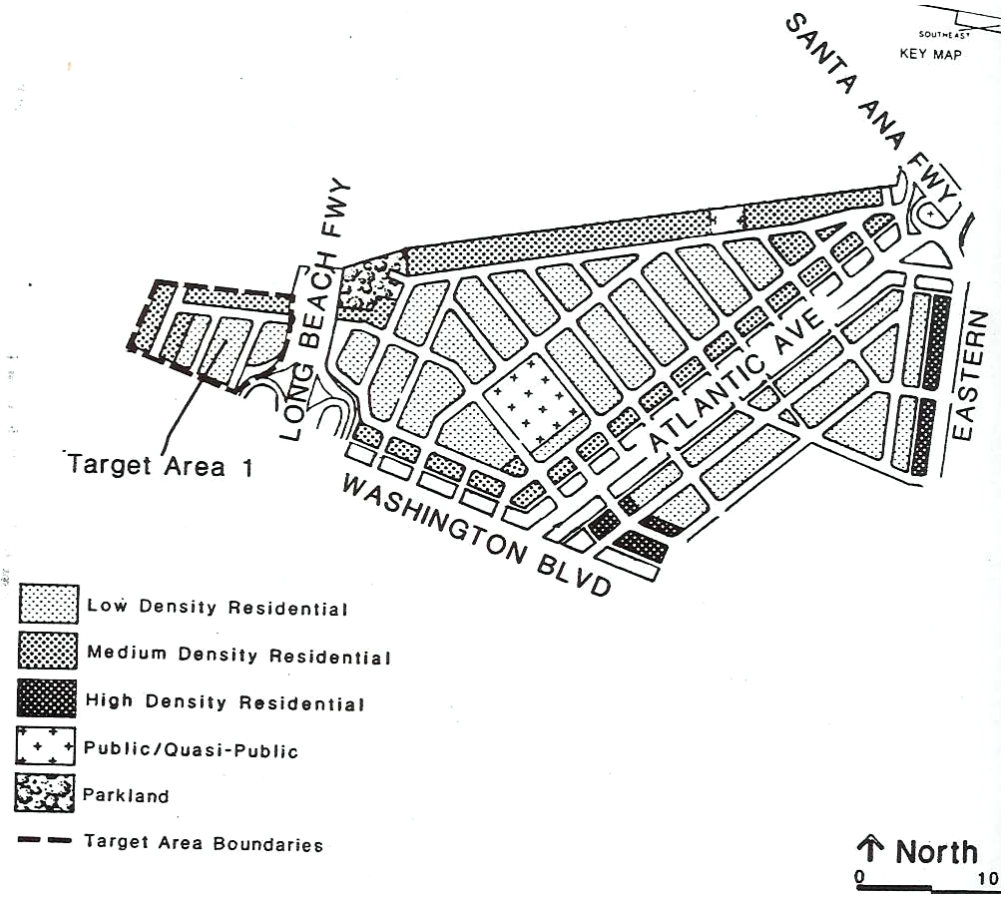
GOAL 6.0 – Support Federal and State laws which prohibit discrimination in housing on the basis of age, sex or race.

Policy 6.1 – Continue to cooperate with the Los Angeles County Fair Housing Council to enforce fair housing laws.

Policy 6.2 – Inform the Los Angeles County Fair Housing Council or any known violations of applicable federal and State laws.

Policy 6.3 – Continue to use Redevelopment Agency funds, density bonuses and other program incentives to encourage private developers to construct low income housing units.

Policy 6.4 – The Redevelopment Agency will continue to acquire and assemble properties to facilitate construction of housing units for low and moderate income and senior citizen households.



Program	Responsible Agency	Funding	Annual Goals 1980-86 (Achieved)	Annual Goals 1987-92	Comments
Handyman	Community Development	Redevelopment Agency, CDBG	N/A	10	Will rely primarily on Redevelopment Agency funds
Low Interest Loans	Community Development	Redevelopment Agency	94	19	
Deferred Loans	Community Development	Redevelopment Agency	44	40	
Rebates	Community Development	Redevelopment Agency	495	100	Assuming continued availability of Federal funding
Section 8	Los Angeles County	HUD	42	8	
Elderly Housing	Redevelopment Agency	Redevelopment Agency, HUD	300	9	
Housing Relocation	Redevelopment Agency	Redevelopment Agency	475*	20	
Code Enforcement	Community Development	Community Development	N/A	100	

N/A = Information not available
*Major 140 unit project (Village Homes) constructed in 1981.

Planning Area/ Land Use Designation	Area in Acres (1)	Allowable Density (DU/Acre)	Total Units	Household Size (2)	Total Population
Bandini-Rosini					
Low Density Residential	64.33	11	566	3.46	1,959
Medium Density Residential	31.01	17	422	3.46	1,459
High Density Residential	6.41	27	138	3.46	479
Rosewood					
Low Density Residential	54.19	11	477	3.51	1,674
Medium Density Residential	12.79	17	174	3.51	611
High Density Residential (3)	4.27	27	92	3.51	324
Northwest					
Low Density Residential	0.00	11	0	4.23	0
Medium Density Residential	24.13	17	328	4.23	1,388
High Density Residential	2.00	27	43	4.23	183
Southeast					
Low Density Residential	16.97	11	149	3.5	523
Medium Density Residential	13.66	17	186	3.5	650
High Density Residential	62.68	27	354	3.5	4,739
Ferguson					
Low Density Residential	0.00	11	0	3.85	0
Medium Density Residential	0.00	17	0	3.85	0
High Density Residential	20.02	27	432	3.85	1,663
TOTAL			**4,362**		**15,652**

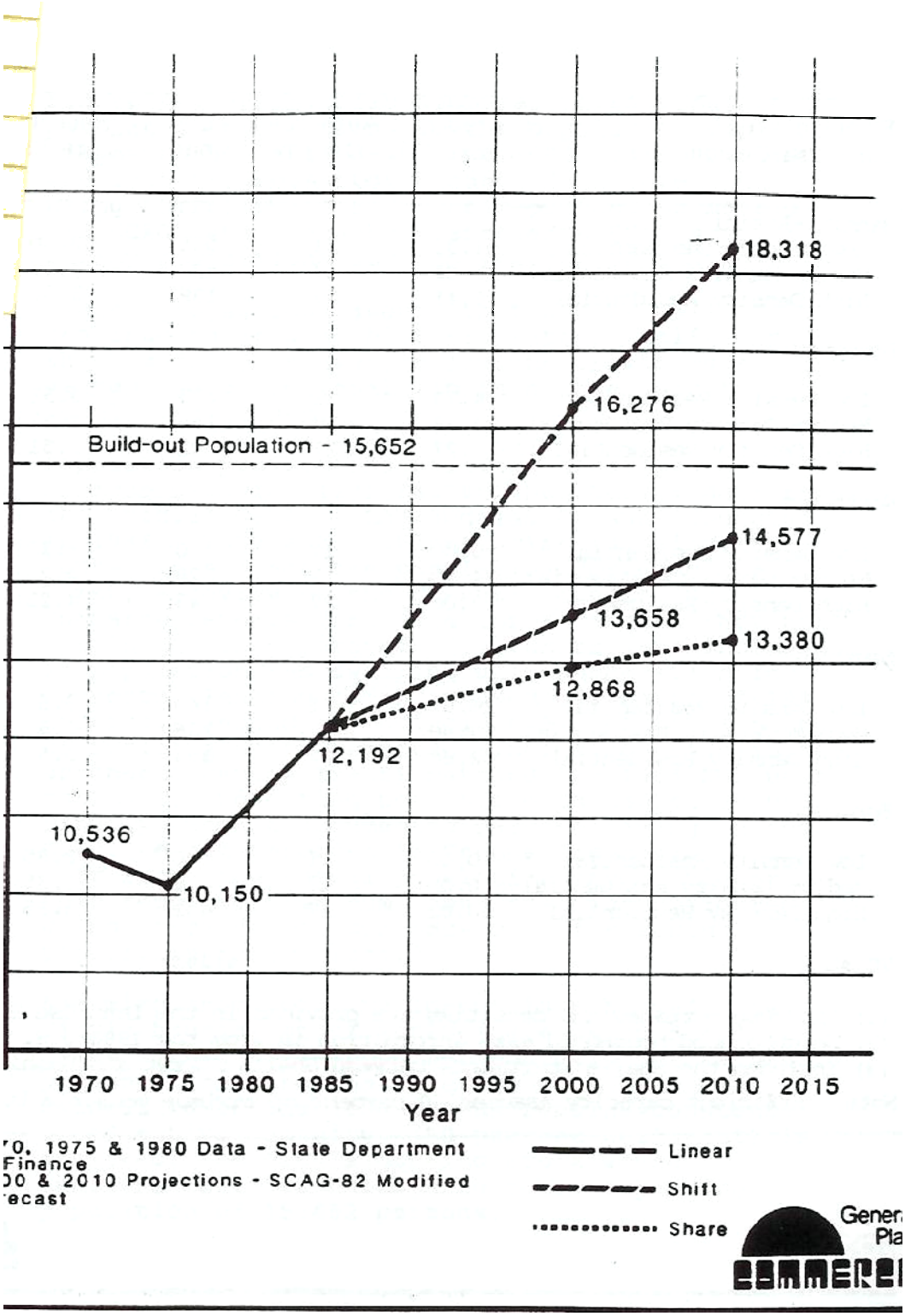
(1) Land use acreages and densities are provided in the Land Use Element.
(2) Neighborhood household size information is from the 1980 U.S. Census.
(3) Includes the Sheila Apartments between Sheila Street and Washington Blvd.

Note: Efficient capacity assumes 80 percent of maximum possible build-out.

General Plan
COMMERCE

Table H-4
Build-Out and Population - Efficient Capacity

Housing Element-31
9/8/87


18,318
16,276
Build-out Population - 15,652
14,577
13,658
13,380
12,868
12,192
10,536
10,150
1970 1975 1980 1985 1990 1995 2000 2005 2010 2015
Year
'0, 1975 & 1980 Data - State Department
Finance
)0 & 2010 Projections - SCAG-82 Modified
'ecast
Linear
Shift
Share
Gener
Pla
COMMERCE

Income

Median household income: $34,040 (year 2000)

INCOME IN 1999		
Households	**3,293**	**100.0%**
Less than $10,000	375	11.4
$10,000 to $14,999	331	10.1
$15,000 to $24,999	530	16.1
$25,000 to $34,999	442	13.4
$35,000 to $49,999	612	18.6
$50,000 to $74,999	592	18.0
$75,000 to $99,999	218	6.6
$100,000 to $149,999	170	5.2
$150,000 to $199,999	5	0.2
$200,000 or more	18	0.5
Median household income (dollars)	$34,040	(X)

Structure of Government

The City of Commerce, a General Law City, incorporated on January 28, 1960.

Administrative Body

The City is governed by a five-member City Council including the Mayor, Mayor Pro Tem and three (3) City Council Members. The City Council maintains municipal services as efficiently and economically as possible and recognizes the needs of the community by keeping its residents informed and involved in the City's decision making process

The City Clerk's Office provides copies of City Council meeting agendas and minutes, Campaign Statements, Conflict of Interest Statements, City agreements and other official City records. They also provide voter registration information and city claim forms, along with information on local elections, the Political Reform Act and the Brown Act. The City Clerk's Office conducts City General and Special Municipal

Elected Officials

Ray "Gordy" Cisneros, Council

Rosalina G. Lopez, Mayor

Jesus M. Cervantes, Council Member

Hugo A. Argumendo, Mayor Pro Tem

Nancy Ramos, Council Member

Contracted Services

The City of Commerce contracts law enforcement and fire services from the Los Angeles County Sheriff's and Los Angeles County Fire Departments.

Vector control services are provided by the Greater Los Angeles Vector Control.

Departments & Responsibilities

City Council	
Administration	Public Information
City Attorney	
City Clerk	
Finance	Business License Purchasing Division
Community Development	Planning Business Services Environmental Services Housing Resources and Assistance
Community Services	Public Safety Social Services Division Employment and Business Development
Human Resources	Job Opportunities
Library	Central Library Atlantic Branch Bristow Park Branch Greenwood Branch
Parks and Rec	Activities Sports Cultural Parks Senior Citizens Center
Transportation	Transit
Schools	Montebello Unified School District Los Angeles Unified School District

Public Services

The Mission of the Department of Public Works is to preserve the health and safety of the residents, workers, and guests of the City of Commerce, and to protect the environment. In accomplishing its mission, the Department is committed:

To encourage, promote and recognize excellence, personal integrity, personal growth, team work, professionalism and responsiveness in Department employees;

To provide the highest quality of engineering services for the management team of the City of Commerce; and

To sustain and improve the public goodwill by providing the highest quality of engineering, maintenance and operation services for City facilities, including the City-owned water system, public utilities, public streets, City parks and City buildings. Approximately 75,000 people travel through the City of Commerce each day. This heavy flow of traffic places a very large demand on our City's street system. The Department of Public Services maintains about 69 miles of city streets. The maintenance work on the street system is accomplished by City personnel, by private contractors and by Los Angeles County agencies.

The Department of Public Services is also responsible for supervising the collection of residential trash (through contractual agreement) and for maintenance of streets, street lights, sewers, storm drains, public buildings and the City-owned water system. The Department of Public Services is responsible for administering and monitoring all City facilities utilizing resources available to the City, such as city staff, agreements with private contractors and/or professional servicing agencies for the following:

- Bridge Maintenance and Construction
- Curb, Gutter and Sidewalk Maintenance and Construction
- Graffiti Eradication
- Maintenance and Security of City-Owned Facilities
- Operation and Maintenance of Public Facilities
- Operation/Maintenance of City Water System
- Other facilities as directed by City Council
- Public Improvements in Streets and Alleys
- Public Right-of-Way
- Refuse Collection in Residential Areas
- Renovation Construction
- Sewer Maintenance and Construction
- Storm Drain Facilities
- Storm Drain Maintenance and Construction
- Street Lighting
- Street Marking and Signing
- Street Sweeping
- Surface Street Construction and Maintenance
- Traffic Commission Liaison
- Tree Service
- Tree Trimming, Removal and Planting
- Water System Improvement (including pump station)

Southern Counties
Rebecca J. Wagoner
State Public Assistance Officer
Office of Emergency Services
75 North Fair Oaks Avenue
4th Floor East Annex
Pasadena, CA 91103-3647

Hazard Mitigation:
John Rowden
State Hazard Mitigation Officer
Hazard Mitigation Section
Office of Emergency Services
Post Office Box 419023
Rancho Cordova, CA 95741-9023

Individual Assistance:
Karma Hackney
Individual Assistance Officer
Disaster Assistance Programs Branch
Office of Emergency Services
Individual Assistance Section
P O Box 419023
Rancho Cordova, CA 95741-9023

Grant Payments:

Kenneth Meeker
Disaster Assistance Resources Branch
Office of Emergency Services
Grant Payments Unit
Post Office Box 419023
Rancho Cordova, CA 95741-9023

General Facilities

State & Federal Officials

State Senator - 30th District
Martha Escutia
400 N. Montebello Blvd., #101
Montebello, CA 90640
(323) 724-6175

State Assembly Member - 50th District
Marco A. Firebaugh
7501 Atlantic Blvd., Suite D
Cudahy, CA 90201
(323) 562-7880

United States Officials

U.S. Senators Barbara Boxer
2250 E. Imperial Hwy., Suite 545
El Segundo, CA 90245
(310) 414-5700

Dianne Feinstein
11111 Santa Monica Blvd., Suite 915
Los Angeles, CA 90025
(310) 914-7300

U.S. Congressional Representative - 34rd District
Lucille Roybal-Allard
Roybal Federal Bldg.
255 E. Temple St., #1860
Los Angeles, CA 90012
(213) 628-9230

County Officials

Supervisor 1st District
Gloria Molina
Board of Supervisor
Kenneth Hahn
Hall of Administration
5264 E. Beverly Blvd.
(213) 881-4601

City of Commerce

Commerce City Hall
City Council
722-4805

City Administrator
722-4805, ext. 2215

City Clerk
722-4805, ext. 2253

Animal Control
887-4460, ext. 2236
(weekends, evenings: (562) 940-6898)

Aquatorium
887-4404
For recorded information:
887-4423

Building & Safety
887-4455

Code Enforcement
722-4805, ext. 2329 or 2338

Commerce Channel 55
887-4446

Community Development
722-4805, ext. 2230

Community Services
887-4460

Employment Referral Information
887-4460

Environmental Services (recycling)
722-4805, ext. 2839

Finance
722-4805, ext. 2336

Graffiti Hotline
887-4444

Housing Assistance
722-4805, ext. 4436

Human Resources
722-4805, ext. 2266

Library Services
722-6660

Medi-Ride
887-4419

Neighborhood Watch
887-4466

Parks & Recreation
887-4434

Planning
722-4805, ext. 2230

Public Information Office
887-4453

Public Safety
887-4466

Public Services
Engineering
Construction projects
Street lights
Street sweeping
Tree maintenance
Trash collection schedule
Water
722-4805, ext. 4451

Social Services
887-4460

Sports Office
887-4432

Transportation
887-4419

Tree Trimming
887-4469

Recreation

Bandini Park/Batres Community Center
4725 Astor Avenue
Commerce, CA 90040
(323) 264-5045

Bristow Park
1466 S. McDonnell Avenue
Commerce, CA 90040
(323) 269-5603

Rosewood Park
2433 Commerce Way
Commerce, CA 90040
(323) 721-5281

Veteran's Memorial Park
6364 Zindell Ave.
Commerce, CA 90040
(562) 927-1515
Commerce Teen Center
5107 Astor Ave.
Commerce, CA 90040
(323) 838-4246

Senior Citizens Center
2555 Commerce Way
Commerce, CA 90040
(323) 887-4430

Bristow Scout Hut
1466 S. McDonnell Ave
Commerce, CA 90040
(323) 526-0784

James W. Bristow Marksmanship Range
6364 Zindell Ave. / Veterans Park
Commerce, CA 90040
(562) 928-3119

Camp Commerce
465 S. Highway #173
Lake Arrowhead, CA 92352
(909) 337-6680

Aquatorium
2515 Commerce Way
Commerce, CA 90040
(323) 887-4404

Assets

Non-City Facilities

Facility	Critical to	Risk
Commerce Casino	Sales and Liquor Tax	None
Citadel Shopping Center	Economic value	None
Ashland Chemical	Tax base	Hazard risk
Univar Chemical	Blend chemical	Hazard risk
Am Vac Chemical	Tax base	Very High Risk
Wyndham Hotel	Economic value	None
Crown Plaza Hotel	Economic value	None
Super 8 Motel	Economic value	None
Iron Mountain	Tax base	None
File Keepers	Tax base	None
Safe Shred	Tax base	None
Data Page	Tax base	None

Critical Assets

Critical Facilities for Day- to- Day Operations during a Disaster

- Infrastructure - Bridges and roads; I-5 & the 710 Freeway corridor
- HAM Radio Operators; REACT
- Search and Rescue Team
- Citizens Com Cat
- Hospitals; USC & Santa Marta Hospitals, and Garfield Medical Center
- ATC20 – Rapid Evaluation
- Food Suppliers – Unified Grocers, Smart & Final Distribution Center, Gelson's Distribution Center, Vons, Safeway's Dairy and Bakery Warehouse, Gallo Wine Distribution Center, Wine/Beer Warehouse, Garvey Nut, Water Filtering Company's bottling plant, and Golden Luck Foods
- CAN Communication System – Citizen's warning system
- Radio Tower
- Hotels – housing for displaced community

Inventory of Assets

PREPARED BY
Driver Alliant Insurance Services
1301 Dove Street
Suite 200
Newport Beach, CA 92660 (949) 756-0271

CJPIA PROPERTY SCHEDULE
CITY OF COMMERCE

August 05, 2003

Page 1
Includes B & M

Real Property Trend Factor: 1.66%
Personal Property Trend Factor: 1.27%

Loc #	2nd Id	Address, City, Zip	Occupancy	Construction	Auto Spklr	Year Built	Year Apprs		Real Prop	Pers Prop	BI / Rents	Year	Real Property	Personal Property	BI / Rents	Totals
1		CITY HALL COMPLEX	39,900 SQ. FT.	Class: D	No	1954	0	Earthquake:	Yes	Yes	Yes	2003	$5,257,202	$2,981,698	$0	$8,238,900
		2535 COMMERCE WAY	1 STORY	ALL COMB (WOOD FRAME)				Flood:	Yes	Yes	Yes	2004	$5,344,472	$3,019,566	$0	$8,364,038
		COMMERCE CA		Notes:				Rent Notes:								
				Alarms:												
10		BANDINI PARK	11,000 SQ. FT.	Class: B	No	1977	0	Earthquake:	Yes	Yes	Yes	2003	$1,290,534	$74,025	$0	$1,364,559
		4725 ASTOR AVENUE	RECREATION BLDG.	ALL REINFORCED CONCRETE				Flood:	Yes	Yes	Yes	2004	$1,311,957	$74,965	$0	$1,386,922
		COMMERCE CA	1 STORY	Notes:				Rent Notes:								
				Alarms:												
11		TEEN CENTER	5,500 SQ. FT.	Class: D	No	0	0	Earthquake:	No	No	No	2003	$293,838	$46,946	$0	$340,784
		5107 ASTOR AVENUE	RECREATION BUILDING/	ALL COMB (WOOD FRAME)				Flood:	No	No	No	2004	$298,716	$47,542	$0	$346,258
		COMMERCE CA	STORAGE BUILDING	Notes:				Rent Notes:								
				Alarms:												
14			100 SQ. FT.	Class: C	No	0	0	Earthquake:	No	No	No	2003	$16,880	$0	$0	$16,880
		1466 S. MCDONNELL AVENUE	PUMP HOUSE	MASONRY CONST/WOOD ROOF				Flood:	No	No	No	2004	$17,160	$0	$0	$17,160
		COMMERCE CA		Notes:				Rent Notes:								
				Alarms:												
17		STADIUM	10,368 SQ. FT.	Class: C	No	1969	0	Earthquake:	No	No	No	2003	$630,076	$18,245	$0	$648,321
		6364 ZINDELL AVENUE		MASONRY CONST/WOOD ROOF				Flood:	No	No	No	2004	$640,535	$18,477	$0	$659,012
		COMMERCE CA S		Notes:				Rent Notes:								
				Alarms:												
19		VETERANS PARK	38,150 SQ. FT.	Class: B	Yes	1971	0	Earthquake:	Yes	Yes	Yes	2003	$6,631,297	$271,667	$0	$6,902,964
		6364 ZINDELL AVE	RECREATION BLDG.	ALL REINFORCED CONCRETE				Flood:	Yes	Yes	Yes	2004	$6,741,377	$275,117	$0	$7,016,494
		COMMERCE CA	1.2 STORIES AND BASEMENT	Notes:				Rent Notes:								
				Alarms:												
22		GREENWOOD LIBRARY	2,000 SQ. FT.	Class: C	No	1964	0	Earthquake:	No	No	No	2003	$229,155	$113,987	$0	$343,142
		6134 GREENWOOD AVENUE	BRANCH LIBRARY	MASONRY CONST/WOOD ROOF				Flood:	No	No	No	2004	$232,959	$115,435	$0	$348,394
		COMMERCE CA		Notes:				Rent Notes:								
				Alarms:												
23		FIRE STATION	1,790 SQ. FT.	Class: D	No	1954	0	Earthquake:	No	No	No	2003	$181,621	$3,992	$0	$185,613
		6971 E. BANDINI BLVD.		ALL COMB (WOOD FRAME)				Flood:	No	No	No	2004	$184,636	$4,043	$0	$188,679
		COMMERCE CA		Notes:				Rent Notes:								

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CJPIA PROPERTY SCHEDULE
CITY OF COMMERCE

Page 3
Includes B & M

Real Property Trend Factor: 1.66%
Personal Property Trend Factor: 1.27%

August 05, 2003

Loc #	2nd Id	Address, City, Zip	Occupancy	Construction	Auto Spklr	Year Built	Year Apprs		Real Prop	Pers Prop	BI / Rents	Year	Real Property	Personal Property	BI / Rents	Totals
28			700 SQ. FT.	Class: A	No	1987	0	Earthquake:	Yes	Yes	Yes	2003	$2,232,947	$0	$0	$2,232,947
		7201 DOMINION CIRCLE	2 MILLION GAL. STORAGE	NON COMB STEEL FRAME				Flood:	Yes	Yes	Yes	2004	$2,270,014	$0	$0	$2,270,014
		COMMERCE CA	RESERVOIR	Notes: CERT/COP				Rent Notes: SEE LOC. #66								
				Alarms:												
29		CITY HALL	29,000 SQ. FT.	Class: C	Yes	1956	0	Earthquake:	No	No	No	2003	$1,915,208	$630,000	$0	$2,545,208
		5550 HARBOR STREET	NORTH ANNEX/1 STORY	MASONRY CONST/WOOD ROOF				Flood:	No	No	No	2004	$1,947,000	$638,001	$0	$2,585,001
		COMMERCE CA	INCL EQUIP CONTR/MOBILE	Notes:				Rent Notes:								
				Alarms:												
31		BRISTOW PARK	17,000 SQ. FT.	Class: D	No	1988	0	Earthquake:	Yes	Yes	Yes	2003	$2,315,995	$85,524	$0	$2,401,519
		1466 S. MCDONNELL AVENUE	1 STORY	ALL COMB (WOOD FRAME)				Flood:	Yes	Yes	Yes	2004	$2,354,441	$86,610	$0	$2,441,051
		COMMERCE CA	LIBRARY/REC BLDG.	Notes:				Rent Notes:								
				Alarms:												
39		WATER WELL #4	0 SQ. FT.	Class: D	No	0	0	Earthquake:	Yes	Yes	Yes	2003	$0	$0	$0	$0
		3317 S. GARFIELD AVENUE	500,000 GALLON STORAGE	ALL COMB (WOOD FRAME)				Flood:	Yes	Yes	Yes	2004	$0	$0	$0	$0
		COMMERCE CA	VALUES INCL. W/LOC. #43	Notes: CERT/COP				Rent Notes: SEE LOC. #66								
				Alarms:												
40		WATER WELL #5	0 SQ. FT.	Class: D	No	0	0	Earthquake:	Yes	Yes	Yes	2003	$0	$0	$0	$0
		5720 E. BANDINI BLVD.	GALLON STORAGE	ALL COMB (WOOD FRAME)				Flood:	Yes	Yes	Yes	2004	$0	$0	$0	$0
		COMMERCE CA	VALUES INCL. W/ LOC #43	Notes: CERT/COP				Rent Notes: SEE LOC. #66								
				Alarms:												
41		WATER PUMP #6	0 SQ. FT.	Class: A	No	0	0	Earthquake:	Yes	Yes	Yes	2003	$0	$0	$0	$0
		6608 E. 26TH STREET		NON COMB STEEL FRAME				Flood:	Yes	Yes	Yes	2004	$0	$0	$0	$0
		COMMERCE CA	VALUES INCL. W/LOC. #43	Notes: CERT/COP				Rent Notes: SEE LOC. #66								
				Alarms:												
42		WATER WELL #3D	0 SQ. FT.	Class: D	No	0	0	Earthquake:	Yes	Yes	Yes	2003	$0	$0	$0	$0
		5960 E. GARFIELD AVENUE		ALL COMB (WOOD FRAME)				Flood:	Yes	Yes	Yes	2004	$0	$0	$0	$0
		COMMERCE CA	VALUES INCL. W/LOC. #43	Notes: CERT/COP				Rent Notes: SEE LOC. #66								
				Alarms:												
43		WATER WELL #3E	0 SQ. FT.	Class: D	No	0	0	Earthquake:	Yes	Yes	Yes	2003	$9,959,273	$0	$831,900	$10,791,173
		3420 E. GARFIELD AVENUE	500,000 GALLON STORAGE	ALL COMB (WOOD FRAME)				Flood:	Yes	Yes	Yes	2004	$10,124,597	$0	$831,900	$10,956,497
		COMMERCE CA	TIV INCL LOCS #39,40,41&42	Notes: CERT/COP				Rent Notes: SEE LOC. #66								

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CJPIA PROPERTY SCHEDULE
CITY OF COMMERCE

Page 8
Includes B & M

Real Property Trend Factor: 1.66%
Personal Property Trend Factor: 1.27%

August 05, 2003

Loc #	2nd Id	Address, City, Zip	Occupancy	Construction	Auto Spklr	Year Built	Year Apprs		Real Prop	Pers Prop	BI / Rents	Year	Real Property	Personal Property	BI / Rents	Totals
82		SMITHWAY INDUSTRIAL	329,627 SQ. FT.	Class: B	Yes	~~2000~~ 1999		Earthquake:	Yes	Yes	Yes	2003	~~$9,297,197~~	$0	$1,666,188	~~$10,963,385~~
		BLDG.	[LOT SIZE 608,300] *	ALL REINFORCED CONCRETE				Flood:	Yes	Yes	Yes	2004	~~$9,445,431~~ CK	$0	$1,666,188	~~$11,111,619~~ CK
		5777 SMITHWAY STREET		Notes: 273,507 leased to Ernest Paper				Rent Notes:								
		COMMERCE CA		55,760 leased to File Keepers												
				Alarms:												

Appraised 1999
Built 1999

[LOT & BLDG APPRAISED AT $20,100,000] *

Response Assets

Search and Rescue Team

- Ham Radios
- Com Cat Public Safety volunteers have 25 2-way radios, which operates off the repeater. This enables the team to investigate calls.
- Urban Search Rescue Team consists of four 5 man teams
- Fire department has a Swift Water Rescue

Designated Emergency Shelters:

- Bristow Park, occupancy inside is 100 and 1000 outside
- Veterans Park, occupancy inside is 100 and 500 outside
- Rosewood Park, occupancy inside 500 and 1500 outside
- Bandini Park, occupancy inside 100 and 500 outside
- The Teen Center, occupancy 75 inside and 200 outside

Commissions, Special Districts, Services

Community/Economic Development

Commerce has four redevelopment project areas totaling 2409 acres, 69% of the City's total acreage.

Community Development

The goal of the Community Development Department is to promote and increase residential and commercial activity in the City of Commerce. The department is responsible for land use issues, oversees the development of new housing, and coordinates the implementation of the city's general plan. The department manages and maintains business license records, conducts field inspections, coordinates the city's environmental management services and enforces property maintenance and zoning laws. The Department of Community Development also administers the city's business attraction and retention programs and its industrial redevelopment efforts.

The Industrial Council

Mission Statement

The mission of the Industrial Council shall be to promote the general welfare of the City of Commerce so that its businesses and its citizens have the best environment in which to prosper ... and to promote commercial, industrial, education and legislative actions that will benefit its members and all those concerned with the welfare of the community.

History

The Industrial Council was formed in 1959 to promote local business while protecting member firms from annexation by surrounding, tax-based cities. In 1960, the Industrial Council was a major force in the successful incorporation of the City of Commerce as a NO-TAX based city.

Water/Waste Water/Sewer

Water is owned by the City of Commerce. Cal Water operates the water system and is responsible for storage and treatment.

Sanitation is maintained by Los Angeles County and the City of Los Angeles Hyperion Treatment Plant.

Water Service (Metered Water Service)

Residential, commercial and industrial water services are provided by California Water Service Company throughout 90% of the City.

School

The City of Commerce is served by the Montebello Unified School District (MUSD). The district is a public school district providing kindergarten through twelfth grade, preschool, and adult instructional services. The District serves approximately 35,500 K-12 students, plus 700 preschool students, and 34,000 adult continuing education students from the communities of Bell Gardens, Montebello, Monterey Park, Pico Rivera, South San Gabriel and portions of the East Los Angeles region, along with the City of Commerce.

The District Administrative Offices are located at:

123 South Montebello Blvd.
Montebello, California 90640
(323) 887-7900

The MUSD schools that provide for Commerce residents are:

Bandini Elementary
2318 Couts Avenue
Commerce, CA 90040
(323) 887-7898

Laguna Nueva Elementary
6300 South Garfield Avenue
Commerce, CA 90040
(562) 806-7812

Rosewood Park Elementary
2353 South Commerce Way
Commerce, CA 90040
(323) 721- 7027

Suva Elementary
6740 East Suva Street
Bell Gardens, CA 90201
(562) 927-1827

Bell Gardens Intermediate
5841 Live Oak Street
Bell Gardens, CA 90201
(562) 927-1319

Suva Intermediate
6660 Suva Street
Bell Gardens, CA 90201
(562) 927-2679

La Merced Intermediate
215 East Avenida de La Merced
Montebello, CA 90640
(323) 722-7262

Macy Intermediate
2101 South Lupine Avenue
Monterey Park, CA 91754
(323) 722-0260

Bell Gardens High School
6119 Agra Street
Bell Gardens, CA 90201
(323) 826-5151

Montebello High School
2100 West Cleveland Avenue
Montebello, CA 90640
(323) 728-0121

Schurr High School
820 North Wilcox
Montebello, CA 90640
(323) 887-3090

Utilities

Utility Companies

Cable Television
Charter Communications
Subscriptions, repairs, customer service
(866) 499-8080

Electricity
Southern California Edison
Hook-up, disconnection or emergencies
(800) 655-4555

Gas
Southern California Gas Co.
Hook-up, disconnection or emergencies
(800) 427-2200

Telephone
VERIZON
Residential Service
(800) 483-3000

Pacific Bell
Residential Service
(800) 310-2355

Trash Disposal
Residential Service
CalMet Services
(323) 721-8120

Water
California Water Service
(323) 722-8601

Utilities and Communication

- Electricity – Southern California Edison, A substation is located at Gage and Garfield Ave.
- SBC switching station
- Montebello Transmitter
- Waste to Energy Plant
- High pressure gas lines – Owned/ Operated by Chevron, Mobile, and BSI

Health Care

Hospitals

Hospitals/medical centers near Commerce:

- Santa Marta Hospital (about 2 miles; Los Angeles, CA)
- Beverly Hospital (about 3 miles; Montebello, CA)
- Garfield Medical Center (about 4 miles; Monterey Park, CA)

Higher Education

Colleges/Universities

Colleges/universities with over 2000 students nearest to Commerce include:

- East Los Angeles College (about 4 miles; Monterey Park, CA; FT enrollment: 12,670)
- East Los Angeles Occupational Center (about 6 miles; Los Angeles, CA; FT enrollment: 2,186)
- California State University-Los Angeles (about 6 miles; Los Angeles, CA; FT enrollment: 14,556)
- Los Angeles Trade Technical College (about 9 miles; Los Angeles, CA; FT enrollment: 8,528)
- Fashion Institute of Design and Merch-Los Angeles (about 9 miles; Los Angeles, CA; FT enrollment: 2,112)
- Cerritos College (about 9 miles; Norwalk, CA; FT enrollment: 11,666)
- Compton Community College (about 9 miles; Compton, CA; FT enrollment: 3,797)

Business & Industry

Manufacturing (CalArp)

Monogram Aerospace Fasteners
AMVAC Chemical Corporation
Newark Pacific Paperboard Co.
Valentina Bassett
SCAQMD – South Coast Air Quality
Recycled Fibers of California
Ploypure Inc.
KMI
Univar USA
Ramcar Batteries Inc.
Hickory Springs of California
Exide Technologies, Inc.
Johannessen Trading Col.
Los Angeles Paper Box & Board Mills
Lemus Medical Center
Crystolon, Inc.
Commerce Casino
Calstrip Steel Corp.
Ashland Chemical Co.
PolyOne
Huhtamaki Consumer Packaging
Bonded Fiber Products, Inc.
Authentic Fitness Corp.
Weld It Co.
ICI Paints
Unified Western Grocers
Recylcled Fibers of California
Ashland Specialty Chemical Co.
L M Scofield Co.
Vons (Safeway Co.)
Jerseymaid Milk Products
Hickory Springs of California
Old Castle Glass Los Angeles
Mail Well Commercial Printing
F P International
Enovation Graphic Systems
Commerce Refuse to Energy Fac.
Valley Plating Works Inc.
Union Ice Co.
Engineered Polymer Solutions
Smithway Associates Inc.
Dreyers Grand Ice Cream
Barrera's Meat Co. 6850
Union Ice Ltd.
Ransom and Randolph

Distribution (Retail)

Citadel Expansion Under Way

Steve Craig of Craig Realty gave a presentation regarding The Citadel Expansion and captivated the crowd during an impromptu history lesson on The Citadel's origins at the October 7 Commerce City Council Meeting.

"The goal is to create a great environment. We want people to pass The Citadel on the freeway and say, 'Wow, I want to go there!' said Craig, who added his company is bringing all the detail, charm and quality they've used in their other projects to Commerce.

Craig also invited the community to The Citadel's Tree Lighting Ceremony on November 22 at 5 p.m., which he stated will be bigger and better than last year's event. The event will feature snow and a holiday production with live music and entertainment. The snow will fall in The Citadel's center court every evening at 6 p.m. from November 22 to January 1.

In his presentation Craig brought to life every aspect of the project, which he described in detail with the use of illustrations, a power point presentation and three-dimensional displays for the benefit of the audience.

The completed expansion project will increase the number of stores from 43 to 78 by the fall of 2004.

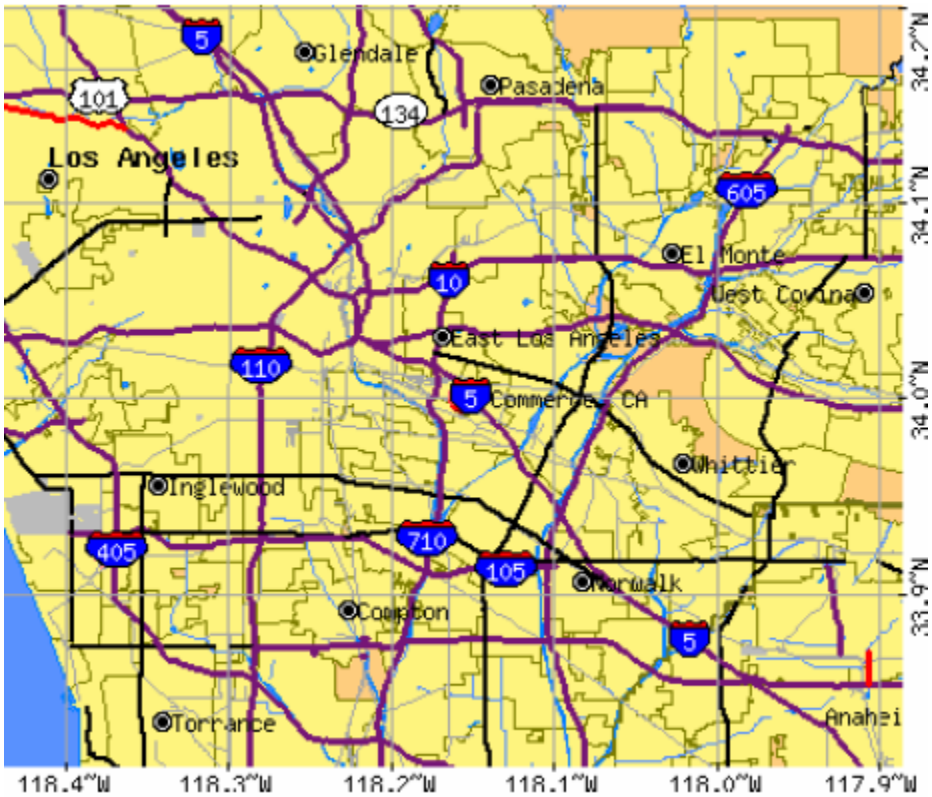
The changes underway reconfigure Citadel Drive, relocate 200 palm trees previously located along the main entrance, creates additional parking and includes new restrooms and a new Starbucks. The restrooms are on schedule to be completed in early December and the Starbucks is slated to open in January 2004. Upcoming phases of construction will include the completion of Citadel Drive and rebuilding the Northwest parking lot.

Another dramatic change planned for The Citadel originated out of a need for better signage but posed one of the more interesting challenges for Craig.

Transportation

Freeways/Major Highways

Commerce is directly served by the Santa Ana (I-5) and Long Beach (I-710) Freeways, and is located in the center of the entire Southern California freeway network.



Railways

The rail spur service within the city is provided by the Atchison Topeka and Santa Fe, Southern Pacific, and Union Pacific railroads.

Airports

Airports certified for carrier operations nearest to Commerce:

- Long Beach /Daugherty Field (about 13 miles; Long Beach, CA; ID: LGB)
- Los Alamitos Airport (about 17 miles; Los Alamitos, CA; ID: SLI)
- Los Angeles International (about 18 miles; Los Angeles, CA; ID: LAX)

Other public-use airports nearest to Commerce:

- Compton/Woodley (about 10 miles; Compton, CA; ID: CPM)
- El Monte (about 11 miles; El Monte, CA; ID: EMT)
- Jack Northrop Field/Hawthorne Municipal (about 14 miles; Hawthorne, CA; ID: HHR)

Mass Transit

Commerce has its own municipal bus system which carries approximately 970,000 passengers annually. No fare is charged. The Montebello Bus Line and the Metropolitan Transportation Authority (MTA) also serve the area. The Metrolink commuter trains stop at the Commerce station daily.

Ports & Harbors

The port of Long Beach is 20 miles to the southwest and the port of Los Angeles is 25 miles to the southwest.

Non-profit & Community-based Organizations

FIRM AND PHONE LISTING

10/05/2004

LIC. NO.	FIRM NAME	ADDRESS	OWNER NAME	PHONE
263645	Start A Heart, Inc.	553 2nd St, Hermosa Beach CA 90254	Jeff C Del Monte	(310) 937-5649
106113	American Legion Post 320	6453 Allston St, Los Angeles CA 90022	M. C Lopez	(213) 726-7974
103066	Commerce Aquatic Booster Club	2135 S Atlantic Blvd, Commerce CA 90040	Salvador Orozio	(323) 838-0644
106210	Commerce Evening Lions Club	2547 Boris Ave, Commerce CA 90040	John Ruiz	(213) 721-5797
264343	Concept 7, Inc.	200 Citadel Dr Ste #175, Commerce CA 90040	Tony Orme	(323) 838-9566
104701	Alta-med Health Services Corp	500 Citadel Dr 490, Commerce CA 90040	Castulo De La Rocha	(323) 725-8751
265551	Altamed Health Services Corp.	500 Citadel Dr Ste 150, Commerce CA 90040	Castulo De La Rocha	(323) 725-8751
264062	Small Business Development Center	500 Citadel Dr Ste 213, Commerce CA 90040	Small Business Development Cer	(323) 887-9627
100010	Auld Lang Syne Senior Citizens Club	2555 Commerce Way, Commerce CA 90040	Mary J Brandt	(213) 887-4430
265526	Hannah's Children's Homes	5900 E Eastern Ave 140, Commerce CA 90040	Kimberly Berry	
264247	Wells Fargo Financial California, Inc.	4820 S Eastern Ave L, Commerce CA 90040	Christopher J Adam	(515) 557-7502
263448	Los Angeles County Child Support	5500 S Eastern Ave, Commerce CA 90040	Claudia D Myles	(323) 889-3427
263401	D M V-driver Safety Field Unit	5500 S Eastern Ave 150, Commerce CA 90040	California Department Of Motor	(323) 724-4000
262633	Wells Fargo Bank	5701 S Eastern Ave, Commerce CA 90040	George Silva	(323) 728-3963
102243	E Central Credit Union	5770 S Eastern Ave, Commerce CA 90040	Mike Theodore	(626) 799-6000
104985	Los Angeles County Department Of	5770 S Eastern Ave, Commerce CA 90040-2924	Claudia D Myles	(323) 889-3427
262632	Bank Of America	5800 S Eastern Ave, Commerce CA 90040	Neva Roy	(323) 720-4243
263524	Cal-west Tariff Bureau, Inc.	5800 S Eastern Ave 260, Commerce CA 90040	Bob Black	(323) 721-7689
103039	Printing Industries Assoc Inc Of So Cal	5800 S Eastern Ave 4th, Commerce CA 90040	Robert Lindgren	(323) 728-9500
102621	Commerce Federal Credit Union	5900 S Eastern Ave 146, Commerce CA 90040	Elise Guimont	(323) 724-5455
266075	Health Care Employees Union Local 39	5480 Ferguson Dr, Los Angeles CA 90022	Jorge Rodriguez	(323) 734-8399
265919	Bibles For America	5530 Ferguson Dr, Commerce CA 90022-5140	Dave Yowell	(323) 728-7848
100390	County Of Los Angeles	5555 Ferguson Dr, Commerce CA 90022	County Of Los Angeles	(323) 890-8614
264834	Missionary Church Of The Disciples	6466 Foster Bridge Rd, Bell Gardens CA 90201	Luis Zepeda	(562) 927-1888
100457	Park Lawn Cemetery	6555 E Gage Ave, Commerce CA 90040	Terry Abel	(562) 806-0660
103872	Telacu Manor Inc	7100 E Gage Ave, Commerce CA 90040	David C Lizarraga	(213) 927-7427
264879	Burlington Northern Santa Fe - Q D C	3420 1/2 Garfield, Commerce CA 90040	Kerry Rutherford	(323) 727-7568
100505	L A County-dept. Public Social Service	2700 S Garfield Ave, Commerce CA 90040	Linda Macasil	(323) 838-5002
104572	State Of Calif E D D	3424 S Garfield Ave, Commerce CA 90040	Alfonso Dave	(213) 744-2237
103750	State Of California Employment Develo	1231 S Gerhart Ave, Commerce CA 90022	Lillian Kirimlidis	(213) 720-9744
104352	Millwright Machine Erectors Local 1607	932 S Gerhart Ave, Commerce CA 90022	Gene Van Winkle	(323) 724-0178
105013	Telacu Youth Services	1234 S Goodrich Blvd, Commerce CA 90022	David Lizarraga	(323) 888-6819
104792	A B C Child Development	1254 S Goodrich Blvd, Commerce CA 90040	Dr. Tim Dosemagen	(213) 726-0505
263544	Mexican American Opportunity Foundat	972 S Goodrich Blvd, Commerce CA 90040	Martin Castro	(323) 890-1555
263403	Greenwood Community Church	6125 Greenwood Ave, Commerce CA 90040	Sam Wright	(562) 927-1131
264443	Los Angeles County - District Attorney	5300 Harbor St, Commerce CA 90040	Weber Distribution	(213) 202-7615
102969	Commerce Rosewood Park Snack Bar	5600 Harbor St, Commerce CA 90040		(213) 722-4805
106112	Commerce Sister City Assoc	5560 Joaquin Ct, Commerce CA 90040	Alfonso Gonzalez	(323) 721-5797
264385	East Los Angeles Jaycees	5600 E Joaquin Ct, Commerce CA 90040	Ron Andrade	(323) 365-1187
263402	First Baptist Church Of Commerce	5102 Kinsie St, Commerce CA 90040	First Baptist Church Of Commer	(323) 268-9623
265080	Baltierra Family Day Care	4627 Leonis St, Commerce CA 90040	Barbara Baltierra	(323) 267-1157
102968	Commerce Bristow Park Snack Bar	1466 S McDonnell Ave, Commerce CA 90040		(213) 722-4805
220158	A K Disposal	1632 Mines St, Montebello CA 90640	Krikor G Azarian	(213) 480-1993
264068	Hispanic Americans For Fairness In Me	5400 E Olympic Blvd Ste 260, Commerce CA 90022-5	Esther Renteria	(323) 726-1558
104366	Household Finance Corp Of Calif	5400 E Olympic Blvd Suite125, Commerce CA 90022	L.r. Abrams	(323) 725-6075
104505	Community Commerce Bank	5444 E Olympic Blvd, Commerce CA 90022	W M Lasher	(323) 888-0065
106111	Holy Name St Marcellinus	2331 Ransom St, Commerce CA 90040	Mario Sotelo	(323) 263-7025
106330	Montebello U S D Head Start Office	5745 Rickenbacker, Commerce CA 90040	Montebello Unified School Dist	(562) 806-7961
265936	Association Of Woodworking & Furnishi	5733 Rickenbacker Rd, Commerce CA 90040	Barry Howerton	(323) 838-9440
106168	L A County Child Support Services	5895 Rickenbacker Rd, Commerce CA 90040	L A County Cssd Court Tr	(323) 838-7550

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LIC. NO.	FIRM NAME	ADDRESS	OWNER NAME	PHONE
264917	M L M Amusements	ROSEWOOD PARK, Commerce CA 90040	Manuel Martinez	(562) 688-7080
262485	El Arca, Inc	3839 Selig Pl, Los Angeles CA 90031	John R Gutierrez	(213) 223-3079
264004	Soul Winners O.d.c. Ministries	5721 Sheila St, Commerce CA 90040	Francisco Cervantes	(323) 526-7227
263909	Victory Outreach	9101 Slauson Ave C, Pico Rivera CA 90660	Gilbert Salazar	(562) 948-4773
102099	City National Bank	5601 E Slauson Ave 100, Commerce CA 90040	Russell Goldsmith	(323) 721-1849
262790	Consumer Credit Counseling	5628 E Slauson Ave, Commerce CA 90040	Peter F Lake	(800) 750-2227
104356	Sonshine Youth Services	5801 E Slauson Ave G180, Commerce CA 90040	J. T Warring	(323) 888-9693
264742	Wells Fargo Home Mortgage, Inc.	5801 E Slauson Ave Ste 210, Commerce CA 90040	Mark C Oman	(515) 213-6397
100974	Mt. Olive Memorial Park	7231 E Slauson Ave, Commerce CA 90040	Mount Olive Memorial Park	(323) 208-7511
105800	Plaza De La Raza Head Start Inc	6620 Telegraph Rd, Commerce CA 90040	Crescent Byerly	(323) 727-6555
106043	Myasthenia Gravis Foundation	5675 E Telegraph Rd 230, Commerce CA 90040	Richard E Lewis	(323) 887-0056
264948	Kyu Ho Choi - Acupuncturist	6121 E Telegraph Rd 200-2M202, Commerce CA 900	Kyu Ho Choi	(323) 725-7070
106107	Boy Scouts Troop 473	4465 Triggs, Commerce CA 90040	Alberto Mafud	(562) 733-7186
106110	United Family Of Bristow Park	4478 Tuttle St, Commerce CA 90040	Leonard Mendoza	(323) 268-1286
105671	Maravilla Foundation	5729 Union Pacific Ave, Commerce CA 90022	William Gonzalez	(323) 869-4500
106109	Model City Demo Club	5546 Village Dr, Commerce CA 90040	Eva R Long	(323) 726-8616
265579	California Addressing Services	2708 Village Rd, Lakewood CA 90712	Tim Mator	(562) 425-7134
265064	U.p.c.a., Llc.	4341 E Washington Blvd, Commerce CA 90023	Joseph E O'connor Jr.	(323) 981-7518
101883	Certified Federal Credit Union	5601 E Washington Blvd, Commerce CA 90040	Jeffrey Weinstein	(323) 723-8991
105519	Vernon Commerce Credit Union	5720 E Washington Blvd, Commerce CA 90040	Ruth Gonzalez Garcia	(323) 890-4500
265589	East Yard Communities For	5914 E Washington Blvd, Commerce CA 90040	Angelo Logan	(323) 722-6327
103168	Bank Of The West	6055 E Washington Blvd, Commerce CA 90040	Alicia De La Cruz	(213) 724-0890
265528	Mental Health Association Of La	6055 E Washington Blvd 900/901, Commerce CA 900	Richard Van Horn	(562) 285-1330
265313	L.a. Co. Small Business Development C	6055 E Washington Blvd Ste 414, Commerce CA 900	Business Finance Center	(323) 278-9600
263789	Southern California Indian Center, Inc.	6055 E Washnington Blvd 700, Commerce CA 90040	Rose Luna	(323) 728-8844
104294	California Commerce Bank	5438 Whittier Blvd, Commerce CA 90040	Robert Bob Castro	(310) 203-3400
264713	Wells Fargo Bank	5458 Whittier Blvd, Commerce CA 90040	Gaylon Woodard	(323) 266-5426
260672	Camp Fire Los Angeles Area Council In	1541 Wilshire Blvd 500, Los Angeles CA 90017	Marilyn G Gilmore	(213) 413-5501
101850	So. Cal. Ptg. & Drywall Appren Ind.	2077 Yates Ave, Commerce CA 90040	So. Cal Ptg. & Drywall Apprent	(323) 727-2811
102967	Commerce Veterans Snack Bar	6364 Zindell Ave, Commerce CA 90040		(213) 722-4805

Native American Tribes

There are no Native American Tribes in the City of Commerce.

Climate

Local Meteorology

Average weather in Commerce, California

Based on data reported by over 4,000 weather stations

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average temp. (°F)	58.3	59.7	61.1	64.7	67.4	71.9	75.9	76.8	75.2	69.9	63.0	58.5
High temperature (°F)	69.4	70.9	71.9	76.3	78.0	83.1	87.7	88.5	86.6	81.6	74.8	70.3
Low temperature (°F)	47.2	48.5	50.3	52.9	56.8	60.7	64.0	65.1	63.6	58.2	51.3	46.7
Precipitation (in)	3.4	3.7	3.0	0.9	0.2	0.1	0.0	0.1	0.2	0.3	1.1	1.8

Back to the top

Normal climate around Commerce, California

Based on data reported by main weather stations

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Days with precip.	6	5	5	3	1	0	0	0	1	2	3	5
Wind speed (mph)	5.2	6.0	6.7	7.4	7.1	7.0	6.8	6.6	6.2	5.6	5.2	5.0
Morning humidity (%)	76	78	80	80	81	82	82	82	83	81	79	77
Afternoon humidity (%)	53	54	55	51	55	56	54	53	54	54	53	52
Sunshine (%)	71	71	71	70	62	62	71	72	71	70	75	72
Days clear of clouds	12	10	11	12	10	12	18	19	15	13	13	13
Partly cloudy days	8	7	9	10	13	12	11	10	11	11	8	8
Cloudy days	11	11	11	8	8	6	2	2	4	7	8	10
Snowfall (in)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Threatened & Endangered Species

While protection of endangered species and historic buildings is a mitigation consideration for this jurisdiction it must also be noted that the Federal Cost Benefit Analysis does not allow for a specific value for either the historic status of a structure of the endangered distinction of a species.

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Section 4 – Hazard Vulnerability Analysis

A hazard can be defined as a condition that has the potential to result in equipment or system failure that can result in human injury or death or damage to the environment. Hazards are divided into two categories: natural or technological. Natural hazards include earthquakes, wild fires, and floods; while technological hazards include transportation accidents, illegal disposal, and equipment failures during manufacturing, storage, transportation, and use of hazardous materials.

A risk assessment is the process of evaluating the degree of harm a hazard presents. Risk assessments are utilized in developing emergency response plans and procedures, designing and modifying safety systems, identifying needed resources, conducting training and exercises, and minimizing damage and liability.

Definitions for Hazard Prioritization

Magnitude

Physical and Economic Greatness of the event

Factors to consider

- Size of Event
- Threat to life
- Threat to Property
    1. Individual
    2. Public Sector
    3. Business and Manufacturing
    4. Tourism

Duration

The length of time the disaster and the effects of the disaster last

Factors to consider

- Length physical duration during emergency phase
- Length of threat to life and property
- Length of physical duration during recovery phase
- Length of effects on individual citizen and community recovery
- Length of effects on economic recovery, tax base, business and manufacturing recovery, tourism, threat to tax base and threat to employment

Distribution

The depth of the effects among all sectors of the community and State

Factors to consider:

- How wide spread across the state is the effects of the disaster
- Are all sectors of the community affected equally or disproportionately

Area Affected

How large an area is physically threatened and potentially impaired or by a disaster risk

Factors to Consider:

- Geographic Area affected by primary event
- Geographic, physical, economic areas affected by primary risk and the potential secondary effects.

Frequency

The historic and predicted rate of recurrence of a risk caused event (generally expressed in years such as the 100 year flood)

Factors to consider:

- Historic events and recurrences of events in a measured time frame
- Scientifically based predictions of an occurrence of an event in a given period of time.

Degree of Vulnerability

How susceptible is the population, community infrastructure and state resources to the effects of the risk.

Factors to Consider:

- History of the impact of similar events
- Mitigation steps taken to lessen impact
- Community and State preparedness to respond to and recover from the event

Community Priorities

The importance placed on a particular risk by the citizens and their elected officials

- Willingness to prepare for and respond to a particular risk
- More widespread concerns over a particular risk then other risks
- Cultural significance of the threat associated a risk.

Hazard Ratings

Hazard Rating Definitions

Instructions for Hazard Mitigation Rating Form

Give each hazard priority risk category listed as a rating from 0 to 3; 0 = no risk, 3 meaning a high risk.

0 = No hazard risk in accordance with the definitions for hazard prioritization on page 4 through 6 of this form.

1 = Low Risk in accordance with the hazard prioritization definitions on pages 4 through 6 of this form.

2 = Moderate Risk in accordance with the hazard definitions on pages 4 through 6 of this form.

3 = High Risk in accordance with the hazard risk definitions on pages 4 though 6 of this form.

Total the numbers horizontally for each hazard category. The highest possible score for a hazard is 24 the lowest potential score is 0.

Examples:

a score of	15 - 24	could be considered HIGH priority risk
	9 - 14	could be considered MODERATE priority risk
	0 - 8	could be considered LOW priority risk

Prioritization of Hazard Matrix Results

Stakeholder Prioritization

High Risk Priority Hazards

Earthquake	(Natural)
Explosions	(Human-caused)
Transportation Loss	(Human-caused)
Economic Disruption	(Human-caused)
Transportation Accident	(Human-caused)
Hazardous Materials Incidents/Pipelines	(Human-caused)
WMD/Terrorism	(Human-caused)
Utility Loss	(Human-caused)
Water/Wastewater Disruption	(Human-caused)

Moderate Risk Priority Hazards

Aviation Disasters	(Human-caused)
Severe Weather	(Natural)
Drought	(Natural)
Floods	(Natural)
Substations	(Human-caused)
Biological/Health Emergencies	(Human-caused)
Data Telecommunications Losses	(Human-caused)

Low Risk Priority Hazards

Special Events	(Human-caused)
Sinkholes	(Human-caused)
Volcanic Activity	(Natural)
Winds	(Natural)
Dam Failure	(Human-caused)
Wild land/Urban Fire in the City	(Natural)

The following hazard discussions are separated into Natural and Technological/Human-caused, and are listed by their general priority category (High, Moderate, and Low).

Natural Hazards

Earthquake

Earthquake was listed as a HIGH PRIORITY RISK by the City of Commerce Hazard Mitigation Planning Team.

Impact: Depending on the magnitude and location of the earthquake, the impact to Commerce's infrastructure could range from 10% to total devastation.. The City of Commerce is depended on their local commerce and transportation routes to maintain daily business. If the highway and bridges were sufficiently damaged, the City and their citizens would not be able to conduct their day-to-day business.

City of Commerce General Plan Safety Element

Seismic Hazards – No known or suspected active fault traces traverse the City of Commerce through the surrounding region is seismically active. Figure PS – 2 highlights the major faults in the area. Of the five known active faults in the area, the San Andreas Fault is considered most likely to produce a large seismic even within the next 100 years. The San Andreas Fault lies approximately 38 miles northeast of Commerce. Geologic evidence suggests that a a major earthquake (7.5 to 8.5 Richter magnitude) has a 50 percent chance of occurring within the next 30 years. An earthquake of this magnitude is comparable to the 1906 San Francisco earthquake and has the potential for causing considerable upset in the Southern California region.

An earthquake occurring along the Newport – Inglewood Fault could impact Commerce more severely than a San Andreas induced episode. The Newport – Inglewood Fault lies about nine miles form the City, and it is estimated that 6.0 to 6.5 Richter magnitude earthquake on this Fault has 15 to 50 percent probability of occurrence within the next 100 years. A 6.5 magnitude earthquake could produce strong ground shaking lasting from 12 to 18 seconds. The Long Beach earthquake of 1933 registered 6.3 on the Richter Scale, and the Commerce are did sustain some damage.

The Whittier – Ellsinore Fault also lies in close proximity to the City (seven miles to the west), but historically this fault has produced relatively minor earthquakes (less that 4.5 Richter magnitude). Geologic studies indicate that this fault has less than a 15 percent probability of producing a moderate earthquake (5.5 to 6.0 Richter magnitude) within the next 100 years. Neither the San Fernando – Sierra Madre Fault nor the Dan Jacinto Fault is expected to produce seismic events which will impact Commerce significantly. The San Jacinto system lies almost 50 miles from the City, and the San Fernando – Sierra Madre Fault runs roughly in an east – west direction about 15 miles north of Commerce.

Surface fault rupture is not a concern during an earthquake since no known faults are located within the City. Seismic activity can produce several secondary effects which could result in property damage and loss of life. These secondary hazards include liquefaction, settlement, landslides, tsunamis, and seiches, and dam failure.

The energy created form earthquakes moves out from the epicenter in waves which affect the various rock and soil types differently. Commerce can be divided in two separate microtones based on the nature of near surface deposits (see Figure Ps-3). Zone 1 contains recent unconsolidated alluvium, whereas Zone 2 surface deposits consist of the firmer Lakewood Formation. Ground shaking in Zone 1 would be ten percent stronger than in Zone 2. In some instances ground shaking can cause unconsolidated soils to settle, which can result in significant damage to structures. Geologic

investigations performed for the 1974 Commerce General Plan indicates that no such soil conditions exist within the City limits.

A phenomenon similar to soil settlement is liquefaction. Liquefaction results when seismic induced ground shaking causes water – laden, cohesion less soils to form a quicksand – like soil condition below the their ground surface. Structural damage may ensue as building foundations lose ground support. Liquefaction occurs in areas where groundwater exists with 30 feet of the ground surface and where poorly consolidated, cohesionless soils predominate. Groundwater measurements around Commerce indicate that the groundwater surface generally is deeper than 100 feet; therefore, liquefaction hazards are not perceived to be a problem in the City. Other secondary hazards such as landslides, tsunamis, and seiches will not impact the City.

A major earthquake will cause significant social disruption and damage to buildings and infrastructure due to sever ground shaking. A large earthquake, catastrophic in its effects upon the population, could exceed the response capabilities of the individual cities and the Los Angeles County Operational Area. Response and disaster relief support would be required from other local governmental and private organizations, and from the state and federal governments.

Earthquake History

The most recent significant earthquake event affecting Southern California was the January 17th 1994 Northridge Earthquake. At 4:31 A.M. on Monday, January 17, a moderate but very damaging earthquake with a magnitude of 6.7 struck the San Fernando Valley. In the following days and weeks, thousands of aftershocks occurred, causing additional damage to affected structures.

57 people were killed and more than 1,500 people seriously injured. For days afterward, thousands of homes and businesses were without electricity; tens of thousands had no gas; and nearly 50,000 had little or no water. Approximately 15,000 structures were moderately to severely damaged, which left thousands of people temporarily homeless. 66,500 buildings were inspected. Nearly 4,000 were severely damaged and over 11,000 were moderately damaged. Several collapsed bridges and overpasses created commuter havoc on the freeway system. Extensive damage was caused by ground shaking, but earthquake triggered liquefaction and dozens of fires also caused additional severe damage. This extremely strong ground motion in large portions of Los Angeles County resulted in record economic losses.

However, the earthquake occurred early in the morning on a holiday. This circumstance considerably reduced the potential effects. Many collapsed buildings were unoccupied, and most businesses were not yet open. The direct and indirect economic losses ran into the 10's of billions of dollars.

To better understand the earthquake hazard, the scientific community has looked at historical records and accelerated research on those faults that are the sources of the earthquakes occurring in the Southern California region. Historical earthquake records can generally be divided into records of the pre-instrumental period and the instrumental period. In the absence of instrumentation, the detection of earthquakes is based on observations and felt reports, and are dependent upon population density and distribution. Since California was sparsely populated in the 1800s, the detection of pre-instrumental earthquakes is relatively difficult. However, two very large earthquakes, the Fort Tejon in 1857 (7.9) and the Owens Valley in 1872 (7.6) are evidence of the tremendously damaging potential of earthquakes in Southern California. In more recent times two 7.3 earthquakes struck Southern California, in Kern County (1952) and Landers (1992). The damage from these four large earthquakes was limited because the occurred in areas which were sparsely populated at the time they happened. The seismic risk is much more severe today than in the past because the population at risk is in the millions, rather than a few hundred or a few thousand persons.

For decades, partnerships have flourished between the USGS, Cal Tech, the California Geological Survey and universities to share research and educational efforts with Californians. Tremendous earthquake mapping and mitigation efforts have been made in California in the past two decades, and public awareness has risen remarkably during this time. Major federal, state, and local government agencies and private organizations support earthquake risk reduction, and have made significant contributions in reducing the adverse impacts of earthquakes. Despite the progress, the majority of California communities remain unprepared because there is a general lack of understanding regarding earthquake hazards among Californians.

Historic Earthquakes

Since seismologists started recording and measuring earthquakes, there have been tens of thousands of recorded earthquakes in Southern California, most with a magnitude below three. No community in Southern California is beyond the reach of a damaging earthquake. The table below describes the historical earthquake events that have affected Southern California. About 30 earthquakes occur every day in Southern California. Most have a magnitude of less than 2.0. No evidence exists that earthquakes are more likely to occur in certain kinds of weather.

The best place to see any part of the monstrous, 800-mile San Andreas Fault is in Palmdale in a road cut along the Antelope Valley Freeway (Route 14) just north of Avenue S. The last time this part of the fault was active was in 1857

Year	Date	Location	Time	Richter	Mercalli	Deaths & Property Damage
1769	Jul 28	L.A. Area	---	6.0	VIII	No information
1812	Dec 8	L.A. Area	3:00pm	7.0	VII	40 deaths, Mission San Juan Capistrano severely to moderately damaged. Mission San Gabriel moderately damaged.
1827	Sep 24	L.A. Area	4:00am	5.5	---	**No information**
1855	Jul 11	L.A. Area	4:15am	6.0	VIII	Bells of Mission San Gabriel torn down. 26 buildings damaged in L.A.
1857	Jan 9	Fort Tejon	4:24pm	7.9	IX	2 deaths; Heavy property damage and loss
1916	Oct 23	Tejon Pass Region	**2:44pm**	**5.3**	**---**	**No information**
1933	Mar 10	Long Beach	5:54pm	6.4	IX	120 deaths; $50 million
1941	Oct 21	Torrance-Gardena	10:57pm	4.8	VII	No deaths; $100,000
1941	Nov 14	Torrance-Gardena	12:42am	4.8	VIII	No deaths; $1 million
1951	Dec 25	San Clemente Island	4:46pm	5.9	---	**No deaths; No appreciable damage**
1971	Feb 9	San Fernando	6:01am	6.6	---	65 deaths; $505 million
1979	Jan 1	Malibu	3:15pm	5.2	---	No deaths; minor damage
1987	Oct 1	Whittier-Narrows	7:42am	5.9	---	8 deaths; $358 million
1988	Dec 3	Pasadena	11:38pm	5.0	---	No deaths; No appreciable damage
1989	Jan 19	Malibu	10:38pm	5.0	---	No deaths; slight damage
1989	Jun	Montebello	9:57am	4.6	---	No deaths; No appreciable damage

	12					
1991	Jun 28	Sierra Madre	7:44am	5.8	---	2 deaths; $40 million
1994	Jan 17	Northridge	4:31am	6.7	---	61 deaths Est. $20 billion
2001	Sep 9	SE of West Hollywood	4:59pm	4.2	---	No deaths; moderate damage

The Los Angeles-Whittier Narrows Earthquake of October 1, 1987 (FEMA-799-DR-CA).

Introduction

On October 7, 1987, the President declared California a major disaster area as a result of an earthquake which struck the eastern Los Angeles Metropolitan area. Los Angeles County was declared eligible for the Individual and Public Assistance Programs. What follows is a summary of the Hazard Mitigation Survey Team's recommendations to the Federal Emergency Management Agency (FEMA) Regional Director, the Governor's Authorized Representative, and interested Federal, State, and local agencies.

Description of the Disaster

Overview

The relatively moderate earthquake that struck the eastern Los Angeles area at 7:42 a.m. on October 1 produced widespread damage in southern California. The earthquake caused relatively few deaths and injuries but produced significant financial impacts, both from damage and loss of revenues.

Damage due to earthquake shaking was reported as far north as Ventura County and extended south to mid-Orange County, west to Long Beach, and east to Ontario. At least 55 cities as well as unincorporated areas in Los Angeles, Orange, and Ventura counties reported some degree of damage, and total losses exceeded $350 million (see Tables 1 and 2 for detailed estimates of losses). The primary concentration of major damage was to the redeveloped historic central business district of Whittier. Numerous buildings occupied primarily by small businesses suffered severe damages.

Fatalities caused by the earthquake included a student at California State University, Los Angeles, killed by a concrete slab falling from a parking structure, a utility worker trapped while excavating for a power line in the Angeles National Forest area, and a Maywood man who fell to his death from a second story apartment window. Approximately 200 injuries (mostly minor) and several fatal heart attacks were also attributed to the earthquake.

FEMA and the State of California opened ten disaster application centers. By November 13, 1987, 22,622 individuals and businesses had registered at these centers. The temporary housing program received 15,579 applications for assistance, while the Individual Family Grant Program received 4,609 applications. The Small Business Administration issued 13,877 home and personal property loan applications and 4,200 business loan applications.

Public schools generally experienced few casualties or major damage. The Los Angeles Unified School District reported that 56 schools sustained minor damage and two schools sustained major damage, with an estimated loss of $5 million. The most significant problem appeared to be emergency coordination and implementation of school disaster plans.

The earthquake damaged more than 30 hospitals, nursing homes, medical care and outpatient facilities as far away as 30 miles from the epicenter. Businesses experienced significant financial disruption. Several large corporations reported structural and nonstructural damage, resulting in significant losses.

Numerous small businesses in Whittier experienced major losses and interruptions of business that in some cases were difficult to recover from.

LOSSES (in $millions)			
	Los Angeles Co.	Orange Co.	Total
Private Sector	$244,080	$8,648	$252,728
Public Sector	104,909	413	105,322
TOTAL	***$348,989***	***$9,061***	***$358,050***

PUBLIC SECTOR LOSSES BY CATEGORY (in $millions)	
Counties/Cities/Special Districts	$52,170
Community Colleges	1,747
State Facilities	23,625
Schools (K-12)	16,000
Private Non-Profit	11,780
TOTAL	***$105,322***

Geophysical Discussion

The Los Angeles-Whittier Narrows earthquake, measuring 5.9 on the Richter scale, occurred in the east Los Angeles metropolitan area at 7:42 a.m. on October 1, 1987. The earthquake's epicenter was approximately six miles south-southeast of Pasadena. The main shock occurred along a previously unidentified Transverse Range thrust fault. It was followed by approximately thirty-five aftershocks including one magnitude 5.3 event at 3:59 a.m. on October 4. Aftershocks continued through the end of the month.

The geophysical setting of this earthquake is described by the interaction between crustal plates that are in constant motion (5-10 cm/yr.) relative to one another. The San Andreas fault system forms the boundary between the Pacific and the North American plates. This boundary intersects several of California's major metropolitan centers, making it one of the most extensively urbanized tectonic plate boundaries.

The Los Angeles metropolitan area is susceptible to earthquake damage resulting from the ongoing tectonic process that characterizes coastal California. This process is dominated by the intersection of the San Andreas and the Transverse Range fault systems ; the effects of this intersection are evident in the regular occurrence of moderate size earthquakes.

The Los Angles metropolitan area, inhabited by more than 11 million people, is one of the key industrial, commercial, and cultural centers of the United States. As the area's population and development continue to expand, so does its vulnerability to damaging earthquakes. The 1971 San Fernando and the Whittier Narrows earthquakes, both moderate-sized events, demonstrate how vulnerable a complex modern urban society is to the damaging effects of earthquakes. Earthquakes of similar moderate magnitude can be expected to recur in the region on a regular basis. According to the U.S. Geological Survey, there is a strong possibility that the potential for moderate magnitude

earthquakes within the Los Angeles Basin has been underestimated by seismologists and emergency planners.

Even though the losses from these and other moderate earthquakes are significant, they do not reflect the overall risk to the region, since none has been as strong as the largest credible earthquake, an 8.0+ magnitude event on the San Andreas Fault. The probability that such a large earthquake will occur sometime in the next 25 years near the Los Angeles metropolitan area is estimated to be 50 percent or greater. Projected losses would exceed those of any previous natural disaster in the United Stated.

Damage Assessment

Approximately 10,000 buildings in the region were damaged as a result of the October 1 earthquake, with additional damage occurring after the major October 4 aftershock. Structural damage impacted primarily unreinforced masonry commercial buildings, wood frame homes, apartments, and mobile homes, and concrete frame structures. Other areas of concern included nonstructural damage, transportation and lifelines.

Unreinforced Masonry Structures

The most heavily damaged structures were older commercial buildings constructed of unreinforced masonry. The business district of Whittier experienced heavy damage to these types of structures. Following the earthquake, the entire business district was closed, and a number of the damaged buildings were demolished. Typical damaged consisted of failure of one or more load-bearing walls, with occasional collapse of floor or roof diaphragm elements.

The Unreinforced Masonry Building Act (SB 547), the state law passed in 1986 to require local jurisdictions to develop hazard mitigation programs for unreinforced masonry buildings, had not yet been fully implemented at the local level. The cities of Los Angeles and Monterey Park had enacted hazardous building ordinances, but had not yet fully implemented them. Other communities in the impacted area were considering enacting this type of ordinance.

Residential Structures

A second serious type of structural damage involved single family homes, apartment buildings, and mobile homes. In some cases, homes experienced damage to unreinforced masonry walls, especially hollow clay tile walls, a construction material popular in older southern California buildings. In most cases, however, residential damage was to wood frame structures. Typically the failure of the supporting “cripple wall” between the concrete foundation and the floor diaphragm caused the building to slide off the foundation, destroying exterior structural components and breaking utilities connections. Many homes sustained minor damage such as chimney collapse.

Un-reinforced masonry apartment buildings experienced significant damage, although none actually collapsed. Wood frames/stucco apartment buildings were less heavily impacted, but some sustained major cracking of exterior walls that in effect made the structure uninhabitable. Some damage occurred also to the more modern apartment and condominium structures, including wall cracks, fallen ceilings, and collapse of balconies. Damage was also reported to mobile homes. Typically, this damage involved loss of support from foundation piers due to earthquake shaking.

Modern Concrete Frame Structures

Some modern concrete frame buildings experienced significant problems, while steel frame buildings performed well. Concrete frame parking structures experienced damage, in one case resulting in a fatality. Several concrete frame buildings on the campus of California State University, Los Angeles,

sustained significant damage. Pre-cast concrete buildings proved particularly vulnerable to earthquake shaking, and would probably have experienced severe damage if the duration of the earthquake shaking had been slightly longer. A 1976 pre-cast concrete frame structure in Rosemead experienced serious structural damage which forced the corporate occupant to relocate its work force in temporary outdoor units.

Nonstructural Damage

Widespread nonstructural damage was reported following the earthquake. Many broken glass storefront windows could have resulted in severe injuries had the earthquake occurred one hour later when pedestrian traffic was present. Other nonstructural damage of serious concern included the widespread failure of elevators, the partial collapse of many ceilings and light fixtures, and the toppling of building contents.

Transportation & Lifelines

Damage to the transportation system was minimal. One exception was the Interstate 605 overpass at the intersection with Interstate 5, where damaged columns resulted in a one-day closure of both freeways at that location. Local roads and highways experienced little damage. Airports suffered enough damage to requir4e temporary closure, but were generally back in operation within a day.

The municipally owned water system in Whittier experienced major damage. Numerous water mains in the old system were cracked or broken. The October 4 aftershock exacerbated the damage in some of the same locations.

Emergency Response

The California Office of Emergency Services (OES) activated its Region I Emergency Operations Center (EOC) in Los Angeles and attempted to determine the level and location of earthquake damage. Region I staff, supplemented by staff from the State Department of Transportation, the State Department of Health Services, and the Southern California Earthquake Preparedness Project (SCEPP), also processed requests for volunteer assistance from the California Conservation Corp (CC) and the OES engineers program. At approximately 3:45 p.m. on October 1, the California Earthquake Prediction Evaluation Council (CEPEC) convened via a conference call from the EOC to ascertain, to the extent possible, the probability that the initial earthquake would be followed within the next several days by a shock of equal or greater magnitude. The consensus of the Council was that the likelihood of such an event was less than 5%.

Two of the cities most affected by the earthquake had exercised their emergency response plan during 1987. One of these, Monterey Park, had exercised its plan just two days prior to the earthquake. Whittier, the city most seriously damaged by the earthquake, had previous initiated a comprehensive community training program and reported that citizens and city employees knew what to do.

Evacuations

Numerous evacuations from high-rise and other types of buildings occurred after the earthquake. In most cases, these evacuations were spontaneous and unplanned, resulting in some inappropriate actions. For example, in some high-rise buildings, occupants congregated on sidewalks outside the building, risking injury from falling glass in the event of an aftershock.

In other cases, residents of apartment buildings self-evacuated to nearby parks, sometimes against the advice of emergency responders. Red Cross staff reported dealing with two kinds of problems following

the earthquake: residents fearful of leaving shelters and returning to their homes, and landlords locking tenants out in order to obtain new tenants at higher rents.

Mutual Aid

Once the area and extent of damage became generally known, jurisdictions in need of mutual aid were called by jurisdictions willing to provide it. Among the resources made available were:

- The City of Los Angeles provided numerous building inspectors to Whittier;
- Huntington Park provided public works assistance to Bell;
- Los Angeles County provided building inspectors, aerial lift trucks, and haulage to Alhambra and building inspectors to Whittier;
- Orange County provided fire units to Monterey Park;
- Ventura and Orange counties dispatched fire equipment to Los Angeles County through regular fire mutual aid channels;
- The (CCC) provided crews to Alhambra and Whittier to assist in demolishing chimneys destroyed by the earthquake;
- State OES provided hand-held radios to Whittier.

Communications

The telephone communications system, as expected, experienced severe overload and consequent outage. Land-line communications were disrupted by the earthquake. In some cases, phones did work, but most jurisdictions hit hardest reported one-way communications, with calls coming in, but none going out. Although service was restored relatively quickly, the outage restricted the ability of local government to respond quickly to the emergency.

Jurisdictions with organized radio amateurs groups reported success in using these individuals to determine the initial extent of their damage. One city used cellular car phones for two-way communications; they functioned well although they are ultimately tied into the existing land line network.

In spite of the relatively minor incidence of injury produced by this earthquake, medical communications systems experienced an overload of the 911 system. Extra telephone dispatchers were called in to handle the greatly increased number of calls which, at one point, tied up virtually every 911 line.

It is clear from this response that a higher magnitude earthquake, with greater consequences, could completely overburden the emergency communications system.

Fires and Hazardous Materials

Fire departments around the area reported a number of calls concerning fires and hazardous materials incidents immediately following the earthquake. The Los Angeles City Fire Department reported five earthquake caused fires, three of which were linked to natural gas leaks.

A significant hazardous materials incident occurred in the City of Santa Fe Springs, when an earthquake-ruptured tank leaked 240 gallons of chlorine into the air, causing a plume cloud formation

that drifted through the industrial section of the City toward Whittier, resulting in the evacuation of some areas. Spilled chemicals resulted in a fire at a laboratory facility of California State University, Los Angeles. Pockets of encapsulated asbestos were dislodged by the earthquake shaking, releasing airborne asbestos fibers into ventilation systems or some public schools.

The Southern California Gas Company received over 20,000 service calls following the earthquake. They found 4,065 gas leaks, of which only 1,411 proved to be directly caused by the earthquake. A total of 16,507 customers reported turned off their gas although there was no gas leak; 81 automatic gas shutoff valves had to be reset.

Mass Care

The American Red Cross sheltered 10,359 people in 21 shelters following the earthquake and fed disaster victims 186,635 meals. By November 18, 1987, the Red Cross had provided 20,930 “bed units” (one person per day per bed equals one bed unit). In addition, some 625 families had been placed in rental units and more than 593 individuals checked into motels. Some difficulties were reported in terms of developing coordination between volunteer organizations and local government in providing this service.

Initial Recovery

After the main shock, city and county authorities started to quickly clean up and open the damaged area to people who wanted to remove their business inventories, clean up debris, or get back to work. Vehicle traffic was kept out of the most seriously damaged areas, but allowed access to the immediately surrounding area. This initial recovery effort failed to account for potentially damaging aftershocks. Although the Whittier Narrows aftershock sequence was characterized by an unusually small number of aftershocks during its first 48 hours of activity, a very large aftershock, measuring 5.3 on the Richter scale, occurred on October 4. The Whittier May Company parking garage, which was damaged but stills standing after the earthquake, collapsed during the aftershock.

The Northridge Earthquake

The magnitude 6.7 Northridge earthquake occurred at 4:31 on the morning of January 17, 1994, a national holiday, when most Californians were at home asleep. Fifty-seven people lost their lives, nearly 9,000 were injured, and damage was in excess of $20 billion.

Responding to the losses from the Northridge earthquake, Governor Pete Wilson issued Executive Order W-78-94 instructing the Seismic Safety Commission to review the effects of the earthquake and to coordinate a study of the specific policy implications arising from the Northridge earthquake, with particular attention to seismic structural safety and land-use planning.

In carrying out the Governor's mandate, the Commission used over three dozen background reports (published separately in the *Compendium of Background Reports on the Northridge Earthquake*, SSC 94-08) that describe the relevant laws, codes, regulations, and current practices in the fields of land use planning, structure and lifeline design, construction, and earth sciences. These reports were prepared by experts who reviewed the legal, social, and physical environment in which they took place. The reports were also reviewed by over 60 stakeholders, from state agencies and professional organizations to private citizens. In addition, a number of detailed case studies were conducted on over two dozen buildings following the earthquake and published as *Northridge Buildings Case Studies*, SSC 94-06.

Effects of the Northridge Earthquake

At 4:31 a.m. on January 17, 1994, eight miles below the surface of the northwestern end of the San Fernando Valley, the magnitude 6.7 earthquake generated intense shaking that caused widespread damage and enormous economic loss. The communities of Northridge, San Fernando, West Hollywood, Santa Clarita, Fillmore, Simi Valley, and Sherman Oaks were the hardest hit, but strong shaking and vulnerable buildings caused extensive damage as far away as central Los Angeles, Santa Monica, and Whittier.

This report is an overview of the effect of the Northridge earthquake on people, buildings, lifelines, and the local economy. It is these effects the Commission seeks to reduce in future earthquakes through improved public policy.

People

Although the number of lives lost in the Northridge earthquake was remarkably low considering the intensity of the earthquake and its location, 57 people died, nearly 9,000 were injured, and the earthquake affected the lives of more people than any previous natural disaster in the United States.

The earthquake hit California hardest at home. Over 25,000 dwelling units were permanently lost or severely damaged, and over 1,600 homes and apartment buildings were declared uninhabitable. By mid-September, the Governor's Office of Emergency Services and the Federal Emergency Management Agency (FEMA) had received over 630,000 phone calls regarding disaster assistance from victims of the earthquake, more than twice the number received after the previous record holder, Hurricane Andrew. FEMA had also received over 265,000 applications for individual and family grants. The Small Business Administration had conducted over 535,000 interviews with earthquake victims and had approved over 100,000 loans totaling nearly $3.4 billion.

Low-cost housing proved the most difficult to replace. Despite extraordinary city, state, and federal government efforts, repairs have begun on less than half of the 5,607 buildings that provided 11,000 apartments in the now infamous "ghost towns" (see Figure 3). The owners of the remaining buildings

either don't yet know whether they can rebuild or have decided to forfeit their equity and allow lenders to foreclose.

Local mental health agencies and community-based groups reported over 1,150,000 crisis counseling interventions, costing over $35 million. Although most victims have adjusted and returned to an appearance of normalcy, for many the traumas continues.

Buildings

With losses estimated at $20 billion, the Northridge earthquake was the most expensive earthquake in the history of this country. The greatest portion of those losses was a direct result of the damage to buildings. Over 112,000 structures were damaged in the earthquake. In the City of Los Angeles, over 934,000 buildings were damaged badly enough to require inspection, and nearly 2,000 (including 1,500 residential buildings) of those were red-tagged, forbidding entry; another 1,000 buildings were red-tagged in other affected communities. Over 8,800 buildings were yellow-tagged as safe only for limited use in Los Angeles; 5,000 more were yellow-tagged in other communities.

Most modern buildings (those built to post-1976 codes) performed significantly better than structures built to prior codes, however, three types of structures built to modern codes had a higher-than-expected frequency of damage:

1. Tilt-up concrete buildings

2. Steel moment-frame buildings

3. Aboveground reinforced concrete parking structures

The most severe damage generally occurred to buildings designed to codes used before 1976, with damages divided into three categories:

1. Buildings constructed with suspect materials and techniques, such as tilt-ups, non-ductile concrete frames, and un-retrofitted unreinforced masonry.

2. Buildings designed or constructed with irregular configurations – for example, multistory buildings with inadequately braced first stories (like most of the apartment houses that collapsed) and hillside homes.

3. Buildings with poor design, construction, or maintenance.

In spite of the good performance of most buildings, the economic losses were high. The damage to nonstructural elements – heating and air conditioning systems, lighting fixtures, suspended ceilings, partitions, and equipment – was costly. Nonstructural damage is a significant matter as the value of these elements generally ranges from slightly over half of a single-family dwelling's cost to as much as 80 percent of the total cost of many large buildings. Nonstructural items make possible a building's function and damage can disable buildings that are otherwise safe to occupy. Some hospitals had to close even though they had suffered only minor structural damage, because of damage to sprinkler systems, power systems, and other vital equipment.

Fires

The earthquake caused relatively few fires, although the most spectacular, the fire at a break in a natural-gas transmission line on Balboa Boulevard, was shown so often on television that it gave the perception of a more pervasive problem. Good fortune played a critical role in keeping fires from

spreading; there was no wind, and the area was not experiencing a dry spell. Another major factor, which was not a matter of luck, was the high level of planning and training in local fire departments and utilities, and the earthquake risk-mitigation programs of many businesses and governments.

Nonetheless, there were several problem areas:

- A number of fires in mobile home parks were caused when mobile homes fell from their supports and severed natural-gas connections. IN all, 172 mobile homes were destroyed by fire. These mobile home fires were all too predictable; they remain a constant threat throughout the state.
- Communications failures hampered the response of emergency responders.
- Damage to water delivery systems seriously limited the efforts of firefighters.

Lifelines

Lifelines – transportation systems, communications, and water, gas, and electric utilities – suffered extensive damage. The effect of individual lifeline failures and combined failures is both direct (gas fires) and indirect (interference with emergency response). The combined loss of water pressure, electrical power, emergency power, and communications, coupled with significant gas-related fires, present a clear and unacceptable hazard with far-reaching implications for emergency response and disaster recovery. Only good fortune prevented an even greater disaster.

Transportation Systems

Despite the retrofits and improvements in design that were made between the 1971 San Fernando earthquake and this 1994 event, some freeway overpasses collapsed and other portions of the highway system failed. Most of the bridges that were severely damaged were designed prior to the changes instituted as a result of the San Fernando (1971) and Loma Prieta (1989) earthquakes. Bridges designed and built after the lat4e 1970s performed relatively well. The direct cost to repair damaged freeway structures was over $350 million.

Communications

Communications failures during this disaster resulted in breakdowns in service, misunderstandings, lack of information for making decisions, and, in some cases, loss of lives and property. Emergency and normal communications systems were disrupted by damage, loss of electrical power, increased call volume, and call convergence into and out of the affected area. The disruption ranged from delayed dial tones to nonfunctional radio systems. Cellular phones worked well, but experienced overload. Radio communication among various police and fire agencies was hampered by too few mutual-aid channels, incompatibility of dissimilar radio systems, and the use of exclusive frequency bands.

Many hospital radios and phones did not work, requiring the Los Angeles Fire Department to send runners and fire units to determine the status of hospitals; paramedic and emergency medical services in the San Fernando Valley had communication problems; the Los Angeles County Medic Alert Center broke down; the Hospital Emergency Administrative Radio system was inoperable in the area of greatest earthquake impact; Reddi-Net, a computerized system owned by the Hospital Council of Southern California that links 86 hospitals, failed. Equipment damage and lack of employee training took their toll.

Electricity

About two million customers in the Los Angeles area lost electric power following the earthquake. Although power to most customers was restored, those near the epicenter, including hospitals and police and fire stations, were without power. Electric utilities made significant progress in "hardening" their generating and distribution facilities as a result of lessons learned in the San Fernando, Loma Prieta, and other earthquakes, but this event presented new problems. For the first time, transmission towers were toppled at a few locations. Power was restored to most of the region within one day and the hardest-hit areas within three days.

Gas

Damage to natural-gas transmission and distribution system caused fires, including a spectacular fire on a major thoroughfare, and interrupted service. The earthquake demonstrated that some older pipelines are vulnerable to failure in areas of ground deformation, but that newer pipelines faired well. Because gas-related fires are a major source of losses, efforts to minimize losses and control leaks are important.

Water

Damage to the area's water supply systems, from northern California and the Colorado River, as well as to distribution lines interrupted supplies and hampered fire fighting. The earthquake damaged five major aqueducts, disrupting the supply from the north. These pipelines serve treatment facilities that prepare water for the areas of Santa Clarita, Simi Valley, and San Fernando Valley. As was the case following the 1971 San Fernando earthquake, significant repairs were also required on local water distribution systems. Water was unavailable to some of the areas hardest hit by the earthquake for several weeks.

The Economy

The $20 billion in losses that often has been quoted as the cost of the Northridge earthquake coves, primarily, the physical damage to structures and lifelines. It does not include many of the costs related to loss of use, loss of bus9iness, loss of productivity, and relocation of businesses. Though they are significant, these losses are often overlooked. It was estimated that the loss of use of parts of the transportation system following the earthquake cost $65 billion in delays and lost productivity.

Overall productivity losses in the Los Angeles area in the days following the earthquake were estimated at $1 billion (Romero, 1994). Indirect economic effects such as loss of tax revenue, short- and long-term loss of productivity, and ripple effects such as foreclosures, abandonment of equity, and redistribution of commercial activities are extremely difficult to calculate with any degree of accuracy. Such imprecision doesn't lessen the impact, especially to the victims.

Loss of business is creating major problems in some areas, where these businesses provided both needed services and jobs. Although some businesses, trades, and professions are seeing an increase in demand for their services and products, fueled in part by government grants, low-interest loans, and other assistance, many small businesses remain closed or are struggling because the nearby residential properties that housed their normal customer base remain vacant. Nine months after the earthquake, nearly 50 percent of the small businesses in the most heavily affected area of Northridge were still not open. The commercial district in Fillmore and many commercial properties in communities from the San Fernando Valley to Santa Monica still awaited repairs.

Insured losses exceeded insurance industry expectations, illustrating the importance of reducing earthquake risk. The California Department of Insurance estimates that over 300,000 claims for earthquake damage repair had been filed as of October 1, 1994. The size of individual claims from the Northridge earthquake has been, on average, two or three times greater than claims from previous

earthquakes. Insurance companies expect to pay approximately $11 billion in claims, and some have been driven to the brink of insolvency. Many insurance companies believing their earthquake insurance risk exceeds their ability to pay future claims, have moved to limit the number of policies written for earthquake and homeowners' coverage in California. Lasting effects will be felt in terms of the availability of insurance, the amount paid for premiums, and the quality of coverage.

Geologic and Geotechnical Aspects of the Northridge Earthquake

The Northridge earthquake occurred at a depth of approximately nine miles beneath the earth's surface on a buried, or "blind," thrust fault. It produced intense shaking and caused extensive damage that reaffirmed the potential risk from this type of fault – and the need to mitigate that risk.

The earthquake was th4e most recorded earthquake that has ever occurred in California. Strong-motion instrument recordings were obtained at 257 sires. Over 11,000 aftershocks have been recorded by these instruments. By maintaining and enhancing data collection programs and identifying areas that have faults capable of causing earthquakes, California can learn to better reduce its seismic risk.

The Northridge earthquake also caused secondary hazards, the most prominent of which was localized amplifications of the ground motion caused by local geologic conditions. The identification and mitigation of secondary hazards, such as landslides, liquefaction, and areas that may amplify shaking, need to be integrated into land use planning programs, building codes, and engineering practices.

The Northridge earthquake provided many geologic, seismologic and geotechnical data that are still being compiled and analyzed. A significant value of the Northridge earthquake data is their use in the development and calibration of methods for assessing seismic hazard for planning and engineering applications. For example, the Northridge event occurred on a buried fault, highlighting the need to characterize and include earthquakes on this type of fault in their analysis of the ground motion component of the overall seismic hazard, It also reaffirmed that most of the hazard associated with earthquakes typically comes from strong shaking.

Strong Ground Motion

The Northridge earthquake was a moderate earthquake that produced strong ground motions and intense shaking. The term "moderate" describes the *magnitude* of the earthquake, which in this case was 6.7. Moderate earthquakes (less than magnitude 7.0) generally produce localized shaking of intensity (that is, amplitude of motion and frequency content) on stiff structures similar to that of major earthquakes (magnitudes of 7.0 and above). However, a more extensive area experiences intense shaking in a higher-magnitude earthquake and the duration of the shaking, the length of time the strong motion lasts generally increases with increases in magnitude. Since a higher-magnitude earthquake affects a larger area and lasts longer, it can be expected to cause greater damage.

A number of factors affect the amount of damage to structures in an earthquake, but the intensity of shaking is of paramount importance. Shaking intensity is affected by the magnitude of the earthquake, its style of faulting, local geologic conditions, proximity to the fault rupture, and the rupture geometry along the fault. The Northridge earthquake's strong-motion records reveal extensive information about the nature of the shaking, including acceleration, velocity, displacement, duration, and frequency, the consensus of earth scientists and geotechnical engineers is that the earthquake's motions were not unusual for a thrust-fault earthquake of this magnitude. However, this earthquake clearly points out the importance of near-source effects and local geologic conditions on shaking intensity and the need to incorporate these phenomena in seismic design and construction.

Accelerations

Peak accelerations, which h are not necessarily the best measurement for correlating ground motion with the forces in structures, typically ranged from 0.4g to 0.8g in the regions that suffered significant damage. Recorded peak horizontal accelerations typically ranged between 0.1g and 0.5g at distances between 12 and 30 miles from the rupture zone, although some higher accelerations were recorded due to local geologic or topographic conditions. Horizontal accelerations exceeding 0.9g were re4corded in the San Fernando Valley and in Santa Monica, nearly 14 miles away from the epicenter. The highest recorded free-field accelerations, 1.82g horizontal and 1.18g vertical, were at the Cedar Hill Nursery in Tarzana, three miles south and west of the epicenter. Instruments near an abutment to the Pacoima Dam recorded peak accelerations of 2.3g horizontal and 1.5g vertical, although the free-field accelerations on alluvial materials near the base of the dam were less than 0.5g.

There was initial speculation that much of the damage in the Northridge earthquake was caused by abnormally high vertical accelerations. Although vertical accelerations were high in some locations, so was the horizontal acceleration. The ratio of vertical to horizontal acceleration was consistent with previously recorded data. Modern building codes are based on assumptions that the maximum vertical accelerations will be two-thirds of the peak horizontal acceleration. An analysis of Northridge records indicates that, although this ratio was exceeded at a number of locations, on average, it held true (Shakal et al., 1994). The Commission has not received evidence that vertical accelerations played an unusual role in the damage caused by the Northridge earthquake.

Velocity and Displacement

The intensity of shaking is typically described by acceleration recordings. The Northridge earthquake also produced high velocities and displacements not described in acceleration data. A velocity of 56 inches per second was recorded in a parking lot at the Sylmar County Hospital, and a velocity of 72 inches per second was recorded at the Rinaldi receiving station. Peak velocity is important because it is a good indicator of an earthquake's demand potential (or energy) on multistory structures.

Ground displacement also is a significant factor in the design of structures, especially for seismically isolated structures. Ground displacement of 31 inches was measured at the Sylmar County Hospital parking lot. Base-isolate structures are normally separated from the surrounding soil to allow room for movement. Although seismically isolated structures are isolated from high-frequ4ncy shaking during an earthquake, they may collide with building foundation stops or barriers if actual displacements exceed the anticipated or design displacements. Such collisions would result in high impact forces that fan cause significant damage and even collapse.

Near-Source Effects

The near-source region of an earthquake can be defined as the region within several miles of where the projection of the fault rupture plane meets the ground surface. Within this region, the ground motion may be characterized by pulses of high velocity that are potentially damaging to certain types of structures. The near-source area in a strike-slip earthquake would have a different shape (generally longer and narrower, extending on both sides of the fault rupture for the length of the rupture), and the nature of the near-source strong motion would also vary, depending on other non-source effects such as local geologic conditions.

Although seismologists have known of the influence of near-source effects on seismic shaking for some time, near-source effects first gained the interest of California engineers following the 1971 San Fernando earthquake. Failure of the Olive View Hospital in 1971 was attributed, in part, to a large, long-period near-source "seismic pulse." Near-source effects have been considered in the design of some critical facilities for a number of years. However, the implication of near-source effects have only recently been studied for use in the design of conventional structures because previous earthquakes have not struck well-instrumented urbanized areas and, therefore, produced few recorded motions from areas close to the source. At present, near-source effects are not explicitly considered in the building codes except for seismically isolated structures.

Near-source effects of engineering interest are related to the direction and mechanics of the fault rupture. The numerous localized, relatively rapid failures of "patches" of the fault surface causes significant high-frequency motion and allows permanent coseismal displacement of the fault and surrounding area. Known as source-effect phenomena, these factors affect the amplitude and frequ4ency content of shaking.

Of critical importance to the design of engineered structures is that near-source effects combined with local geologic effects an adversely alter the seismic performance of a wide range of structures, including high-rise and base-isolated buildings. Data recorded during the Northridge earthquake clearly indicate the need to incorporate measures to mitigate this hazard in building codes. High-0velocity pulses in the near-source area are believed by some to be a cause of much of the damage. These pulses were the largest in the northern San Fernando Valley and Santa Susana Mountains. They were also significant in the southern San Fernando Valley.

Duration of Strong Motion

The longer ground shaking lasts, the greater the damage to structures, natural slopes, and fills. When strong shaking ceases, there is a reasonable possibility that the damage will not continue. However, if

the shaking continues after damage has been initiated, structures will continue to degrade and may eventually collapse. Damage caused by seismic consolidation and liquefaction also increases as duration increases. The duration of intense shaking during the Northridge earthquake was relatively short, on the order of nine seconds or less. Had the earthquake's magnitude been larger, there is little doubt that the strong shaking would have lasted longer and the damage would have been greater. Strong shaking has lasted minutes in some other events.

The duration of intense shaking, like near-source effects, is not explicitly considered in out building codes Because an urbanized area of California has not yet been exposed to long-duration near-source effects, the effect of durations on various types of structures is not fully understood.

Response Spectra

Response spectra are graphs that display the response of structures to ground motion associated with earthquakes. A spectrum graphically depicts the variation of spectral accelerations (velocities or displacements) experienced by simple structures with different stiffness or periods of vibrations (expressed in seconds). Although some recorded Accelerations in this earthquake were especially high, most spectra generally agreed with those recommended by site-specific geotechnical studies as the basis for the design of special structures. Similar response spectra have been calculated from data from numerous earthquakes since the 1971 San Fernando event and should be expected in future events.

Engineers use *design* spectra to determine the design parameters to use when designing stuffier. The values of design spectra are not the same as those of response spectra computed from measured ground motion. Design spectra are modified from response spectra to reflect safety factors and the performance of materials and structural systems observed in past earthquakes.

Because of the damage from this earthquake, questions have been raised concerning the adequacy of the building code's definition of the forces that earthquakes can impose on buildings. Code writers and designers know that code spectral values will likely be exceeded in large earthquakes and that this was anticipated when the code was written.

The recorded data from the Northridge earthquake are still being evaluat4ed and are subject to different interpretations. Strong motion instruments also were not located in many of the areas that suffered the most sever damage. Generally speaking, the motions recorded near the Northridge epicenter wee compatible with those used as the basis for the code, but the motions exceeded those assumed in the code in some cases. At some locations, particularly in the near-source areas and in areas with unique local geology, shaking exceeded the assumptions underlying design values in the short- to mid-period range. This shaking appears to have affected low- and mid-rise buildings and caused response in higher modes of vibration for tall buildings. Velocity- and displacement-sensitive structures also may have been affected by the velocity pulses described earlier. Near-source and local geological effects must be considered in the design of structures. There is no compelling evidence that changes to the code's assumed force levels are necessary. However, changes are necessary regarding the treatment of effects of near-source and local geologic conditions.

Strong-Motion Instrumentation

The timely release of strong-motion data, especially during the days immediately following an earthquake, is invaluable to building owners, emergency responders, and those who will revise codes and design practices. Much of the evidence of an earthquake's effects disappears quickly as demolition, repair, and reconstruction takes place. The opportunity to compare building performance and earthquake effects with actual motion data helps practicing engineers and researchers understand their observations, which in turn helps strengthen building codes and reduce future earthquake damage.

The Strong Motion Instrumentation Program (SMIP) proved its worth during this earthquake and its aftermath. Within a day of the main shock, SMIP had issued a "Quick Report" containing copies of strong-motion records obtained by four of its stations; copies of records for nine additional stations were released the following day. By the third day, copies of records for 28 stations had been made available, and by January 25, five quick reports had been released, providing peak acceleration data for 68 stations. In mid-February, SMIP issued a report containing pertinent station information, known geologic site conditions, peak acceleration data, and traces of recordings from 193 stations. SMIP also processed significant records rapidly and released processed data from five stations during the first week of February; additional releases followed at three- to four-week intervals. Processed data for more than 70 stations were released by December 1994. The timeliness and quality of these data were extremely valuable.

The U.S. Geological Survey (USGS), utilities, dam owners, and researchers funded by the National Science Foundation (NSF) operate networks of hundreds of free-field and structural strong-motion instruments scattered throughout California. A considerable public investment has been mad in developing and maintaining USGS- and NSF-funded strong-motion networks. For example, the USGS strong-motion network in southern California consists of nearly 100 stations, while the University of Southern California network originally consisted of 80 free-field stations. Many of these instruments are old analog-type devices; the data they collect require considerable processing before they can be used. Because these arrays complement the SMIP instruments and record motion in different areas, data from these networks are vital to understanding the distribution and severity of shaking resulting from the earthquake. The USGS released photocopies of records obtained from 150 individual accelographs in February 1994. However, data from the USGS- and NSF-funded networks wee not processed in a timely manner following the Northridge earthquake. USGS data were released to the scientific and engineering community in December 1994, but NSF-funded data wee not released as of that date. This situation is unacceptable; a mechanism is urgently needed to correct this problem.

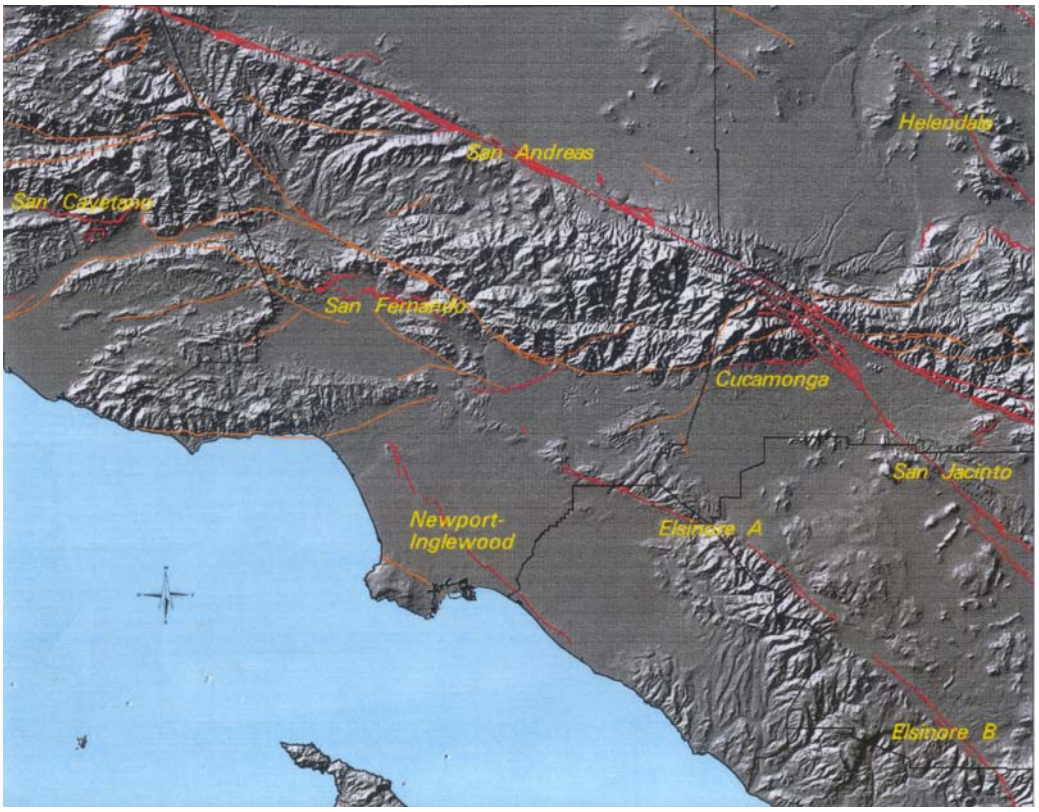
Reference Stations

Most free-field strong-motion stations were installed in locations near active faults to collect data for use in understanding the physics of earthquakes to be better able to estimate ground motion in future earthquakes. Such studies are vital to an understanding of the earthquake processes and such instrument deployments need to continue. However, there is also an urgent need for free-field strong-motion data as references to establish the levels of ground shaking experienced by buildings and other structures. Without such data, engineers cannot assess whether buildings performed as intended and determine the changes needed in codes and design practices to improve performance. For example, there were few free-field instruments in the immediate vicinity of damaged steel-frame buildings, so the levels and character of shaking experienced by these buildings were not well understood. The lack of reliable ground-motion data makes it extremely difficult to understand the causes of these failures and find acceptable solutions. None of the existing programs is directed toward obtaining the reference ground-motion data that are needed.

Faults

Historical and geological records show that California has a long history of seismic events. Southern California is probably best known for the San Andreas Fault, a 400 mile long fault running from the Mexican border to a point offshore, west of San Francisco. "Geologic studies show that over the past 1,400 to 1,500 years large earthquakes have occurred at about 130 year intervals on the southern San Andreas fault. As the last large earthquake on the southern San Andreas occurred in 1857, that section of the fault is considered a likely location for an earthquake within the next few decades."[1]

But San Andreas is only one of dozens of known earthquake faults that crisscross Southern California. Some of the better known faults include the Newport-Inglewood, Whittier, Chatsworth, Elsinore, Hollywood, Los Alamitos, and Palos Verdes faults. Beyond the known faults, there are a potentially large number of "blind" faults that underlie the surface of Southern California. One such blind fault was involved in the Whittier Narrows earthquake in October 1987.



Although the most famous of the faults, the San Andreas, is capable of producing an earthquake with a magnitude of 8+ on the Richter scale, some of the "lesser" faults have the potential to inflict greater damage on the urban core of the Los Angeles Basin. Seismologists believe that a 6.0 earthquake on the Newport-Inglewood would result in far more death and destruction than a "great" quake on the San Andreas, because the San Andreas is relatively remote from the urban centers of Southern California.

For decades, partnerships have flourished between the USGS, Cal Tech, the California Geological Survey and universities to share research and educational efforts with Californians. Tremendous earthquake mapping and mitigation efforts have been made in California in the past two decades, and

http://pubs.usgs.gov/gip/earthq3/when.html

public awareness has risen remarkably during this time. Major federal, state, and local government agencies and private organizations support earthquake risk reduction, and have made significant contributions in reducing the adverse impacts of earthquakes. Despite the progress, the majority of California communities remain unprepared because there is a general lack of understanding regarding earthquake hazards among Californians.

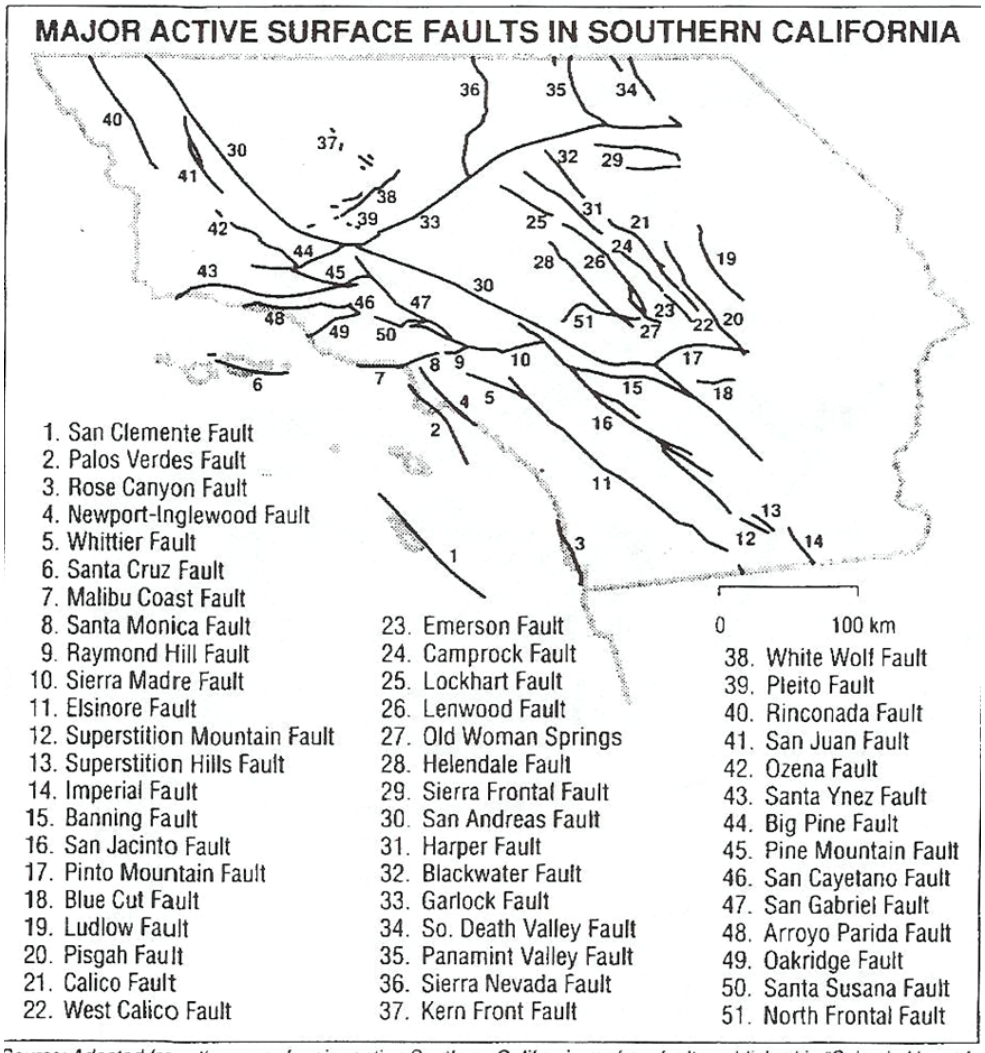
Earthquake Fault Zones Affecting Los Angeles County (Alquist-Priolo)

The Alquist-Priolo Earthquake Fault Zoning (AP) Act was passed in 1972 as a result of the destructive 1971 San Fernando earthquake. The AP Act addresses the seismic hazard of surface fault rupture by prohibiting the placement of most structures for human occupancy across traces of active faults. The AP Act addresses the seismic hazard of surface fault rupture by prohibiting the placement of most structures for human occupancy across traces of active faults. The Act also requires sellers and real estate agents to inform buyers whether real property being sold is within a state-designated Earthquake Fault Zone. The Department of Conservation, Division of Mines and Geology has issued 544 regulatory maps as of March 1, 2000 at a scale of 1:24,000. These maps, designated as Earthquake Fault Zones maps, are issued in order to assist cities and counties in avoiding the hazard of surface fault rupture.

This index shows all Official Maps of Earthquake Fault Zones (EFZ) affecting Los Angeles County as of March 1, 2000.

ATTACHMENT 1, THREAT SUMMARY 1

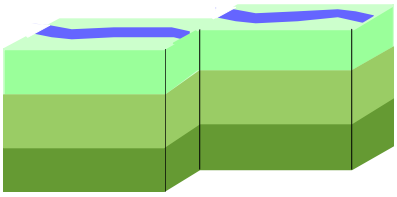
EARTHQUAKE FAULT MAP



Source: Adapted from the map of major active Southern California surface faults published in "Seismic Hazards in Southern California: Probable Earthquakes, 1994-2024," Southern California Earthquake Center.

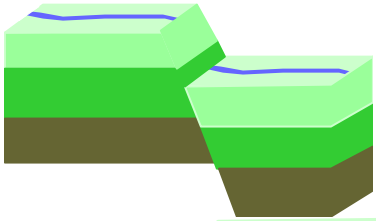
Causes and Characteristics of Earthquakes in Southern California

Fault



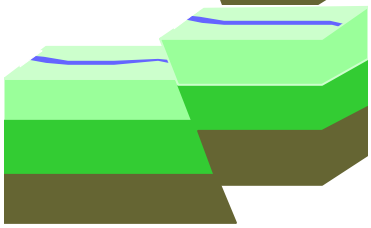
A fault is a fracture along between blocks of the earth's crust where either side moves relative to the other along a parallel plane to the fracture.

Strike-slip



Strike-slip faults are vertical or almost vertical rifts where the earth's plates move mostly horizontally. From the observers perspective, if the opposite block looking across the fault moves to the right, the slip style is called a right lateral fault ; if the block moves left, the shift is called a left lateral fault.

Dip-slip

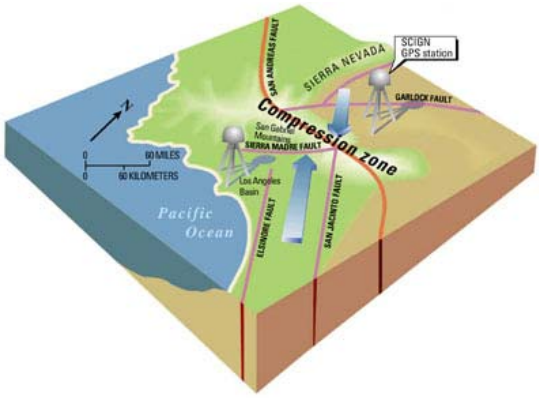


Dip-slip faults are slanted fractures where the blocks mostly shift vertically. If the earth above an inclined fault moves down, the fault is called a normal fault, but when the rock above the fault moves up, the fault is called a reverse fault. Thrust faults have a reverse fault with a dip of 45 ° or less.

The earthquakes of California are caused by the movement of huge blocks of the earth's crust. Southern California straddles the boundary between the Pacific and North American plates. These large sections of the earth's crust (the North American plate extends east to Iceland while the Pacific plate extends west to Japan) are moving past each other. The Pacific plate is moving northwest, scraping horizontally past North America at a rate of about 50 millimeters (2 inches) per year.

About two-thirds of this 50 millimeters per year occurs on the San Andreas fault and some parallel faults—the San Jacinto, Elsinore, and Imperial faults. These four faults are among the fastest moving, and therefore most dangerous, in Southern California. Over time, these four faults produce about half of the significant earthquakes of our region.

However, this is not the whole picture. Unlike central and Northern California, much of this plate movement in Southern California is not parallel to the San Andreas fault. Between the southern end of the San Joaquin Valley and the San Bernardino mountains, in the so-called "big bend," the San Andreas fault runs in a more westerly direction.



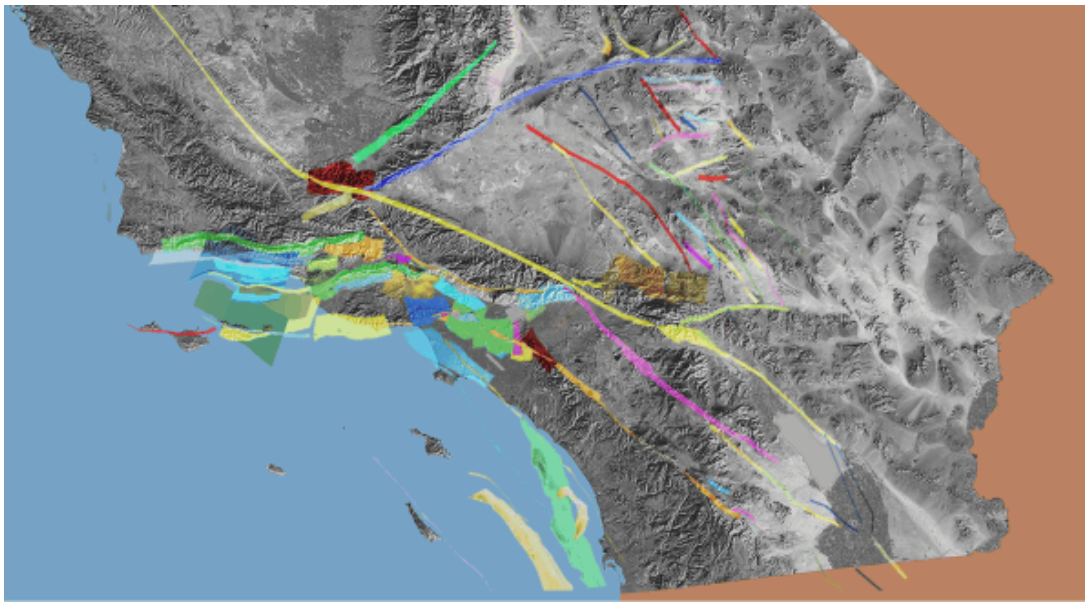
A schematic block model of Southern California showing the motion of the Pacific and North American plates, and the big bend of the San Andreas fault where the plates squeeze together.

Where the fault bends, plate motion is complex. The Pacific and North American plates push into each other, compressing the earth's crust into the mountains of southern California and producing

faults and earthquakes. While these 300 or so faults are generally much shorter and slower moving than the four faults mentioned previously, over half of the significant earthquakes in southern California occur on these faults.

The greatest concentration of these faults is in and near the mountains that have formed around the big bend of the San Andreas fault (the San Bernardino, San Gabriel, and Santa Ynez mountains). These mountains, like most mountains in California, are there because earthquakes are pushing them up. Many of these faults can be detected at the earth's surface, though some are buried beneath the sediments of the Los Angeles basin and the inland valleys.

SCEC Community Fault Model courtesy of Andreas Plesch, Harvard.



This map shows the 3-dimensional structure of major faults beneath Southern California. Vertical faults such as the San Andreas (yellow band from top left to bottom right) are shown as a thin strip. Faults that are at an angle to the surface are shown as wider ribbons of color. The nearest fault to you might be a few miles beneath your home. Areas that seem to have few faults can still experience strong shaking from earthquakes on unmapped faults or from large earthquakes on distant faults

Geologic Rates

The movement between the Pacific and North American plates, 50 millimeters (2 inches) each year, is about how fast your fingernails grow, but it has been going on for eons. Los Angeles City Hall is now 3 meters (10 feet) closer to San Francisco than when it was built in 1924. It would take a mere (geologically speaking) 2 million years for your nails to extend 100 kilometers (60 miles) from San Bernardino to Palmdale. It took many millions of years for our faults to slip enough, and rocks to move enough, to shape Southern California's current landscape.

Unknown Faults

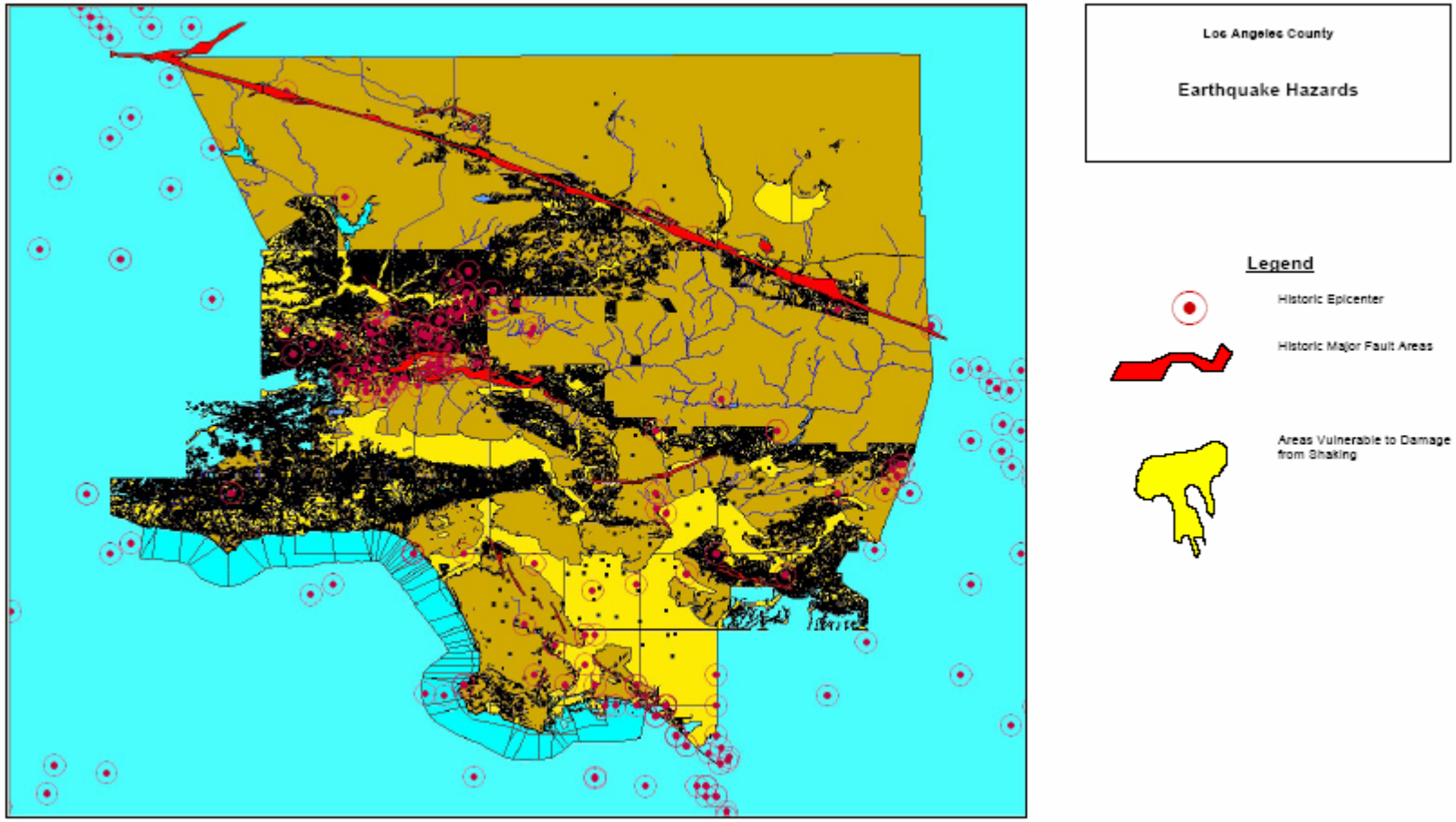
As the Northridge earthquake confirmed, some faults are not known until they move in large and damaging earthquakes. What do we do about the faults we can't see and don't know about yet? Do we still have to wait until the next earthquake reveals them?

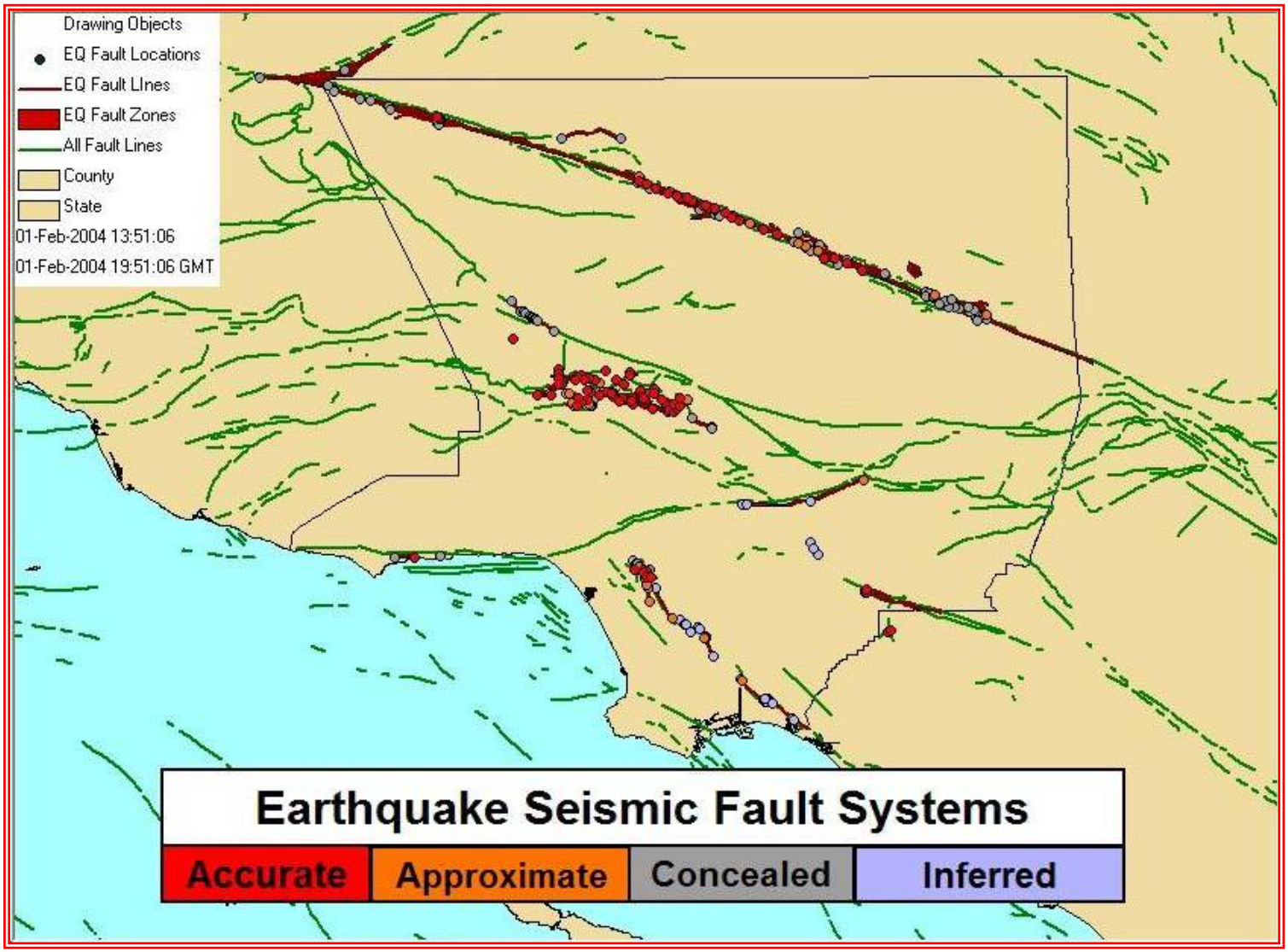
Not necessarily. In 2001, scientists of the Southern California Earthquake Center completed the Southern California Integrated GPS Network (SCIGN), an advanced system of 250 Global Positioning System (GPS) receivers. With this network the positions of locations throughout Southern California can be precisely measured.

By measuring these locations for several years, we can see how different sites are moving relative to each other—for instance, Palos Verdes is moving toward Pasadena at about 4 millimeters (5/32 inch) per year. If movement between two locations is greater than the movement on known faults, then we have a reasonable idea that there may be another fault in the area, perhaps buried by sediment. This can lead to focused research using other methods to identify the unknown fault.

Information from the Southern California Earthquake Center

Earthquake Hazard Map – LA County Los Angeles County GIS Data



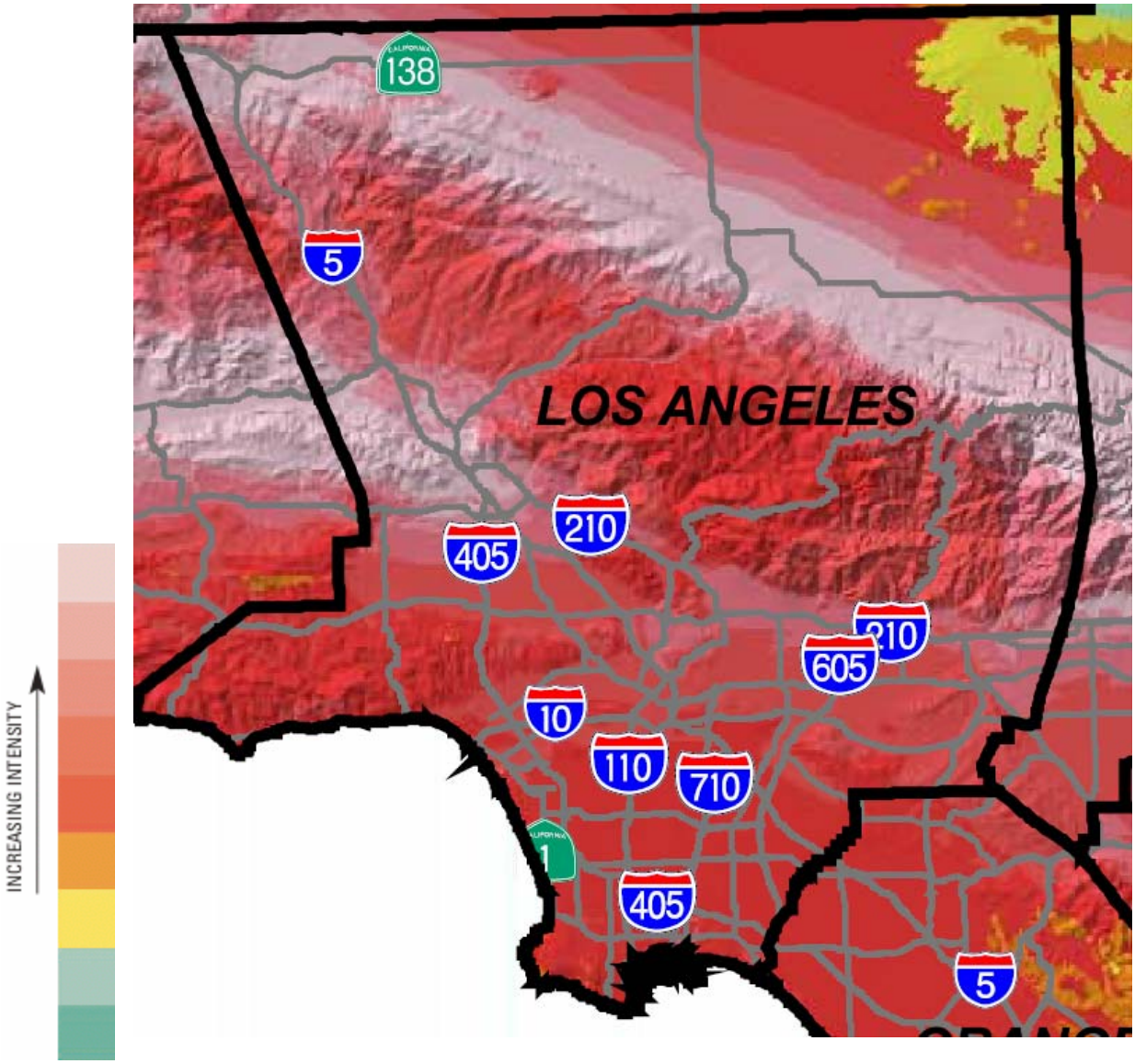

Drawing Objects
EQ Fault Locations
EQ Fault LInes
EQ Fault Zones
All Fault Lines
County
State
01-Feb-2004 13:51:06
01-Feb-2004 19:51:06 GMT
Earthquake Seismic Fault Systems
Accurate
Approximate
Concealed
Inferred

Earthquake Related Hazards

Ground shaking, landslides, liquefaction, and amplification are the specific hazards associated with earthquakes. The severity of these hazards depends on several factors, including soil and slope conditions, proximity to the fault, earthquake magnitude, and the type of earthquake.

Ground Shaking

Ground shaking is the motion felt on the earth's surface caused by seismic waves generated by the earthquake. It is the primary cause of earthquake damage. The strength of ground shaking depends on the magnitude of the earthquake, the type of fault, and distance from the epicenter (where the earthquake originates). Buildings on poorly consolidated and thick soils will typically see more damage than buildings on consolidated soils and bedrock.



These regions are near major, active faults and will on average experience stronger earthquake shaking more frequently. This intense shaking can damage even strong, modern buildings. The regions distant from known, active faults will experience lower levels of shaking.

Earthquake Shaking Potential in Southern California

Residents cannot live in southern California worrying about every one of the more than 300 faults described on the previous page. We also do not need to. As described on pages 8 and 9, the ground shaking in an earthquake depends on the magnitude, the distance from the fault and local soil conditions. For, example, look at the patterns of shaking for two different earthquakes in these figures. The magnitude 4.2 earthquake produced stronger shaking near Beverly Hills than did the much larger but more distant magnitude 7.1 Hector Mine earthquake. These patterns can be simulated by computers to make maps of the shaking to expect from any potential earthquake. Shaking intensities from all possible earthquakes are added to determine the total hazard for each site.

Each area of southern California will be shaken by a different set of earthquakes, though larger earthquakes may shake many areas. In the long run most everywhere in southern California will experience heavy earthquake shaking. Some locations will experience such shaking more frequently because they are closer to more faults or have local soil conditions that amplify earthquake shaking.

Unfortunately, scientists do not yet have the information needed to predict which earthquakes will happen first, so we must be ready for the shaking in our area from any possible earthquake. To help, scientists have summed up the probable shaking from all our known faults to create this map. It shows the relative intensity of ground shaking in California from all anticipated future earthquakes. Areas in red and pink are nearer major, active faults and on average experience stronger earthquake shaking more frequently. Although the greatest hazard is in these area, no region within the state is immune from the potential for earthquake damage.

Earthquake Size Descriptions		
Descriptive Title	**Richter Magnitude**	**Intensity Effects**
Minor Earthquake	1 to 3.9	Only observed instrumentally or felt only near the epicenter.
Small Earthquake	4 to 5.9	Surface fault movement is small or does not occur. Felt at distances of up to 20 or 30 miles from the epicenter. May cause damage.
Moderate Earthquake	6 to 6.9	Moderate to severe earthquake range; fault rupture probable.
Major Earthquake	7 to 7.9	Landslides, liquefaction and ground failure triggered by shock waves.
Great Earthquake	8 to 8+	Damage extends over a broad area, depending on magnitude and other factors.

Rapid Instrumental Intensity Maps

A small nearby earthquake can cause more shaking than a distant large earthquake, as shown in the intensity maps for the magnitude 7.1 Hector Mine earthquake (right) and the magnitude 4.2 Beverly Hills earthquake (below right). The blue square on the map on the right shows the location of the map below.

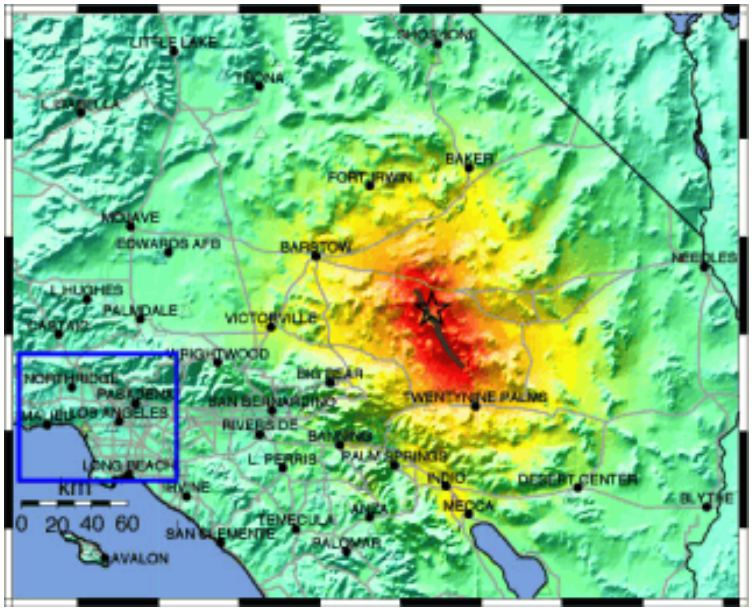
Modified Mercalli Intensity Scale

Another way to recognize the intensity of an earthquake is to refer to the Modified Mercalli Intensity Scale. This scale was devised before seismographs were invented. The Modified Mercalli Intensity Scale remains useful in plotting maps that show the general range and severity of ground effects, structural damage, personal observation and sensations during an earthquake. The scale is largely dependent upon the observations and reports of victims of an earthquake.

Modified Mercalli Intensity Scale	
Numerical Code	**Description**
I	Not felt by people, except under especially favorable circumstances.
II	Felt only by persons at rest on the upper floors of buildings, some suspended objects may swing.
III	Felt by some people who are indoors, but may not be recognized as an earthquake. The vibration is similar to that caused by the passing of light trucks. Hanging objects swing.
IV	Felt by many people who are indoors and by a few outdoors. At night some people are awakened. Dishes, windows and doors are disturbed; walls make creaking sounds; stationary cars rock noticeably. The sensation is like a heavy object striking a building; the vibration is similar to that caused by the passing of heavy trucks.
V	Felt indoors by practically everyone, and by most people outdoors. The direction and duration of the shock can be estimated by the people outdoors. At night, sleepers are awakened and some run out of buildings. Liquids are disturbed and sometimes spilled. Small, unstable objects and some furnishings are shifted or upset. Doors close and open.
VI	Felt by everyone. Many people are frightened and run outdoors. Walking is difficult. Small church bells ring. Windows, dishes and glassware are broken. Liquid spills. Books fall from shelves and furniture is moved or overturned. Poorly built buildings may be damaged and weak plaster will crack.
VII	Causes a general alarm. Standing upright is very difficult. Persons driving cars also notice the shaking. Damage ids negligible in buildings of very good design and construction, slight to moderate in well-built ordinary structures, and considerable in poorly built or designed structures. Some chimneys are broken. Interiors of buildings and furnishings are damaged considerably. Architectural ornaments such as fountains, statues, and gargoyles are damaged. Small slides occur along sand or gravel banks of water channels; concrete irrigation ditches are damaged. Waves form on water surfaces and muddy bottoms become agitated.
VIII	General fright or panic. Steering cars is difficult. Damage is slight in specifically designed earthquake-resistant structures, considerable in well-built ordinary buildings, poorly built or designed buildings experienced partial collapse. Numerous chimneys fall; the walls of frame buildings are damaged; interiors are heavily damaged. Frame houses that are poorly bolted move off their foundation. Decayed pilings are broken off. Trees are damaged. Cracks appear in wet ground and steep slopes. Changes in water flow and temperature in springs and wells are noticed
IX	Panic is general. Interior damage is considerable in specially designed earthquake-resistant structures. Well-built ordinary buildings are severely damaged with partial collapse. Frame structures are thrown out of plumb or shifted off foundations. Unreinforced masonry buildings collapse. The ground cracks conspicuously and some underground pipes are broken. Reservoirs are severely damaged. Reservoirs are seriously damaged.
X	Most masonry and many frame structures are destroyed. Specially designed earthquake-resistant structures may suffer serious damage. Some well-built bridges are destroyed. Dams, dikes, and embankments are seriously damaged. Large landslides are triggered by the shock. Water is thrown onto banks of canals, rivers and lakes. Sand and mud are shifted horizontally on beaches and flat land. Railroad rails are bent slightly. Many buried pipes and conduits are broken.
XI	Few, if any masonry structures remain standing. Other structures are severely damaged. Broad fissures, slumps and slides develop in soft or wet ground. Underground pipelines and conduits are put completely out of service. Railroad rails are severely bent.
XII	Damage is total, with practically all works of construction severely damaged or destroyed. Waves are observed on ground surfaces. All soft or wet ground is greatly disturbed. Heavy objects are thrown into the air and large land masses are displaced.

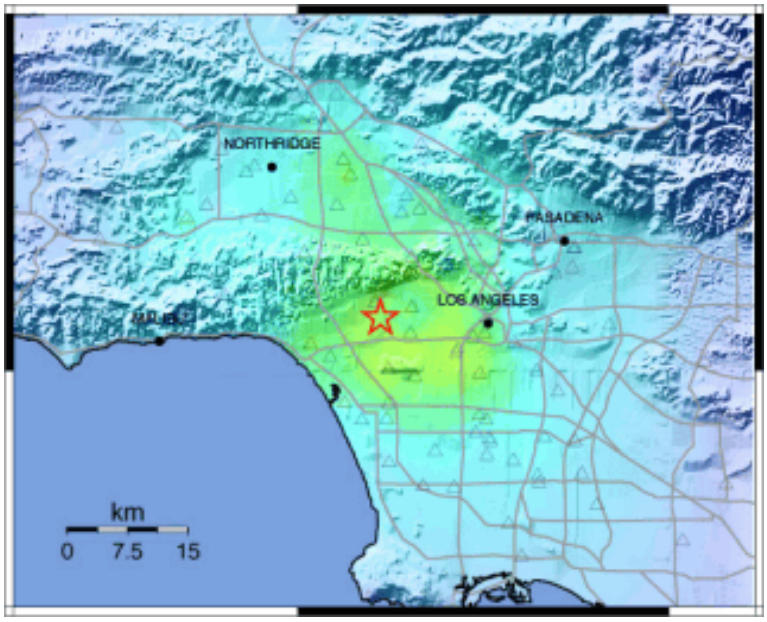
Magnitude 7.1 Hector Mine Earthquake

Saturday, October 16, 1999 03:04:53 a.m. PDT



Magnitude 4.2 Beverly Hills Earthquake

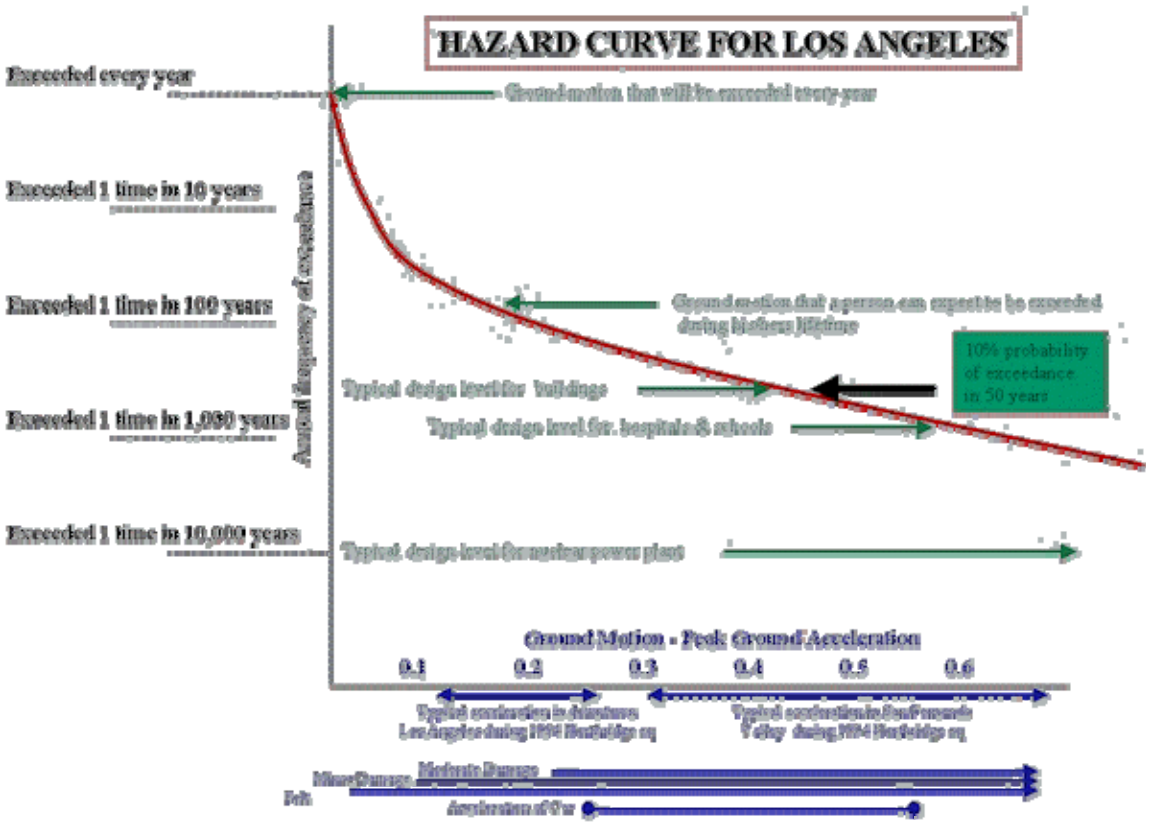
Sunday, September 9, 2001 04:59:18 p.m. PDT



U. S. GEOLOGICAL SURVEY

Hazard Curve

Hazard curves show the probability of exceeding different ground motion values at a site. For example, the 10% probability of exceedance in 50 years is one point on a hazard curve. The hazard curves are important for comparing the hazard at different sites. Some sites may have a high probability of exceeding small ground motions, but a very small probability of exceeding large ground motions. These curves are important for understanding the types of ground motions that one can expect to exceed at a site. Also the hazard curve is important for determining the expected losses. Losses can be caused by frequent smaller events or from less frequent large events. An example of a Hazard Curve is shown below.

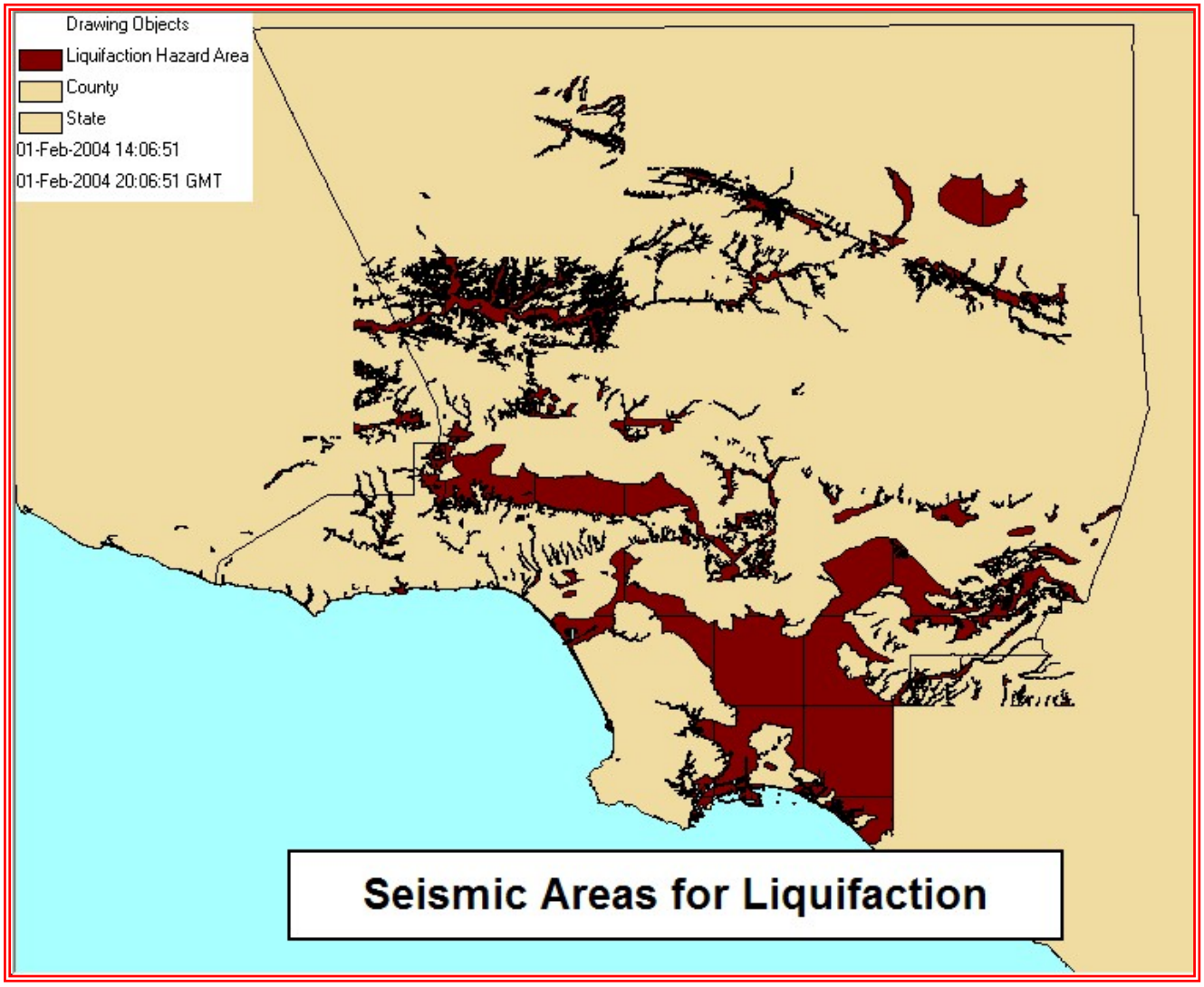


Earthquake Induced Landslides

Earthquake induced landslides are secondary earthquake hazards that occur from ground shaking. They can destroy the roads, buildings, utilities, and other critical facilities necessary to respond and recover from an earthquake. Many communities in Southern California have a high likelihood of encountering such risks, especially in areas with steep slopes. (See Landslide Hazard Description)

Liquefaction

Liquefaction occurs when ground shaking causes wet granular soils to change from a solid state to a liquid state. This results in the loss of soil strength and the soil's ability to support weight. Buildings and their occupants are at risk when the ground can no longer support these buildings and structures. Many communities in Southern California are built on ancient river bottoms and have sandy soil. In some cases this ground may be subject to liquefaction, depending on the depth of the water table.



Amplification

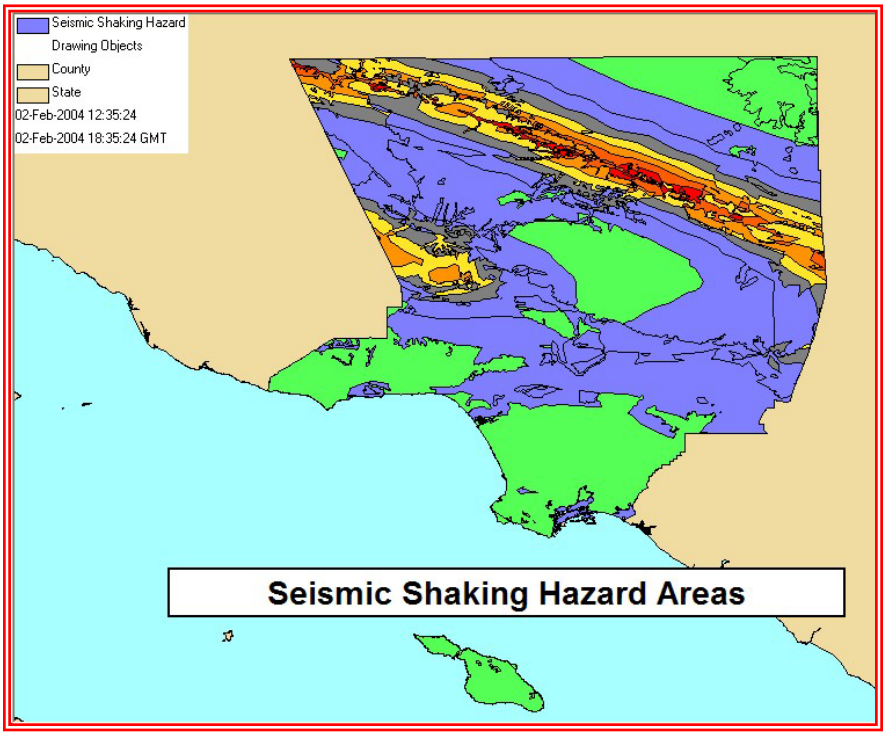
Soils and soft sedimentary rocks near the earth's surface can modify ground shaking caused by earthquakes. One of these modifications is amplification. Amplification increases the magnitude of the seismic waves generated by the earthquake. The amount of amplification is influenced by the thickness of geologic materials and their physical properties. Buildings and structures built on soft and unconsolidated soils can face greater risk.[2] Amplification can also occur in areas with deep sediment filled basins and on ridge tops.

Earthquake Hazard Assessment

Hazard Identification

In California, many agencies are focused on seismic safety issues: the State's Seismic Safety Commission, the Applied Technology Council, Governor's Office of Emergency Services, United States Geological Survey, Cal Tech, the California Geological Survey as well as a number of universities and private foundations.

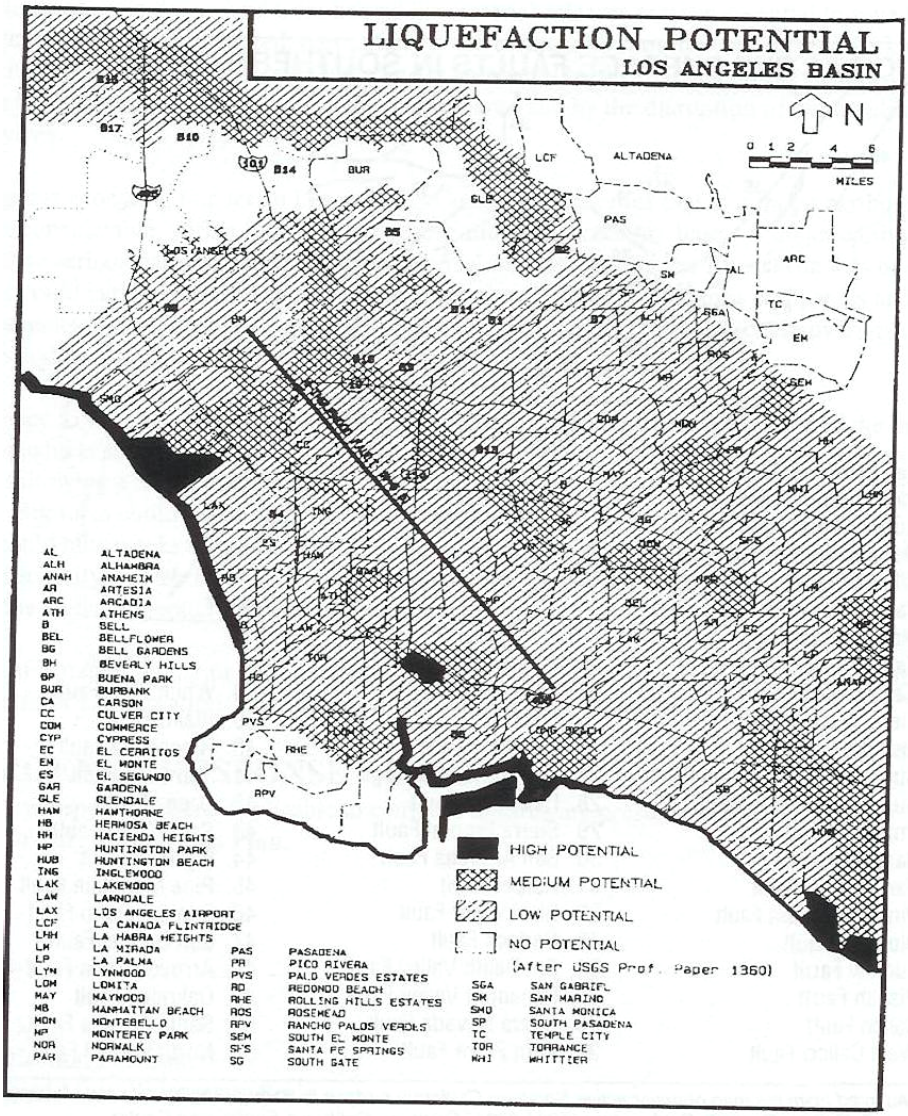
These organizations, in partnership with other state and federal agencies, have undertaken a rigorous program in California to identify seismic hazards and risks including active fault identification, bedrock shaking, tsunami inundation zones, ground motion amplification, liquefaction, and earthquake induced landslides. Seismic hazard maps have been published and are available for many communities in California through the State Division of Mines and Geology. The map below illustrates Seismic Shaking Hazard Areas in Los Angeles County.



Planning for Natural Hazards: The California Technical Resource Guide, Department of Land Conservation and Development (July 2000)

ATTACHMENT 2, THREAT SUMMARY 1

LIQUEFACTION POTENTIAL



Seismic Ground Response

Liquefaction

Many areas may have buildings destroyed or unusable due to the phenomenon of liquefaction, which occurs during sever ground shaking in soft, poorly graded granular soils where there is a high water table. Structures above the liquefaction strata may sink of structurally fail; pipelines passing through liquefaction materials may sustain an unusually large number of breaks.

Unreinforced Masonry Program (URM)

City/County	# of URM Buildings	Inventory Complete	Mitigation Program Type	%	% of URM Buildings Retrofitted & Demolished	Tiltup Retrofit Program	Dwelling Retrofit program	Apartment Retrofit Program	Financial Incentive
Commerce	9	X	Mandatory	77.8	Progress Complete	X	X	X	X

Road Closure Predictions

Additionally, an earthquake may trigger secondary events which can impact the transit system's ability to safely conduct revenue services. In the event of a major earthquake on the Newport-Inglewood Fault (magnitude 7.0 or greater), it is expected that the entire Metro Blue Line can expect to sustain significant damage and will probably close. Segments of the line are also subject to liquefaction.

Severe Weather

Severe Weather was rated as a MODERATE PRIORITY RISK by the City of Commerce Hazard Mitigation Planning Team.

The impact caused by Severe Weather is extended rains, causing road flooding and winds which disrupt data/telecommunication. The potential monetary loss is less than 10% based on the latest data available.

El Niňo

On February 9, 1998, President Clinton, in response to a request from Governor Wilson, declared a major disaster for 27 counties in the State of California. The disaster was designated as FEMA-1203-DR-CA. On February 13, 1998 four additional counties were added; on February 26, four more counties were added, and on March 6, 1998, six additional counties were designated, bringing the total to 41.

The County of Los Angeles established a special task force comprised of county department members to distribute sandbags and clear flood channels. In Monterey County, farmers and landowners along the Salinas River banded together to reduce flooding that caused $240 million in damages in 1995. They formed a coalition and spent $2 million to clean out vegetation, sandbars, and other flow impediments along 40 miles of the river, and increased water flow capacity by 33 percent. As a result, the Salinas River did not flood during the El Nino '98 Storms. In anticipation of El Nino-driven pounding surf and high tides, City and Orange County crews built, along the beach, a 10-foot high berm several hundred yards long to protect scores of beach-front homes in the City of Seal Beach.

The National Flood Insurance Program reported a surge in Californians purchasing flood insurance following the El Nino Community Preparedness Summit held in October, 1997. The number of policies went from a pre-summit total of 264,914 to 333, 753 by the end of November. This number climbed to 365,000 by the end of December according to FEMA.

Disasters have unique and defining characteristics. The El Nino '98 Storms are no exception. The most distinct characteristic of FEMA-1203-DR-CA has been the landslides, coastal erosion, and related earth movement problems brought on by rapidly recurring storms which produce heavy rains, high winds, and large waves.

Overview of FEMA-1203-DR-CA Disaster Declaration

On February 9, 1998, President Clinton signed a major disaster declaration that designated "El Nino '98, FEMA-1203-DR-CA." As a result of the Presidential declaration, section of the Robert T. Stafford Disaster Relief and Emergency Assistance Act were implemented, providing Individual Assistance and Public Assistance to the designated counties. The declaration also activated the Hazard Mitigation Grant Program (HMGP) which is applicable to all counties in the State. After the initial declaration by President Clinton, 14 additional counties requested to receive a federal declaration, bringing the total number of designated counties to 41.

The 41 designated counties were: Alameda, Amador, Butte, Calaveras, Colusa, Contra Costa, Del Nor6te, Fresno, Glenn, Humboldt, Kern, Lake, **Los Angeles**, Marin, Mendocino, Merced, Monterey, Napa, Orange, Riverside, Sacramento, San Benito, San Bernardino, San Diego, San Francis o, San

Joaquin, San Luis Obispo, San Mateo, Santa Ba5bara, Santa Clara, Santa Cruz, Solano, Sonoma, Stanislaus, Sutter, Tehema, Trinity, Tulare, Ventura, Yolo, Yuba.

El Nino '98

In the spring of 1997, Pacific Ocean temperatures along the equator from South America to Australia were rising above normal, changing wind patterns in the area. This is phenomenon known as El Nino. As part of the global impact of El Nino, heavy storms for 1997-1998 were predicted for the State of California.

In anticipation of a serious El Nino winter season, emergency services agencies throughout the State started making preparations. During summit convened on October 6, 1997, Governor Pete Wilson directed the State to take a series of actions in to prepare for the severe storms that were predicted to hit California as a result of El Nino. The Governor directed the Office of Emergency Services (OES) and the Department of Water Resources (DWR) to conduct a series of regional briefings over the next two months to assist local communities in their El Nino preparations. In October 1997, the first of six briefings for local and state agencies was held. FEMA held the "El Nino Community Preparedness Summit" in Santa Monica, on October 14, 1997

Agencies such as DWR and the Corps of Engineers accelerated efforts to complete projects and work which began as a result of the prior year's disastrous flooding. Many local agencies accelerated repairs, cleaned storm channels, and implemented community education efforts, while the State issued environmental permits that allowed repair and mitigation work to move forward prior to the arrival of the storms. Although difficult to quantify, it is clear that without these and a multitude of other efforts, the devastation from the disaster would have been far greater.

About 170% of normal precipitation was experienced in most areas, with several locations receiving 300% or more above normal. Rainstorms occurred continuously in February, ranging in duration from 1 to 3 days, with only a day of rest between cycles. The season's most severe storm occurred on February 2nd, and a series of storms continued until February 24, 1998. A strong jet stream was present across the Pacific during this time and this colder air mass also increased rain and snow. February rains were three times normal, and the mountain snow pack rose from 15% to 185%. The pattern was similar to the winter of 1982-83, the most serious past El Nino year. The El Nino '98 Storms were of average temperature --unlike those of 1997, which were warmer, resulting in rainfall at higher elevations.

Description of Damage and Impact

Damage occurred almost as soon as the first heavy rains began in November, 1997. In Orange County, the damage became serious enough for a local disaster declaration on December 6, 1997. This was followed by a gubernatorial disaster declaration on December 10, 1997.

Casualties included 17 confirmed deaths and 29 confirmed injuries. The total amount of residential damage was estimated at over $120 million. Roads, utilities, and levees were also damaged. As of April 29, 1998, the Disaster Field Office (DFO) estimated damages as follows: 91 homes have been destroyed, 2,303 homes suffered major damages, and 4,252 homes incurred minor damage.

According to the California Coastal Commission, *Storm Summary Report for Coastal California, March 10, 1998,* the El Nino '98 Storms caused extensive damage along Coastal California. In many cases, coastal bluff and mountain soils lost stability due to saturation from copious precipitation and large waves. High river levels caused flooding of several low elevation areas. There was a great deal of beach erosion in Los Angeles, Orange, and San Mateo Counties, as well as other parts of California. Storm waves damaged many low-lying oceanfront structures. The Coastal Commission issued

approximately 75 emergency coastal permits, mostly for rip rap and seawall repairs to protect residential structures.

Impacts to Individuals

By April 28, 1998, FEMA's Human Services Division had received over 70,125 tele-registrations for FEMA disaster assistance. The Disaster Housing Program had received a total of 46,730 applications, and had provided $20.6 million in assistance. As of April 15th the Small Business Administration (SBA) had issued 31,509 home and personal property loan applications and had approved more than $16 million in low interest loans. In addition, the SBA had issued 9,699 business loan applications and approved $6,504,400 in business loan funds. The Individual and Family Grant Program (IFGP) had received 37,093 requests as of April 28th. For serious, unmet needs beyond the maximum IFGP award, the State Supplemental Grant (SSG) could provide up to an additional $10,000, and had awarded 17 grants for an additional $82,663 in aid to individuals. The Public Assistance (Infrastructure) Program had received 269 Damage Survey Reports (DSRs) totaling $26,582,560 as of April 28, 1998. According to the preliminary damage assessment, damage to local government facilities was estimated at $300 million.

Shelters

The El Nino '98 Storms created a need to feed and shelter thousands of people. The American Red Cross (ARC), members of the National Volunteer Organizations Active in Disaster (NVOAD), and numerous other voluntary agencies, are usually the first to respond to the needs of disaster victims. The Red Cross provided housing for 5,112 people at 91 shelter locations, more than 140,000 meals were served, and financial assistance was extended to more than 2,300 households. The Red Cross relief efforts for the El Nino winter storms exceeded $4.6 million.

Levees

Unlike the flooding in the previous year (FEMA-1155-DR-CA), California Winter Storms of 1997), there were less widespread floods and levee problems. Due in part top the lower temperatures, the duration of rains, and pre-storm repair efforts to shore-up levees at risk, there were only a few levee breaks and seepage. According to DWR, The Sacramento River was not strained to capacity. The San Joaquin River briefly approached flood stage at the Vernalis Gage, but did not exceed it. Many of the areas that flooded were predictable, such as Rio Linda in Sacramento County and the residential areas along the Pajaro River in Monterey County. The area around Clear Lake in Lake County repeated its flooding history, and set a record for the stage height. The Russian River at Guerneville was above flood stage, as was the Petaluma River.

Landslides

Landslides and debris flows had a greater impact during this disaster than in the federal disasters of 1995 and 1997. The severity of the problems ranged from the catastrophic losses in the Rio Nido community of Sonoma County, to small erosion problems with minor impact. Landslides and erosion also caused residential damage and destruction in Alameda County, Humboldt County, Los Angeles County, San Mateo County, San Francisco County, Santa Cruz County, Ventura County, and various other sites within the state.

Geological Discussion

The frequent storms that occurred in February 1998 saturated soils and triggered numerous debris flows and landslides, resulting in severe damage throughout river valleys and coastal areas. Eroding

cliffs jeopardized homes, and debris flows forced many residents to evacuate their homes. Such headline grabbing events focused attention on the geologic problems produced by the wet season. It should be noted, however, that deep-seated landslide movements could continue after the heavy rains have stopped.

Soil and rock that comprises hill slopes will eventually move downhill. Some of this material will move grain-by-grain thorough erosion and soil creep, and some will move as larger slabs or liquefied masses, commonly called landslides and mudslides. Geologists generally classify landslides on their shape, rate (speed) of movement, type of motion, and material properties. In most classification schemes, there are three distinct types of movement: flow (e.g. debris flows and mudflows); sliding along a discrete plane or failure (e.g. debris slide); and falling (e.g. rock falls and avalanches).

Landslides can be small, involving only a few cubic yards of material, or large, involving more than a square mile of land. Some landslides are shallow, only a few feet deep, while others can be hundreds of feet deep. Landslides can be slow, and move only a few inches a year. It can also be fast and move at tens to hundred of miles per hour.

While most hill slopes are marginally stable under dry conditions, the addition of water from rainfall, snowmelt, or human activities (e.g. watering lawns) can radically alter the character of the soil and weathered rock and lessen the stability of slopes. Generally, all other conditions being equal, if groundwater is at or near the ground surface, there is a great probability that a landslide or debris flow will occur.

Another major factor that may trigger landslides is sudden changes in the shape of the slope. Slope changes that may trigger landslides include, but are not limited to, man-made cuts and fills, undermining of slopes by stream erosion or formation of gullies, or undermining and overloading of slopes due to landslide movement on adjacent land. In fact, landslide movement in one part of a hill slope can radically affect the stability of adjacent slopes. Events at Rio Nido in Sonoma County illustrate how complex the changes in stability can be. In simplified terms, the Rio Nido landslide began when a block of soil and rock, high on a ridge, rotated down and out on the slope. This movement pushed a bulge of material onto the existing steep slope at the toe of the landslide. Fissures opened at both the top of the rotational block and within the toe of the landslide. The rotational movement of the landslide also undermines up-slope areas (decreasing stability), changing the groundwater flow patterns (increasing stability in parts of the slide while decreasing stability in other). Because the toe of the landslide was no longer supported by the surrounding slope (the slope became overly steep), the saturated outside edge failed by toppling and breaking apart. This loose material then mobilized as debris flow down a stream channel, picking up additional debris, including sediment and trees, as it flowed toward the houses on the canyon flow below. Immediate concerns were that the landslide mass would continue to move high on the slope, and as it did, the entire mass would break apart and fail as a massive debris flow that would inundate a much larger down slope area. Currently, the rotational component of the Rio Nido landslide has not shifted since monitoring equipment was installed two weeks after the failure began.

Hillsides may also be more vulnerable to debris flows following wildfires. Removal of vegetation generally makes hillsides more susceptible to erosion and landslides. After a forest fire there is reduction in the amount of vegetation on the hillsides to hold the soil in place. Also, the roots decay over a period of years following the fire. This results in an increased landslide hazard for 3 to 5 years following a large fire. In 1997, Southern California had 27 wildfires greater than 300 acres. At least 22 of those sites had some erosion damage in 1987, and it came in the form of debris flows and minor flooding.

There is evidence to suggest that most landslides and debris flows occur where they have happened in the past. For example, the Rio Nido landslide is next to an existing landslide deposit identified on a CA Division of Mines and Geology (DMG) map.

Though landslides are fairly common in California's hillside areas, there is considerable pressure to construct new homes at these locations. Some communities require site-specific investigations prior to permitting development. Engineers attempt to stabilize slopes by providing drainage, flattening slopes, and filing-in valleys. Sometimes, these modified slopes and fills require maintenance and while many of these modified slopes could last decades, some failures occur. This is what happened to houses in Laguna Niguel, Orange County, which were built on an engineered slope that had shown signs of distress for three years.

Just as there is pressure to develop hill slope areas, the beautiful ocean views from sea cliffs make them desirable places to live. During the recent disaster, accelerated cliff erosion in Pacifica resulted from slightly higher than normal seasonal ground water infiltration. When the ground becomes saturated, wave action can more easily remove materials that have fallen to the bottom of the cliffs, temporarily accelerating cliff retreat in the areas up slope. The rocks in these particular cliffs are highly fractured and nonresistant. They include sandstone, shale, and metamorphic rocks that are prone to rapid erosion during the rainy season. Erosion usually has occurred episodically, not continually at the same time. This year the cliffs locally eroded as much as 10 feet, compared to the frequently noted annual averages of 3 to 4 inches.

Drought

Drought was listed as a MODERATE PRIORITY RISK by the City of Commerce Hazard Mitigation Planning Team.

Impact; All the City of Commerce's facilities are vulnerable to the affects of drought in that their landscaping and parks grounds would be adversely affected from water shortages and heat. The impact of the affects of a catastrophic drought is estimated at less than 10% of Commerce's assets.

Definition of Drought

There are four different ways that drought can be defined: Meteorological - a measure of departure of precipitation from normal. Due to climatic differences what is considered a drought in one location may not be a drought in another location. Agricultural - refers to a situation when the amount of moisture in the soil no longer meets the needs of a particular crop. Hydrological - occurs when surface and subsurface water supplies are below normal. Socioeconomic - refers to the situation that occurs when physical water shortage begins to affect people.

Agricultural Definition of Drought

Drought is a protracted period of deficient precipitation resulting in extensive damage to crops, resulting in loss of yield.

Lack of rainfall for an extended period of time can bring farmers and major metropolitan areas to their knees. It does not take very long; a few rain-free weeks spreads panic and shrivels crops. We are told to stop washing our cars, cease watering the grass and take other weather conservation steps. Continued sunshine without sufficient rain can turn a rain forest into a desert; so maybe sunny weather is not always the best weather.

The Dust Bowl days of the 1930's affected 50,000,000 acres of land, rendering the farmers helpless. In the 1950's the Great Plains suffered a severe water shortage when seven years went by with rainfall well below normal. Crop yields failed, the water supply fell.

Deficient Topsoil Moisture

A good definition of agricultural drought should be able to account for the variable susceptibility of crops during different stages of crop development, from emergence to maturity. deficient topsoil moisture at planting may hinder germination, leading to low plant populations per hectare and a reduction of final yield. However, if topsoil moisture is sufficient for early growth requirements, deficiencies in subsoil moisture at this early stage may not affect final yield if subsoil moisture is replenished as the growing season progresses or if rainfall meets plant water needs.

Concept of Drought

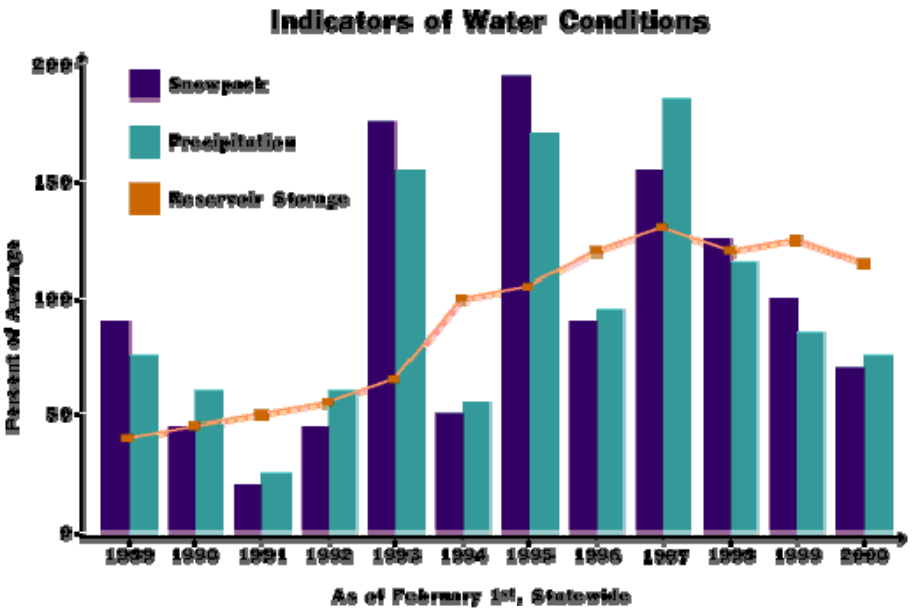
Drought is an insidious hazard of nature. Although it has scores of definitions, it originates from a deficiency of precipitation over an extended period of time, usually a season or more.

This deficiency results in a water shortage for some activity, group, or environmental sector. Drought should be considered relative to some long-term average condition of balance between precipitation and evapo-transpiration (i.e., evaporation + transpiration) in a particular area, a condition often perceived as "normal". It is also related to the timing (i.e., principal season of occurrence, delays in the start of the rainy season, occurrence of rains in relation to principal crop growth stages) and the effectiveness of the rains (i.e., rainfall intensity, number of rainfall events). Other climatic factors such as thigh temperature, high wind, and low relative humidity are often associated with it in many regions of the world and can significantly aggravate its severity. Drought should not be viewed as merely a physical phenomenon or natural event. Its impacts on society result from the interplay between a natural event (less precipitation than expected resulting from natural climatic variability) and the demand people place on water supply. Human beings often exacerbate the impact of drought. Recent droughts in both developing and developed countries and the resulting economic and environmental impacts and personal hardships have underscored the vulnerability of all societies to this "natural" hazard.

A five-year drought has parched soils, lowered reservoirs and weakened forests. And if the past is any guide, the dry spell could go on for decades.

One dry year does not normally constitute a drought in California, but serves as a reminder of the need to plan for droughts. California's extensive system of water supply infrastructure -- its reservoirs, groundwater basins, and inter-regional conveyance facilities -- mitigates the effect of short-term dry periods for most water users. Defining when a drought begins is a function of drought impacts to water users. Hydrologic conditions constituting a drought for water users in one location may not constitute a drought for water users elsewhere, or for water users having a different water supply. Individual water suppliers may use criteria such as rainfall/runoff, amount of water in storage, or expected supply from a water wholesaler to define their water supply conditions.

The graphic below illustrates several indicators commonly used to evaluate California water conditions. The percent of average values are determined for measurement sites and reservoirs in each of the State's ten major hydrologic regions. Snow pack is an important indicator of runoff from Sierra Nevada watersheds, the source of much of California's developed water supply.



Drought is a gradual phenomenon. Although droughts are sometimes characterized as emergencies, they differ from typical emergency events. Most natural disasters, such as floods or forest fires, occur relatively rapidly and afford little time for preparing for disaster response. Droughts occur slowly, over a multiyear period. There is no universal definition of when a drought begins or ends. Impacts of drought are typically felt first by those most reliant on annual rainfall -- ranchers engaged in dry land grazing, rural residents relying on wells in low-yield rock formations, or small water systems lacking a reliable source. Criteria used to identify statewide drought conditions do not address these localized impacts. Drought impacts increase with the length of a drought, as carry-over supplies in reservoirs are depleted and water levels in groundwater basins decline.

Past California Droughts

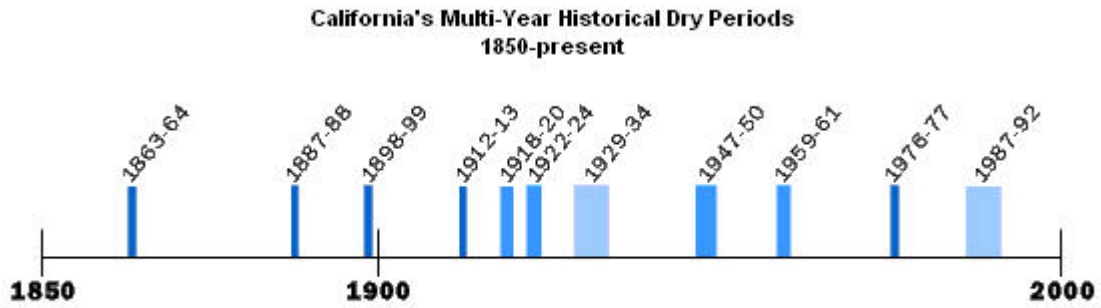
Droughts exceeding three years are relatively rare in Northern California, the source of much of the State's developed water supply. The 1929-34 drought established the criteria commonly used in designing storage capacity and yield of large Northern California reservoirs. The table below compares the 1929-34 drought in the Sacramento and San Joaquin Valleys to the 1976-77 and 1987-92 droughts. The driest single year of California's measured hydrologic record was 1977. California's most recent multi-year drought was 1987-92.

Severity of Extreme Droughts in the Sacramento and San Joaquin Valleys

Drought	Sacramento Valley Runoff		San Joaquin Valley Runoff	
Period	(maf/yr)	(% Average 1901-96)	(maf/yr)	(% Average 1906-96)
1929-34	9.8	55	3.3	57
1976-77	6.6	37	1.5	26
1987-92	10.0	56	2.8	47

Measured hydrologic data for droughts prior to 1900 are minimal. Multi-year dry periods in the second half of the 19th century can be qualitatively identified from the limited records available

combined with historical accounts, as illustrated in the figure below, but the severity of the dry periods cannot be directly quantified.



1. Dry periods prior to 1900 estimated from limited data.
2. Covers dry periods of statewide or major regional extent.

One approach to supplementing California's limited period of measured data is to statistically reconstruct data through the study of tree rings (called dendrochronology). Information on the thickness of annual growth rings can be used to infer the wetness of the season. Site-specific approaches to supplementing the historical record can include age-dating dryland plant remains now submerged in place by rising water levels, or sediment and pollen studies. For example, a 1994 study of relict tree stumps rooted in present-day lakes, rivers, and marshes suggested that California sustained two epic drought periods, extending over more than three centuries. The first epic drought lasted more than two centuries before the year 1112; the second drought lasted more than 140 years before 1350. In this study, the researcher used drowned tree stumps rooted in Mono Lake, Tenaya Lake, West Walker River, and Osgood Swamp in the central Sierra Nevada. These investigations indicate that California has been subject to droughts more severe and more prolonged than those witnessed in the brief historical record.

The Long-term Climatic Viewpoint

The historical record of California hydrology is brief in comparison to geologically modern climatic conditions. The following sampling of changes in climatic conditions over time helps put California's twentieth century droughts into perspective. Most of the dates shown below are necessarily approximations. Not only must the climatic conditions be inferred from indirect evidence, but the onset or extent of changed conditions may vary with geographic location. Readers interested in the subject of paleo-climatology are encouraged to seek out the extensive body of popular and scientific literature on this subject.

Past California Droughts

The historical record of California hydrology is brief in comparison to the time period of geologically modern climatic conditions. The following samplings of changes in climatic and hydrologic conditions help put California's twentieth century droughts into perspective, by illustrating the variability of possible conditions. Most of the dates shown below are necessarily approximations, since the dates must be inferred from indirect sources.

11,000 years before present

Beginning of Holocene Epoch- Recent time, the time since the end of the last major glacial epoch

6,000 years before present

Approximate time when trees were growing in areas now submerged by Lake Tahoe. Lake levels were lower then, suggesting a drier climate.

900-1300 A.D.(approximate)

The Medieval Warm Period, a time of warmer global average temperatures. The Arctic ice pack receded, allowing Norse settlement of Greenland and Iceland. The Anasazi civilization in the Southwest flourished, its irrigation systems supported by monsoonal rains.

1300-1800 A.D. (approximate)

The Little Ice Age, a time of colder average temperatures. Norse colonies in Greenland failed near the start of the time period, as conditions became too cold to support agriculture and

livestock grazing. The Anasazi culture began to decline about 1300 and had vanished by 1600, attributed in part to drought conditions that made agriculture infeasible.

Mid - 1500s A.D.

Severe, sustained drought throughout much of the continental U.S., according to dendro-chronology. Drought suggested as a contributing factor in the failure of European colonies at Parris Island, South Carolina and Roanoke Island, North Carolina.

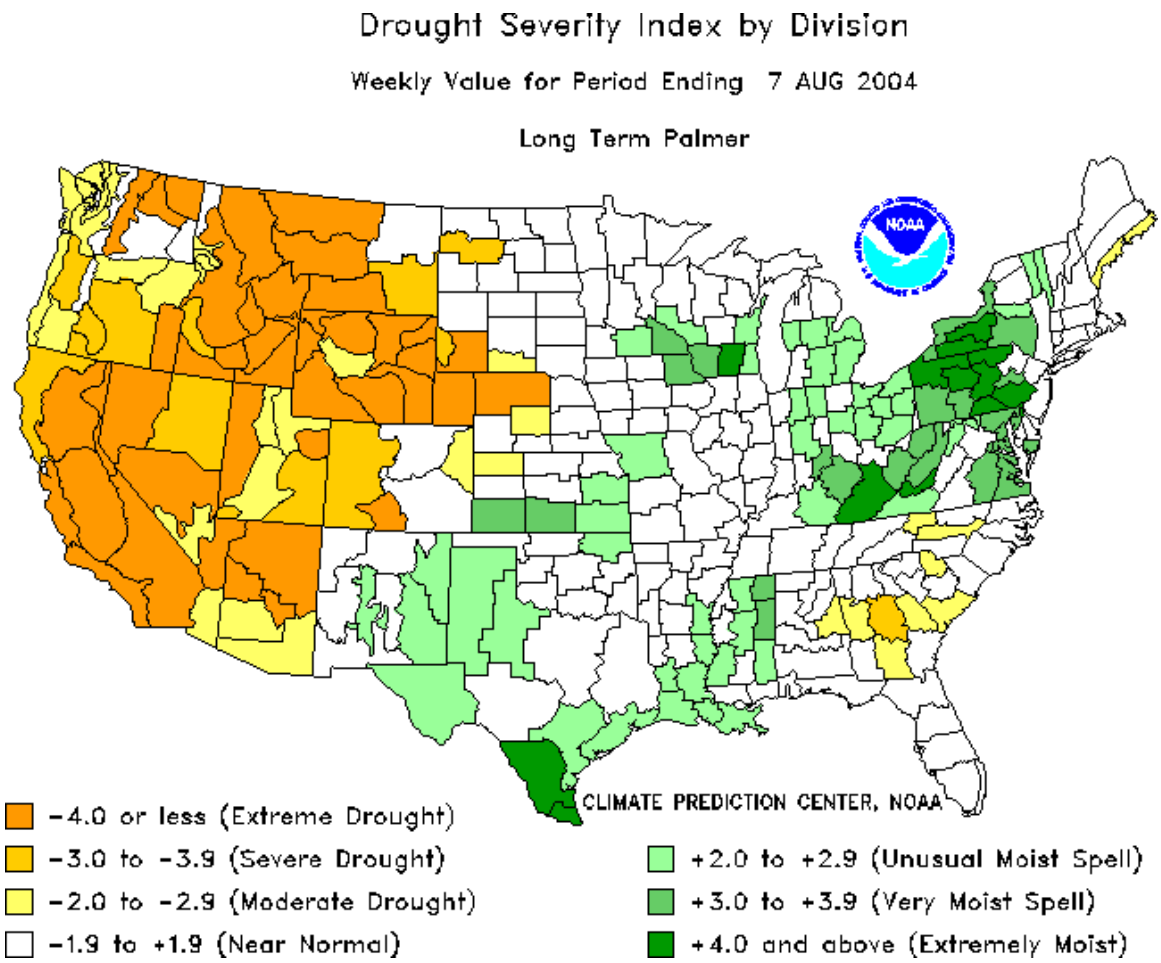
1850s A.D.

Sporadic measurements of California precipitation began.

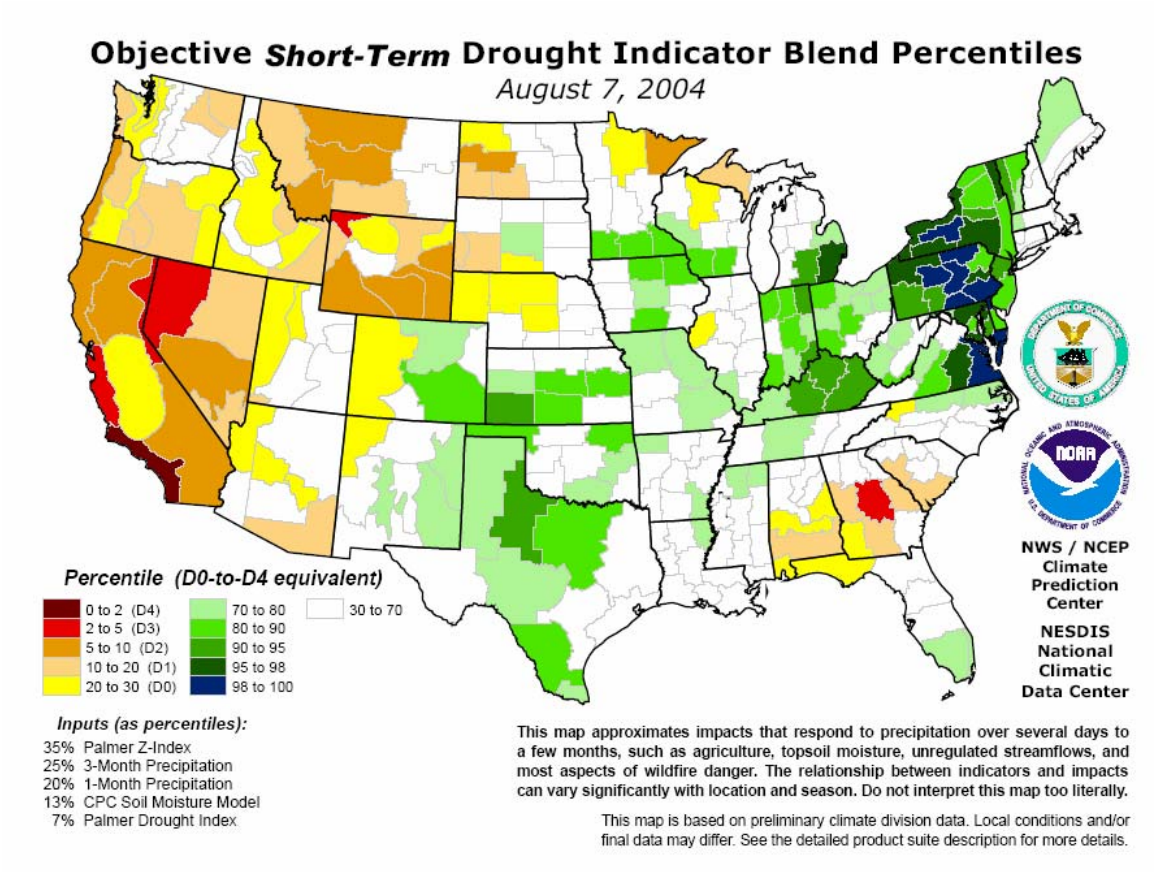
1890s A.D.

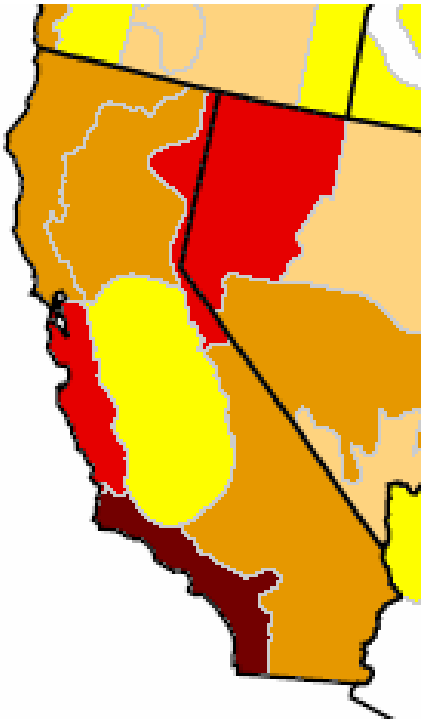
Long-term stream flow measurements began at a few California locations

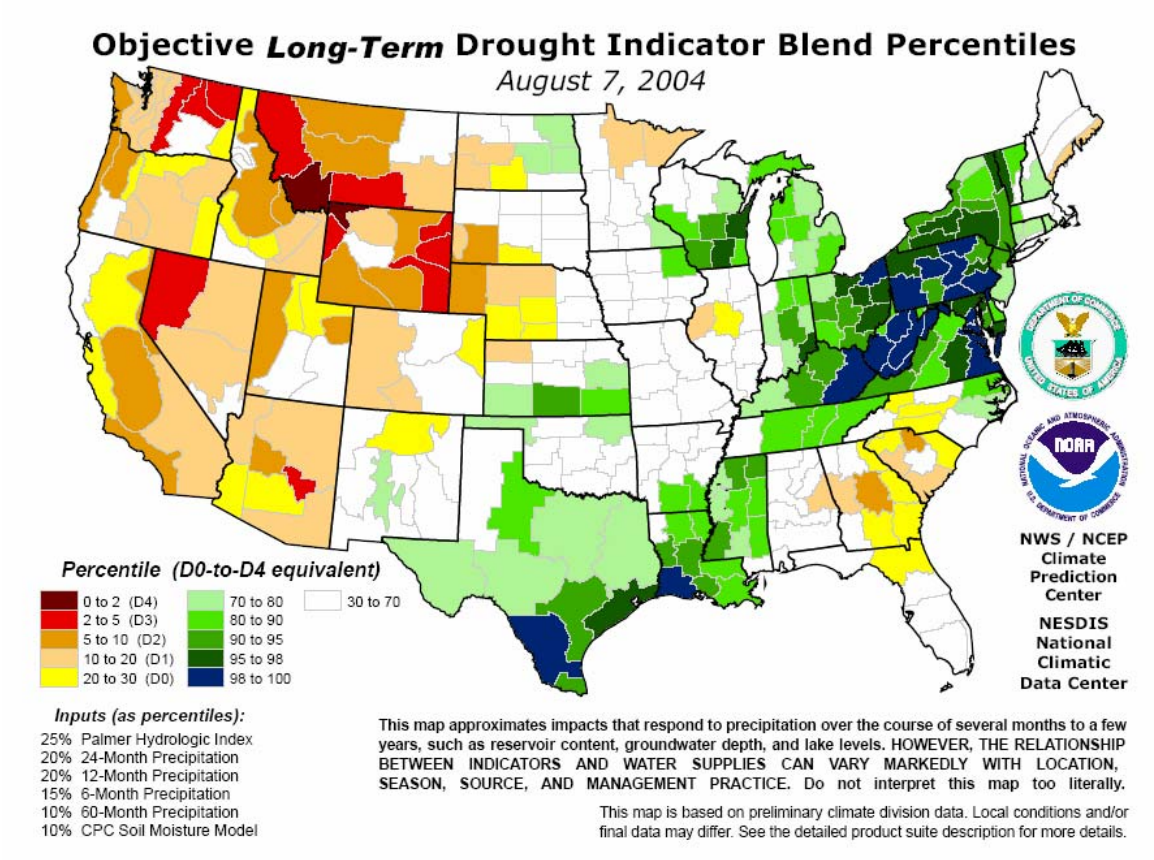
The image below is a the most current snapshot of drought conditions across the U.S. It is provided by NOAA's Climate Prediction Center.

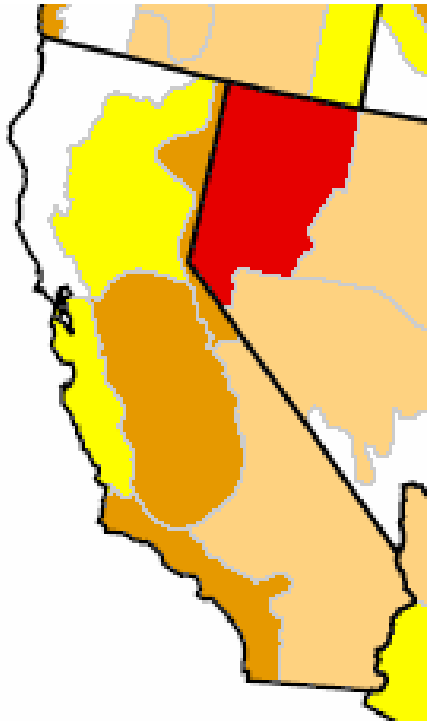


Drought Monitor






Objective Long-Term Drought Indicator Blend Percentiles
August 7, 2004
Percentile (D0-to-D4 equivalent)
0 to 2 (D4)
2 to 5 (D3)
5 to 10 (D2)
10 to 20 (D1)
20 to 30 (D0)
70 to 80
80 to 90
90 to 95
95 to 98
98 to 100
30 to 70
NWS / NCEP Climate Prediction Center
NESDIS National Climatic Data Center
Inputs (as percentiles):
25% Palmer Hydrologic Index
20% 24-Month Precipitation
20% 12-Month Precipitation
15% 6-Month Precipitation
10% 60-Month Precipitation
10% CPC Soil Moisture Model
This map approximates impacts that respond to precipitation over the course of several months to a few years, such as reservoir content, groundwater depth, and lake levels. HOWEVER, THE RELATIONSHIP BETWEEN INDICATORS AND WATER SUPPLIES CAN VARY MARKEDLY WITH LOCATION, SEASON, SOURCE, AND MANAGEMENT PRACTICE. Do not interpret this map too literally.
This map is based on preliminary climate division data. Local conditions and/or final data may differ. See the detailed product suite description for more details.



The Drought Monitor was introduced as an operational weekly product in 1999 to provide an overview of conditions averaged across a broad array of time scales and impact indicators, leaning toward those that seem most relevant to observed impacts. This approach has led to an unprecedented degree of cooperation and coordination among a variety of disparate Federal, state, and local government agencies, in addition to many interested members of the academic and private research communities. The result has boiled the complex issues of drought and drought-related impact assessment down to a single, simple, visually-intuitive summary of conditions which has replaced the uncoordinated, disparate, and often contradictory assortment of opinions and data that formerly characterized responses to requests for drought information.

While this approach has been successful and well-received overall, there are situations where it can be substantially misleading. Drought and its related impacts operate on a variety of time scales, and the Drought Monitor depiction (which usually portrays some semblance of an "average" condition across all time scales and impact types) cannot accurately confer information when conditions and impacts dependent on one time scale differ dramatically from those related to a much longer (or shorter) time scale. Hypothetically, a region which has received consistently and substantially inadequate precipitation over the course of several years might experience a day, or a few days, or even a few weeks of heavy rain. What is the overall drought status after this occurs? The Drought Monitor would likely depict a substantial improvement in conditions (in deference to major short-term relief) but maintain some indication of continuing drought (in deference to the multi-year dryness which likely changed only slightly in response to the heavy rains). This is all that a single-image depiction could possibly do. In reality, however, the degree to which drought-related impacts would continue to be a concern would depend on what time scale a given class of impacts responds to. Obviously, in this situation, wildfire danger would decline sharply, at least for the immediate future. Also, unregulated stream flows would swell from runoff and topsoil moisture would be substantially recharged if the precipitation lasted long enough, thereby providing at least a temporary respite for non-irrigated agriculture. On the other hand, reservoir stores might increase only slightly, having been depleted by a few years of precipitation failing to keep up with demand, and ground water levels and/or well water depth, if they were low, might be barely (or at best belatedly) affected by the heavy short-term rains, since much of the water was likely dispersed by swollen streams or absorbed by parched topsoil.

To confer information about drought status on different time scales to those users that need such information, two new experimental products are being made public which will serve as timescale-specific supplements to the Drought Monitor at a basic level. Both assess conditions based on a blend of several drought indicators, and are depicted relative to the local historic record.

The ***Short-Term Blend*** approximates drought-related impacts that respond to precipitation (and secondarily other factors) on time scales ranging from a few days to a few months, such as wildfire danger, non-irrigated agriculture, topsoil moisture, range and pasture conditions, and unregulated stream flows.

The ***Long-Term Blend*** approximates drought-related impacts that respond to precipitation on time scales ranging from several months to a few years, such as reservoir stores, irrigated agriculture, groundwater levels, and well water depth.

It should be noted that the relationship between indicators and impacts varies, sometimes markedly, with location and season. This is particularly true of water supplies, which are additionally dependent on the source (or sources) tapped, management practices, and legal mandates. Exercise caution when attempting to relate these maps to specific impact implications for a particular location and time of year. The blend-to-impact correlation is not always direct, and will vary spatially and temporally.

The following bullets describe the composition of these experimental blends:

- These products are generated using the Climate Prediction Center's real-time daily & weekly climate division data, and the National Climatic Data Center's monthly climate division data archive, back to 1932.

- The indices used in the blends and their weights are as follows:

    - ***SHORT-TERM:*** 35% Palmer Z-Index; 25% 3-Month Precipitation; 20% 1-Month Precipitation; 13% Climate Prediction Center Soil Moisture Model; and 7% Palmer (Modified) Drought Index.

    - ***LONG-TERM:*** 25% Palmer Hydrologic Drought Index; 20% 12-Month Precipitation; 20% 24-Month Precipitation; 15% 6-Month Precipitation; 10% 60-Month Precipitation; 10% Climate Prediction Center Soil Moisture Model.

- All parameters are first rendered as percentiles with respect to 1932-2000 data using a percent rank method. Most parameters are ranked relative to the National Climatic Data Center's historic climate division data for the current month, except for the Z-Index which is rendered relative to all months on record (this introduces evaporative seasonality into the short-term blend).

- For each blend, the averages of the percentile inputs are calculated, with each input weighted as described above. This yields a "weighted raw average" of the individual component percentiles for each blend. Then, each raw average is compared to its historic (1932 - 2000) distribution (these have been retrospectively generated from the climate division data archive). The real-time data are compared to ALL retrospective months, not just the current month, since the individual percentile inputs were each generated (for all but the Z-Index) relative to the history of the current month only. This allows for a more confident estimation of the percentile by using more data to define the historical array (12 times as many as if we assessed the blends' raw weighted averages relative to the current month only).

  The precipitation percentile inputs are generated in a somewhat unusual way, combining month-to-date numbers from Climate Prediction Center with the National Climatic Data Center's monthly totals for prior months. As daily precipitation totals for the current month are ingested into the x-month totals, an identical proportion of the monthly precipitation that fell during the first month in the x-month period is eliminated (e.g., to determine a 6-month precipitation total, from which a percentile will be calculated and incorporated into the blend, for the period ending September 21, 2002, we add the daily preliminary precipitation amounts for September 1-21 to the 6-month total for March-August 2002, then subtract 21/30 of the March total from the result, since 21/30 of September have been added). This process (a) emulates natural cycles by adding precipitation as it falls but eliminating early-period precipitation evenly over the course of a month; and (b) ensures that the data utilized in real time are as consistent with the historical array as possible. The near-real-time climate division precipitation data are biased in some areas relative to the final NCDC monthly archive, with wet near-real-time biases in the central and northern Rockies particularly extreme. The data are adjusted where appropriate at the end of each month, but the biases remain in the data for all precipitation time scales since the end of the previous calendar month. In addition, the biased near-real-time data are used in the Palmer Drought Index, the Palmer Hydrologic Drought Index, the Z-Index, and CPC's modeled soil moisture data, and can remain in those calculations for several weeks. These blends may be subject to change in the future.

Flood

Floods were listed as MODERATE PRIORITY RISK by the City of Commerce Hazard Mitigation Planning Team.

Impact; the City of Commerce located in a zone "C" flood plain. Although, flooding or ponding can affect the streets of Commerce. The monetary affects to the infrastructure is less than 12% based on historical flooding in neighboring jurisdictions. The greatest impact is to transportation routes.

City of Commerce General Plan Safety Element

Flood protection for the County is provided by the Los Angeles County Flood Control District which operates and maintains an extensive network of flood – control facilities. The system includes the Los Angeles River and Rio Hondo River Channels located near the City.

The Los Angeles River Flood Control system has been designed to accommodate the Standard Project Flood. The Standard Project Flood is defined as that flood which may be expected form the most severe combination of meteorological and hydrological conditions that are considered reasonably characteristic of the geographical area in which the drainage basin is located excluding extremely rare circumstances.

The level of protection in this particular instance is for 50 – year storm flows and is the maximum level generally provided by the Army Corps of Engineers and is considered adequate for Commerce. Recent studies performed by the Corps, However indicate that portions of this flood control system may not be able to handle 50 year storm flows, which means that without additional flood protection, some urbanized areas may be subject to inundation. The Corps' report has not been released; therefore, it is difficult to ascertain whether or not portions of Commerce may flood during sever rainstorms. It may become necessary fo the Los Angeles County Public Works Department which operates the system, to release additional water into channels in urbanized areas.

Because the City is heavily urbanized, minor ponding will occur during intense rainstorms. Problem areas include Sycamore Street near the City of Montebello, Astor Street between Barney Street and Couts Avenue, and Slauson Avenue between Eastern and Garfield Avenues. Ponding is also a problem below the Union Pacific Railroad tracks in the north part of the City.

Flood Type	Problems
Alluvial Fan	Alluvial fan flooding occurs in the steep arid or semiarid mountains found throughout the state. Alluvial fans are fan-shaped deposits of eroded rock and soil carried out of mountains and into valley floors by landslides, mudslides, mudflows, and surface runoff (sheetflows and streamflows.) At the beginning of the valley, alluvial fans are steep and narrow with boulders and other course material. The deposited material becomes increasingly fine as the gradient decreases and the material, mainly gravels, sand and mud, spreads. When rain falls, runoff from the canyon walls flows as a high-velocity sheet that channels into rivulets, and then to natural drainage courses. The rapidly moving water often carries large boulders and other material from the watershed depositing them into runoff channels, blocking the flow of water. Floodwater then spills out onto the fan, with each event finding a new channel that soon fills up with deposits and overflows. Flooding in alluvial fans often can cause greater damage than clear-water flooding.
Coastal	Coastal flooding and erosion present some of the most complex and serious high-risk problems. In California, coastal erosion is most often caused by a combination of factors: winter storms, rising sea levels, tidal action, currents and waves, and high winds.
Flash	Flash floods are quick events, particularly where the topography enhances rainfall from Pacific or Gulf storms and thunderstorms. Flash floods are caused by the rapid buildup of runoff after high-intensity rainfall. The precipitation is often so intense that both perennial streams and dry watercourses are rapidly transformed into torrents, sweeping away whatever lies in their path. Loss of life in such a flooding is common because of the suddenness of high flows. A flash flood can occur in mountainous regions and urban areas. In the mountains, a stream level may rise quickly in a heavy rainstorm. Dry desert washes, especially those near mountains, can reach flood stage within minutes as a result of thunderstorms miles away. Urban flash flooding can occur in any terrain. It is particularly aggravated where natural cover has been removed to construct buildings, roads and parking lots. Streets become rivers, inundating vehicles and causing heavy damage to residential and industrial properties situated along stream channels.
Fluvial	California rivers generally flow west to the Pacific Ocean and may fall as much as 5,000 feet within the first 20 miles. This relatively steep slope creates a high-velocity flow that carries eroded material. As the slope of the river flattens, the velocity slows and the material is deposited. As a result, the lower reaches of many streams pass through the sandy alluvial plains they have formed. Flood flows can cause these streams to migrate, resulting in a higher and wider floodplain. Developed areas on land originally outside the defined floodplain can later flood.
Lake	Lake level fluctuations primarily concern shoreland property owners, but impact local, state and federal agencies with regulatory or financial responsibilities for water and related land use associated with lakes. Both natural and human actions cause changing lake levels. Natural factors include direct precipitation, surface runoff, evaporation, ground water inflow, ice formation, aquatic growth, meteorological disturbances, and, in larger lakes, tidal and crustal movement. Human factors include dredging, diversion, consumptive uses and intruding structures.
Levee	Levees are a basic means of providing flood protection along rivers and waterways in regions where development exists, or is planned, and in agricultural areas. Levees confine floodwaters to the main river channel or protect inland areas from high tides. The causes of levee problems are structural failures, foundation failures of underlying soils, and overtopping by flood flows, tides and waves. Contributing factors include poor construction materials, erosion by current and wave action, seepage through or under the levee, burrowing rodents, and improper repairs. Lack of adequate and regular maintenance to correct these problems also contributes to levee failure. Most failures are composites of several of these factors.
Mudslides	Mud floods and mudflows cause several types of flood damage that are not characteristic of clear-water flooding. These include: • The force of debris-laden water, which can be tens or hundreds of times greater than that generated by clear water, destroys retaining walls and other protective works; • Mud and debris may fill drainage channels, river or stream channels, and sediment basins, causing otherwise normal runoff to suddenly inundate areas outside the floodplains; and • Sediment and debris are more damaging to houses and their contents than clear water. Frame structures are often total losses, and if they remain intact, sediment and mud must be removed and washed out. Stains, mildew and dry rot often result. Major floods almost always involve heavy intrusions of mud, sediment and debris. Such conditions are caused or worsened by forest and brush fires. Once the hills have been denuded of vegetation, there is more runoff and less infiltration. Even light rainfall can develop into rapid runoff with severe erosion occurring in such areas.
Riverine	Riverine flooding, the most common type of flooding in the state, occurs when a stream channel fills with more water than it can carry. The water rises and flows over the channel banks onto the adjacent floodplain.
Seiche and Tsunami	Tsunamis, or seismic sea waves, are usually created by undersea earthquakes or landslides. Seiches are similar, large waves in lakes. Waves are generated by a crustal disturbance giving a vertical impulse to the sea surface. These are long-period waves that travel long distances at speeds of up to 600 miles per hour with little or no loss of energy. When tsunami waves approach a coastal region in which water depth decreases rapidly, their height is increased by refraction, shoaling, and local bay or harbor conditions, and speed is creased. Tsunamis frequently arrive in a series of spaced intervals.

Local Flood Information

Commerce is designated by the National Flood Insurance Program as a zone "C," or City of minimal flood hazard. The City contains 5 specific areas which are considered to be at special risk.

Principal Flood Problems

1. North side of Slauson Ave. between Boxford Ave. and Eastern Ave.
2. West side of Boxford Ave.north of Slauson Ave.
3. Garfield Ave. north of Telegraph Road and south of Yates
4. Vail Ave. and Tanager Ave. north of Elm and west of Supply Ave.
5. South of Kuhl Drive between Telegraph Road and Greenwood Ave.

FEMA National Flood Insurance Information

In 1968, Congress created the National Flood Insurance Program (NFIP) in response to the rising cost of taxpayer funded disaster relief for flood victims and the increasing amount of damage caused by floods. The Mitigation Division a component of the Federal Emergency Management Agency (FEMA) manages the NFIP, and oversees the floodplain management and mapping components of the Program.

Nearly 20,000 communities across the United States and its territories participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, the NFIP makes Federally backed flood insurance available to homeowners, renters, and business owners in these communities.

Flood damage is reduced by nearly $1 billion a year through partnerships with communities, the insurance industry, and the lending industry. Further, buildings constructed in compliance with NFIP building standards suffer approximately 80 percent less damage annually than those not built in compliance. And, every $3 paid in flood insurance claims saves $1 in disaster assistance payments.

The NFIP is self-supporting for the average historical loss year, which means that operating expenses and flood insurance claims are not paid for by the taxpayer, but through premiums collected for flood insurance policies. The Program has borrowing authority from the U.S. Treasury for times when losses are heavy, however, these loans are paid back with interest.

Flood Insurance is required by law

To get secured financing to buy, build, or improve structures in Special Flood Hazard Areas (SFHA's) you will be required to purchase flood insurance. Lending institutions that are federally regulated or federally insured must determine if the structure is located in a SFHA and must provide written notice requiring flood insurance.

Flood insurance is available to any property owner located in a community participating in the NFIP. All areas are susceptible to flooding, although to varying degrees, in fact, 25% of all flood claims occur in the low-to-moderate risk areas. Flooding can be caused by heavy rains, melting snow, by inadequate drainage systems, failed protective devices such as levees and dams, as well as by tropical storms and hurricanes.

There's a big difference between having to buy flood insurance because the law says you must and choosing to buy flood coverage because it's in your best interests to do so. We recommend that all property owners purchase and keep flood insurance because it is the best means of recovery from flood damaged.

Flood Facts

Historic Flooding in Los Angeles County Records show that since 1811, the Los Angeles River has flooded 30 times, on average once every 6.1 years. But averages are deceiving, for the Los Angeles basin goes through periods of drought and then periods of above average rainfall. Between 1889 and 1891 the river flooded every year, and from 1941 to 1945, the river flooded 5 times. Conversely, from 1896 to 1914, a period of 18 years, and again from 1944 to 1969, a period of 25 years, the river did not have serious floods.

The towering mountains that give the Los Angeles region its spectacular views also wring a great deal of rain out of the storm clouds that pass through. Because the mountains are so steep, the rainwater moves rapidly down the slopes and across the coastal plains on its way to the ocean.

"The Santa Monica, Santa Susana and Verdugo Mountains, which surround three sides of the valley, seldom reach heights above three thousand feet. The western San Gabriel Mountains, in contrast, have elevations of more than seven thousand feet. These higher ridges often trap eastern-moving winter storms. Although downtown Los Angeles averages just fifteen inches of rain a year, some mountain peaks in the San Gabriels receive more than forty inches of precipitation annually.

Naturally, this rainfall moves rapidly down stream, often with severe consequences for anything in its path. In extreme cases, flood-generated debris flows will roar down a canyon at speeds near 40 miles per hour with a wall of mud, debris and water, tens of feet high.

Flooding. occurs when climate, geology, and hydrology combine to create conditions where water flows outside of its usual course.

Winter Rainfall

Over the last 125 years, the average annual rainfall in Los Angeles is 14.9 inches. But the term "average" means very little as the annual rainfall during this time period has ranged from only 4.35 inches in 2001-2002 to 38.2 inches in 1883-1884. In fact, in only fifteen of the past 125 years, has the annual rainfall been within plus or minus 10% of the 14.9 inch average. And in only 38 years has the annual rainfall been within plus or minus 20% of the 14.9 inch average. This makes the Los Angeles basin a land of extremes in terms of annual precipitation. (see Section 3)

Monsoons

Another relatively regular source for heavy rainfall, particularly in the mountains and adjoining cities is from summer tropical storms. These tropical storms usually coincide with El Niño years.

Geography and Geology

The greater Los Angeles Basin is the product of rainstorms and erosion for millennia. "Most of the mountains that ring the valleys and coastal plain are deeply fractured faults and, as they (the mountains) grew taller, their brittle slopes were continually eroded. Rivers and streams carried boulders, rocks, gravel, sand, and silt down these slopes to the valleys and coastal plain....In places these sediments are as much as twenty thousand feet thick.

Much of the coastal plain rests on the ancient rock debris and sediment washed down from the mountains. This sediment can act as a sponge, absorbing vast quantities of rain in those years when heavy rains follow a dry period. But like a sponge that is near saturation, the same soil fills up rapidly when a heavy rain follows a period of relatively wet weather. So even in some years of heavy rain, flooding is minimal because the ground is relatively dry. The same amount of rain following a wet period of time can cause extensive flooding.

The greater Los Angeles basin is for all intents and purposes built out. This leaves precious little open land to absorb rainfall. This lack of open ground forces water to remain on the surface and rapidly accumulate. If it were not for the massive flood control system with its concrete lined river and stream beds, flooding would be a much more common occurrence. And the tendency is towards even less and less open land. In-fill building is becoming a much more common practice in many areas. Developers tear down an older home which typically covers up to 40% of the lot size and replacing it with three or four town homes or apartments which may cover 90-95% of the lot.

Another potential source of flooding is “asphalt creep.” The street space between the curbs of a street is a part of the flood control system. Water leaves property and accumulates in the streets, where it is directed towards the underground portion of the flood control system. The carrying capacity of the street is determined by the width of the street and the height of the curbs along the street. Often, when streets are being resurfaced, a one to two inch layer of asphalt is laid down over the existing asphalt. This added layer of asphalt subtracts from the rated capacity of the street to carry water. Thus the original engineered capacity of the entire storm drain system is marginally reduced over time. Subsequent re-paving of the street will further reduce the engineered capacity even more.

Flood Terminology

Floodplain

A floodplain is a land area adjacent to a river, stream, lake, estuary, or other water body that is subject to flooding. This area, if left undisturbed, acts to store excess flood water. The floodplain is made up of two sections: the floodway and the flood fringe.

100-Year Flood

The 100-year flooding event is the flood having a one percent chance of being equaled or exceeded in magnitude in any given year. Contrary to popular belief, it is not a flood occurring once every 100 years. The 100-year floodplain is the area adjoining a river, stream, or watercourse covered by water in the event of a 100-year flood.

Floodway

The floodway is one of two main sections that make up the floodplain. Floodways are defined for regulatory purposes. Unlike floodplains, floodways do not reflect a recognizable geologic feature. For NFIP purposes, floodways are defined as the channel of a river or stream, and the over-bank areas adjacent to the channel. The floodway carries the bulk of the flood water downstream and is usually the area where water velocities and forces are the greatest. NFIP regulations require that the floodway be kept open and free from development or other structures that would obstruct or divert flood flows onto other properties.

The NFIP floodway definition is "the channel of a river or other watercourse and adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water

surface elevation more than one foot. *Floodways are not mapped for all rivers and streams but are generally mapped in developed areas.*

Flood Fringe

The flood fringe refers to the outer portions of the floodplain, beginning at the edge of the floodway and continuing outward.

Base Flood Elevation (BFE)

The term "Base Flood Elevation" refers to the elevation (normally measured in feet above sea level) that the base flood is expected to reach. Base flood elevations can be set at levels other than the 100-year flood. Some communities choose to use higher frequency flood events as their base flood elevation for certain activities, while using lower frequency events for others. For example, for the purpose of storm water management, a 25-year flood event might serve as the base flood elevation; while the 500-year flood event may serve as base flood elevation for the tie down of mobile homes. The regulations of the NFIP focus on development in the 100-year floodplain.

Development and Flooding

When structures or fill are placed in the floodway or floodplain, water is displaced. Development raises the river levels by forcing the river to compensate for the flow space obstructed by the inserted structures and/or fill. When structures or materials are added to the floodway or floodplain and no fill is removed to compensate, serious problems can arise. Flood waters may be forced away from historic floodplain areas. As a result, other existing floodplain areas may experience flood waters that rise above historic levels. *Local governments must require engineer certification to ensure that proposed developments will not adversely affect the flood carrying capacity of the Special Flood Hazard Area (SFHA).*

Displacement of only a few inches of water can mean the difference between no structural damage occurring in a given flood event, and the inundation of many homes, businesses, and other facilities. Careful attention should be given to development that occurs within the floodway to ensure that structures are prepared to withstand base flood events. In highly urbanized areas, increased paving can lead to an increase in volume and velocity of runoff after a rainfall event, exacerbating the potential flood hazards. Care should be taken in the development and implementation of storm water management systems to ensure that these runoff waters are dealt with effectively.

Flood Prone Area Identification

Flood maps and Flood Insurance Studies (FIS) are often used to identify flood-prone areas. The NFIP was established in 1968 as a means of providing low-cost flood insurance to the nation's flood-prone communities. The NFIP also reduces flood losses through regulations that focus on building codes and sound floodplain management. *In the City of Commerce, the NFIP and related building code regulations went into effect on March 1, 1978.* NFIP regulations (44 Code of Federal Regulations (CFR) Chapter 1, Section 60, 3) require that all new construction in floodplains must be elevated at or above base flood level.

Flood Insurance Rate Maps (FIRM) and Flood Insurance Studies (FIS) Floodplain maps are the basis for implementing floodplain regulations and for delineating flood insurance purchase requirements. A Flood Insurance Rate Map (FIRM) is the official map produced by FEMA which delineates SFHA in communities where NFIP regulations apply. FIRMs are also used by insurance agents and mortgage lenders to determine if flood insurance is required and what insurance rates should apply.

Water surface elevations are combined with topographic data to develop FIRMs. FIRMs illustrate areas that would be inundated during a 100-year flood, floodway areas, and elevations marking the 100-year-flood level. In some cases they also include base flood elevations (BFEs) and areas located within the 500-year floodplain. Flood Insurance Studies and FIRMs produced for the NFIP provide assessments of the probability of flooding at a given location. FEMA conducted many Flood Insurance Studies in the late 1970s and early 1980s. These studies and maps represent flood risk at the point in time when FEMA completed the studies. However, it is important to note that not all 100-year or 500-year floodplains have been mapped by FEMA.

FEMA flood maps are not entirely accurate. These studies and maps represent flood risk at the point in time when FEMA completed the studies, and does not incorporate planning for floodplain changes in the future due to new development. Although FEMA is considering changing that policy, it is optional for local communities. Man-made and natural changes to the environment have changed the dynamics of storm water run-off since then.

Flood Loss Information

California has a chronic and destructive flood history. Of seventy-two federally declared disasters in the state between 1950 and 2000, half were flood related.

While the "Great Flood" of 1861-62 may be unmatched in scope, the devastating effects of recent floods far exceed the damage of a century ago. Despite the construction of massive and relatively effective flood control projects, California remains vulnerable to flooding. A steady rise in population and accompanying development contribute to increased flood risks throughout the state.

Between 1992 and 2002, every county in California was declared a federal disaster area at least once for a flooding event. The counties of Los Angeles, Orange, and San Bernardino were declared federal flood disaster areas five times, and sixteen other counties were declared disaster areas four times.

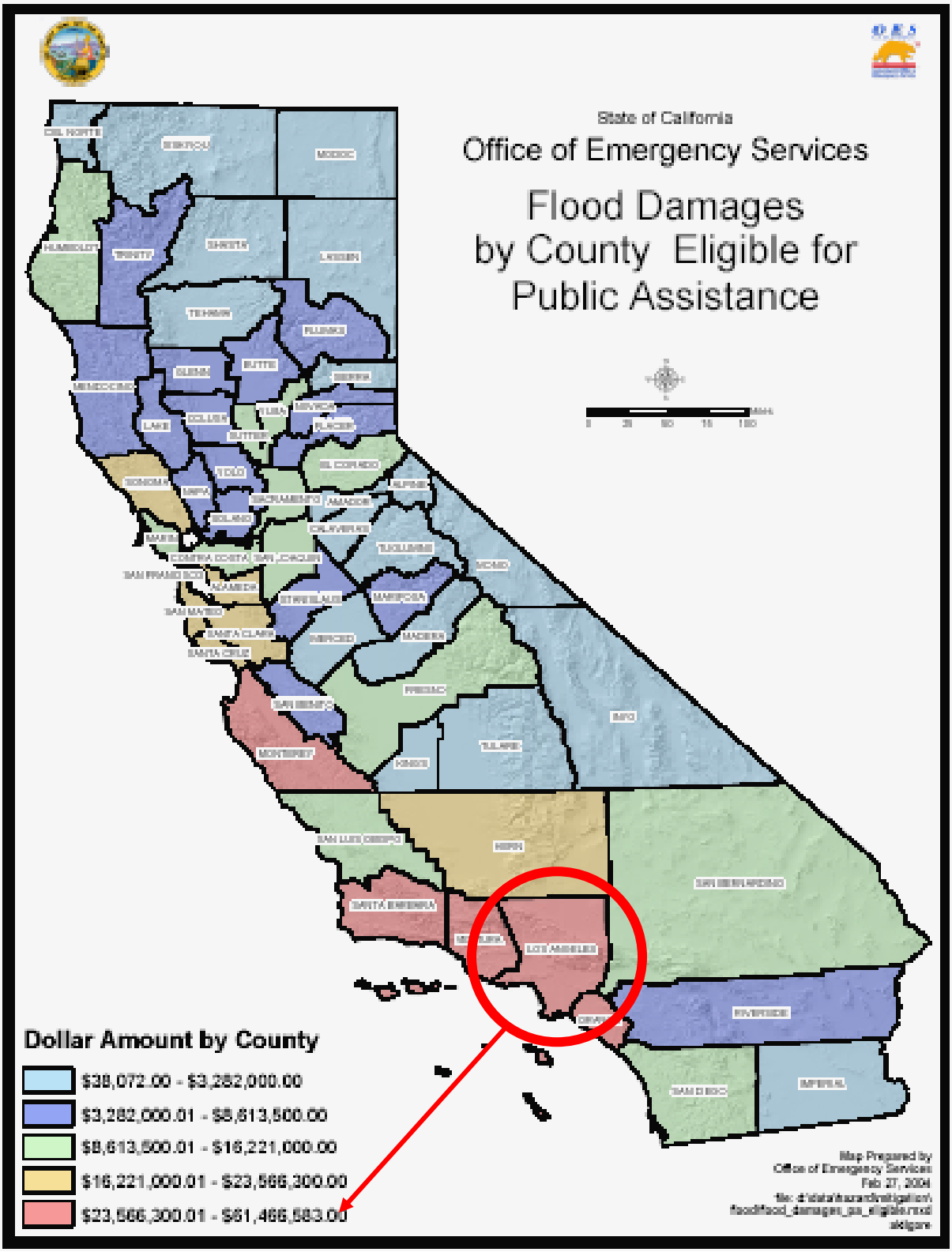
The South Coast hydrologic region extends up from the U.S.-Mexico border to the Tehachapi, San Bernardino, San Gabriel, and San Jacinto mountains. Nearly one-third of the area is coastal plain.

Major stream systems in the South Coast region include:

- Calleguas Creek Basin
- Malibu and Santa Monica Bay streams
- Ventura River
- Santa Clara River
- Los Angeles River
- San Gabriel River
- Santa Ana River
- Santa Margarita River
- San Luis Rey River
- San Dieguito River
- San Diego River
- Sweetwater River
- Otay-Tijuana River

This region contains major urban centers, including the counties of Los Angeles, Orange, and San Diego. Much of the flooding is sudden and severe, resulting in massive slides, debris flows, and mudflows. Typical of the flooding that occurs in this area were the 1969 winter storms that killed forty-seven and resulted in $300 million in property damage. During these storms, an alluvial flood and

debris flow on Deer Creek in San Bernardino County killed eleven. Normally Deer Creek is dry and is not considered a special flood hazard area on the National FIRMs. However, the region has experienced tremendous population growth since 1969 and the area of the Deer Creek alluvial fan is now home to several public schools and Ontario International Airport.


State of California
Office of Emergency Services
Flood Damages by County Eligible for Public Assistance
Dollar Amount by County
$38,072.00 - $3,282,000.00
$3,282,000.01 - $8,613,500.00
$8,613,500.01 - $16,221,000.00
$16,221,000.01 - $23,566,300.00
$23,566,300.01 - $61,466,583.00
Map Prepared by
Office of Emergency Services
Feb 27, 2004

Local Flood Information

Federal Flood Disaster Declarations (Local County Comparison)

County	Total Pop in FIRM Zone	Pop in Zone A - 100YR	Population of County	# PA Applicants	PA Amt Eligible	% PA Amt Eligible	% IA Damage Locations
LOS ANGELES	**390,305**	**98,371**	**9,519,338**	**2,908**	**$61,466,583**	**10.35**	**45.36**
ORANGE	1,384,403	428,779	2,846,289	1,391	$32,167,618	5.42	2.39
RIVERSIDE	295,081	72,628	1,545,387	615	$7,846,555	1.32	1.00
SAN BERNARDINO	196,945	61,247	1,709,434	951	$10,734,165	1.81	1.63
SAN DIEGO	181,757	82,807	2,813,833	798	$11,163,308	1.88	1.54
SANTA BARBARA	54,731	24,772	399,347	1,465	$36,227,678	6.10	1.82
SANTA CLARA	304,511	143,822	1,682,585	712	$23,463,356	3.95	2.80
VENTURA	187,179	56,113	753,197	1,120	$33,556,411	5.65	1.38
STATEWIDE NonSpecific	**5,227,897**	**1,973,712**	**33,871,648**	**30,713**	**$593,611,817**	**100.00%**	**100.00%**

Floodplain Management Plan for Repetitive Loss Properties

Repetitive Loss Properties (RLPs) are most susceptible to flood damages; therefore, they have been the focus of flood hazard mitigation programs. Unlike a countywide program, the Floodplain Management Plan (FMP) for repetitive loss properties involves highly diversified property profiles, drainage issues, and property owner's interest. It also requires public involvement processes unique to each RLP area. The objective of an FMP is to provide specific potential mitigation measures and activities to best address the problems and needs of communities with repetitive loss properties. A repetitive loss property is one for which two or more claims of $1,000 or more have been paid by the National Flood Insurance Program (NFIP) within any given ten-year period.

National Flood Insurance Program (NFIP) and the Community Ratings System (CRS)

The NFIP provides federally supported flood insurance in communities that regulate development in their floodplains. The Community Ratings System (CRS) was implemented in 1990 as a program for recognizing and encouraging community floodplain management activities that exceed the minimum NFIP standards. The CRS encourages comprehensive planning to address the community's flooding problems and provides credit for preparing, adopting, implementing, evaluating, and updating a comprehensive FMP.

Los Angeles County has been a voluntary participant in the CRS established by Federal Emergency Management Agency (FEMA). This program provides a discount on flood insurance premiums for participating property owners, including those properties located within the designated Special Flood Hazard Areas defined by the Flood Insurance Rate Maps (FIRMs).

On March 31, 1992, the LA County Board of Supervisors adopted the "Repetitive Loss Plan for the National Flood Insurance Program CRS," which was approved by FEMA for CRS Activity. To continue program participation, the County is required to prepare an annual update of activities in the Repetitive Loss Plan that reduce the number of and/or mitigate the risk to properties with multiple flood damage claims.

CRS Application and Certification

Community application for the CRS is voluntary. Communities apply for a CRS classification and are given credit points that reflect the impact of their activities on reducing flood losses, improving the insurance rating, and promoting the awareness of flood insurance. The CRS encourages programs and projects that preserve or restore the natural state of floodplains and protect these functions. The CRS also encourage communities to coordinate their flood loss reduction programs with habitat Conservation Plans and other public and private activities that preserve and protect natural and beneficial floodplain functions.

Depending on the credit points received during CRS certification, a community can fall into one of ten classes: Class 1 requires the most credit points and gives the largest premium reduction, while Class 10 receives no premium reduction. The County's current CRS classification is 8. Preparation of site-specific FMPs will help communities to retain or improve the CRS classification.

FMP Procedure and Process

The FMP planning process involves review, research, investigation, discussion, interview, and consensus building. It includes receiving input from all parties involved and collaborating with existing and future regional programs that relate to flood hazard mitigation such as land use plans, capital improvement plans, neighborhood redevelopment plans, floodplain ordinances, and environmental preservation/ enhancement plans. The FMP for RLPs intends to address the site-specific problems and possible resolutions, under the authority of individual homeowners and/or their homeowner associations.

CRS credit is provided for preparing, adopting, implementing, evaluating, and updating a comprehensive floodplain management plan. Credit is not based on the activities the FMP recommends, but rather on the process that is used to prepare the FMP.

FMP Committee

The development, modification, and revision of the FMP are accomplished through the direction and oversight of an FMP Committee. FEMA places a high priority on the establishment of a committee that consists of residents, businesses, and property owners that are most affected by flood hazards. The County has maximized the involvement of the public throughout the FMP process.

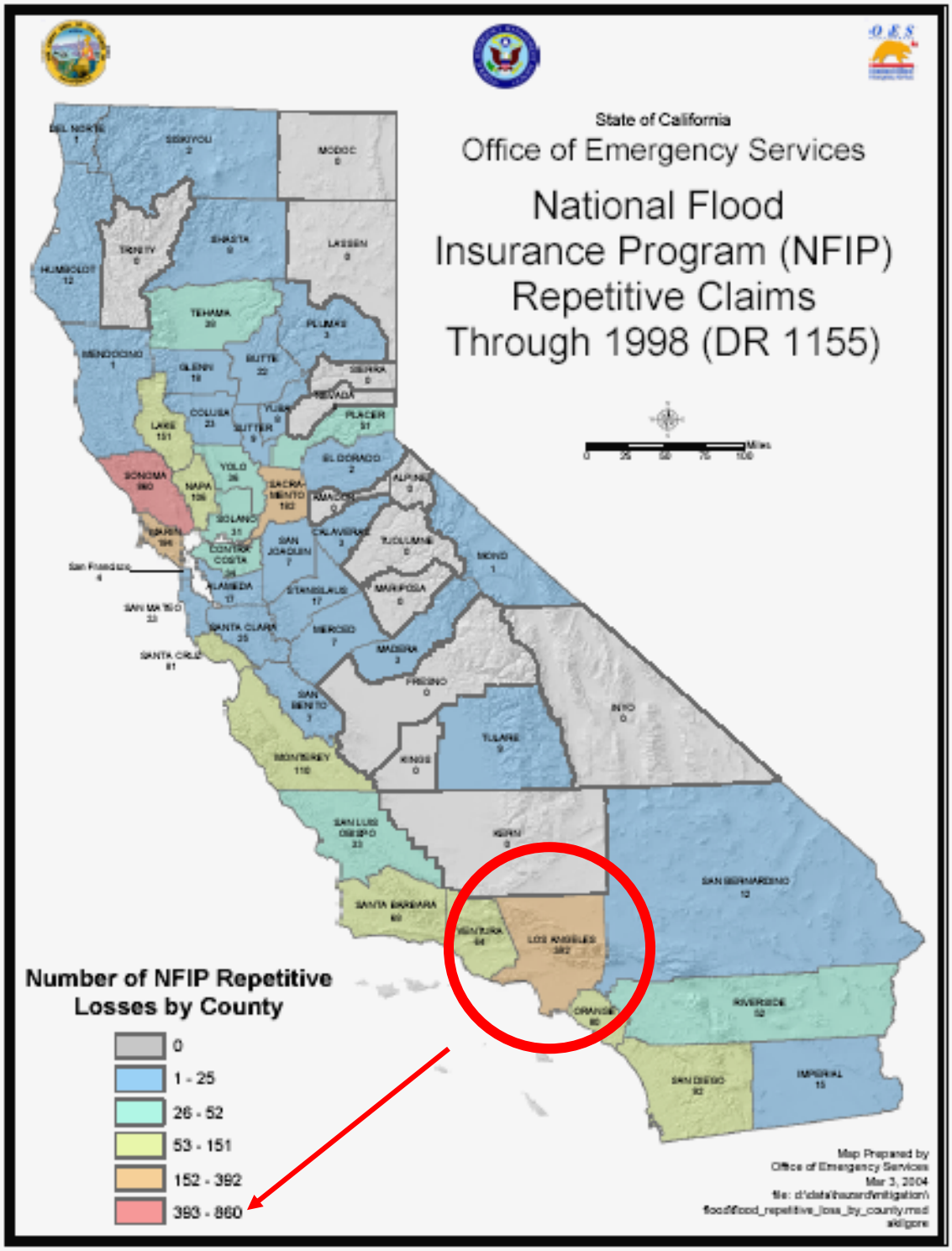
Repetitive Loss Properties (RLPs) in Los Angeles County

Los Angeles County has a total of 28 repetitive loss properties. Nineteen properties are located in the unincorporated areas of Malibu Lake, and nine properties are within the unincorporated areas of Santa Monica Mountains, San Gabriel Mountains and Quartz hills (4 in Santa Monica Mountains, 3 in San Gabriel Mountains, and 2 in Quarts Hill).

Rank	Losses	Properties	Communittee	Building $	Contents $	Total $	CRS Rating	FEMA Plan
10	142	45	Los Angeles County	1,461,070.07	543,404.07	2,004,474.14	8	Presentation
4	284	120	City of Los Angeles	2,779,104.58	494,007.21	3,273,111.79	9	Yes
2	464	169	City of Malibu	7,228,124.92	1,190,328.89	8,418,453.81		Yes

Through the direction and oversight of FMP Committees, site-specific Floodplain Management Plans for these Repetitive Loss Properties are updated on an annual basis to meet CRS certification and NFIP participation requirements. These plans follow the general requirements of the National Floodplain Insurance Program (NFIP) and the specific procedures outlined in the Community Ratings System (CRS) Coordinator's Manual.

(See: (1) "Floodplain Management Plan for Repetitive Loss Properties: Los Angeles County, Santa Monica Mountains, San Gabriel Mountains, Quartz Hills." September, 2001. (2) "Floodplain Management Plan for Repetitive Loss Properties: Los Angeles County, Malibu Lake Area." September, 2001).


State of California
Office of Emergency Services
National Flood Insurance Program (NFIP) Repetitive Claims Through 1998 (DR 1155)
Number of NFIP Repetitive Losses by County
0
1 - 25
26 - 52
53 - 151
152 - 392
393 - 860
Map Prepared by
Office of Emergency Services
Mar 3, 2004

LA County Flood Hazard Area Map

Current Mitigation

Catch Basins

Catch basins are meant to relieve the natural flow of flood waters into safe areas that minimize the risk of those flood waters entering urban areas. Los Angeles County designates areas of the County as Catch Basin Clean Out Areas. Detailed maps and specifications are available from Los Angeles County Department of Public Works..

[redacted]

Volcanic Activity

Volcanoes were rated as a LOW PRIORITY RISK by the City of Commerce Hazard Mitigation Planning Team

A volcano is a mountain that is built up by an accumulation of lava, ash flows, and airborne ash and dust. When pressure from gases and the molten rock within the volcano becomes strong enough to cause an explosion, volcanic eruptions occur.

No active volcanoes are in Los Angeles County. No historical record of this hazard is available for the region.

"The molten rock (magma) that feeds volcanoes comes from much closer to the surface than the core, which is about 2,900 kilometers (about 1,750 miles) deep. Volcanoes are located where there is a source of magma. Lots of times this is at plate boundaries and that's also where there are lots of faults and earthquakes. The San Andreas Fault is a place where two plates are sliding PAST one another, so there are lots of faults and earthquakes. One of the main places where rock is melted is where one plate slides UNDER another. That happens further north in the Cascades of Washington, Oregon, and northern California and that's why they have some active volcanoes (like Mount St. Helens) there. Los Angeles and southern California may have a lot of potential for earthquakes, but are probably safe from volcanoes for a while."

Ronald R. Charpentier, Geologist, U.S. Geological Service

Winds

Winds were rated as a LOW PRIORITY RISK by the City of Commerce Hazard Mitigation Planning Team.

Windstorms

The potential risk of widespread damage in Los Angeles County from wind is not as considerable as the risk from earthquakes or wildfires. Nevertheless, severe windstorms pose a significant risk to life and property by creating conditions that disrupt essential systems such as public utilities, telecommunications, and transportation routes.

High winds can and do occasionally cause damage to homes and businesses. Severe windstorms can present a very destabilizing effect on the dry brush that covers local hillsides and urban wildland interface areas and increase wildfire threat. Destructive impacts to trees, power lines, and utility services also are associated with high winds.

Santa Ana Winds

Based on local history, most incidents of high wind in the Los Angeles County are the result of Santa Ana wind conditions. While high impact wind incidents are not frequent in the area, significant Santa Ana wind events have been known to negatively impact areas of the County.

Santa Ana winds are blustery, warm – (often hot) – dry winds that blow from the east or northeast. These occur below the passes and canyons of the coastal ranges of Southern California and in the Los Angeles basin. Typically they occur from October to March when cooler air in the desert increases air pressure and creates strong westerly winds. Generally speaking, wind speed must reach 25 knots to be classified as a Santa Ana wind.

The map above shows the direction of the Santa Ana winds as they travel from the stable, high-pressure weather system called the Great Basin High through the canyons and towards the low

pressure system off the Pacific. Areas of Los Angeles County are in the direct path of the ocean-bound Santa Ana winds.

While the effects of Santa Ana Winds are often overlooked, it should be noted that in 2003, two deaths in Southern California were directly related to the fierce condition. A falling tree struck one woman in San Diego. The second death occurred when a passenger in a vehicle was hit by a flying pickup truck cover launched by Santa Ana winds.

In windstorms, reports of dislodged roofs and fallen trees and power lines are common. The winds are not considered major widespread threats to population and property, but do involve responses from emergency service personnel. Fallen power lines may cause widespread power outages and fire. Falling trees can occasionally cause fatalities and serious structural damage. These incidents are rare as well as localized.

Hazard Extent

Windstorms that affect Los Angeles County, notably Santa Ana winds, are not location specific but rather impact much of the area. Passes between hillsides are susceptible to slightly higher wind speeds, although the amount of unsheltered development in hillside passes is not substantial.

In the case of a Santa Ana wind – which can last several days – hazards created by wind-fallen trees or utility poles can threaten property and have the potential for personal injury and even death. Many older neighborhoods have larger trees. Although these trees are usually well-rooted enough to withstand higher speed winds, broken and falling tree limbs can create significant hazards.

Strong Santa Ana winds typically occur annually. It is unlikely that Los Angeles County will be subject to widespread damage from wind storm activity but there is potential for isolated events, such as damage to property or communications. Although Santa Ana winds are frequent, the occurrence wind with enough velocity to cause significant damage is much less.

Vulnerabilities

There have been past occurrences of winds strong enough to create damage to property in Los Angeles County. However, there has not been a recorded instance of a windstorm strong enough to create wide spread damage. Damage is usually done to roofs and trees damage, and is generally isolated.

Life and Property

Based on the historical data for the region, windstorm events can be expected, perhaps annually, across widespread areas of the County. This can result in i emergency responses. Both residential and commercial structures with vulnerable or weak construction are susceptible to damage. Wind pressure can create a direct and frontal assault on a structure, pushing walls, doors, and windows inward. Conversely, passing currents can create lift suction forces that pull building components and surfaces outward. With extreme wind forces, roofs or entire buildings can fail, causing considerable damage. Debris carried by strong winds can contribute directly to loss of life, and indirectly to the failure of protective building envelopes, siding, or walls. When severe windstorms strike a community, resulting downed trees, power lines, and damaged property are major hindrances to emergency response and disaster recovery.

Utilities

Historically, falling trees have been the major cause of power outages in the region as a result of high winds. Windstorms can cause flying debris that cut utility lines. For example, tree limbs breaking in winds of only 45 mph can be thrown over 75 feet. As such, overhead power lines may receive damage in even relatively minor windstorms. Falling trees bringing electric power lines down to the ground create the possibility of electric shock.

Infrastructure

Windstorms can damage buildings, power lines, and other property and infrastructure because of falling trees and branches. During wet winters, saturated soils cause trees to become less stable and more vulnerable to uprooting from high winds. Windstorms can result in collapsed or damaged buildings or blocked roads and bridges, damaged traffic signals, streetlights, and parks. Roads blocked by fallen trees during a windstorm may have severe consequences to people who need to be accessed by emergency workers.

Emergency response operations can be complicated when roads are blocked or when power supplies are interrupted. Industry and commerce can suffer losses from interruptions in electric services and from extended road closures. They can also sustain direct losses from damaged buildings, injured personnel, and damage to other vital equipment. There are direct consequences to the local economy resulting from windstorms related to both physical damages and interrupted services.

Transportation

Windstorm activity can have an impact on local transportation in addition to the problems caused by downed trees and electrical wires blocking streets and highways. During periods of extremely strong Santa Ana winds, major highways may require temporarily closure to truck and recreational vehicle traffic. Typically these disruptions are not long lasting, nor do they generally carry a severe long-term economic impact on the region.

Increased Fire Threat

Perhaps the greatest danger from in Southern California comes from the combination of the always present threat of wild fires and the drying hot Santa Ana winds that occur every few years in the urban/wildland interface. With the Santa Ana winds driving the flames, the speed and reach of the wild fires is much greater than in times of calm wind conditions. The higher fire hazard raised by Santa Ana wind conditions requires that even more care and attention be paid to proper brush clearances on property in the wildland/urban interface areas.

Losses

Losses from damage caused by windstorms are generally limited to isolated property such as roofs or tree damage. There are no areas of specific risk in Los Angeles County. Losses are seldom significant in the County.

Existing Mitigation

As stated, one of the most common problems associated with windstorms are power outages. High winds may cause trees to bend, sag, or break (tree limbs or entire trees). They may come in contact with nearby electrical distribution power lines. Fallen trees can cause short-circuiting and conductor

overloading. Wind induced damage to the power system may cut power to customers, be costly to repair, and in some cases cause wild land fires.

California Code

One of the strongest and most widespread existing mitigation strategies pertains to tree clearance. Currently, California State Law requires utility companies to maintain specific clearances – depending on the type of voltage running through the line – between electrical power lines and all vegetation.

The following California Public Resource Code Sections establish tree pruning regulations:

- 4293: Power Line Clearance Required
- 4292: Power Line Hazard Reduction
- 4291: Reduction of Fire Hazards Around Buildings
- 4171: Public Nuisances

The following pertain to tree pruning regulations and are taken from the California Code of Regulations:

- Title 14: Minimum Clearance Provisions • Sections 1250-1258
- General Industry Safety Orders
- Title 8: Group 3: Articles 12, 13, 36, 37, 38
- California Penal Code Section 385

The following California Public Utilities Commission section has additional guidance:

- California Public Utilities Commission • General Order 95: Rule 35

Failure to allow a utility company to comply with the law can result in liability to the homeowner for damages or injuries resulting from a vegetation hazard. Many insurance companies do not cover this type of damage if the policy owner has refused to allow the hazard to be eliminated. The power companies, in compliance with the above regulations, collect data about tree failures and their impact on power lines. This mitigation strategy assists the power company in preventing future tree failure.

Wild Land Fire

Wild Land Fire was listed as LOW PRIORITY RISK by the City of Commerce Hazard Mitigation Planning Team. The City of Commerce is completely developed and does not border any wildland fire zones.

Levels of Wildland Fire Protection Services

The history of California wildfires indicates that the following trends will continue. Risk from wildfire to life, property, natural resources, and firefighter safety is increasing.

- Population will grow and more people will live and use wildland areas, especially in the Central Sierra and in the Southern California counties of Riverside, San Bernardino and San Diego.
- Topography and climate support ecosystems where large wildfires can be expected.
- Drought and fuel moisture conditions will be unpredictable but almost always dangerous in fire season.
- More structures will be constructed in areas that are very susceptible to wildfire.
- Historical legacy of narrow roads, difficult entrance, insufficient water supplies, flammable building construction and location that make many communities and homes wildfire-prone still exits.
- Public demand for wildland fire protection and other services will increase.
- Deteriorating forest health, increasing fuel loads and other factors have led to more intense, destructive wildfires; unabated this pattern will continue.

Assets at risk will increase, especially watershed assets, because of the rapid rise in the demand for water to supply more people. Based on population projections, the potential for accelerating loss of protected assets, especially life and property, will be greater from disastrous wildfires.

Large wildfires do not respect political or property boundaries. Historically, a strength of California's firefighting agencies is found within a concept of mutual cooperation at the federal, state, and local levels of government. Day-to-day mutual aid for initial attack, as well as a statewide mutual-aid system for fire disasters, is the basis of this cooperation and coordination. The ability to rapidly mobilize, effectively deploy and support large numbers of specialized firefighting resources is essential to cope with large multiple fires. Hence, CDF, in cooperation with other fire agencies, must maintain infrastructure, including communications and capital improvements necessary to facilitate such a response.

Fire protection forces in California must have sufficient depth to respond to large, multiple wildfires and still prevent other small fires from becoming large damaging fires. CDF plays a key role in supplying and coordinating such forces; it should maintain and enhance this ability. The 1985 Fire Plan includes a model to provide adequate depth of resources that show CDF needing 96 additional engines and 825 personnel for managing large fires using the Incident Command System. There is a greater need today as reflected in the California Fire Plan.

California Fire Plan 2003

Fire-Safe and Land Use Planning

Population increases in wildland areas have raised strategic concerns about wildfire protection. Clearance laws, zoning, and related fire safety requirements implemented by state and local authorities need to address these factors:

Fire-resistant construction standards: We can no longer view a wildland fire as affecting only watershed, wildlife and vegetation resources; we must now consider their effect on people and their structures. Further, this increase in people and structures have provided increasing ignition sources for fire which, due to their proximity, can spread into the wildland. Building construction standards that encompass such items as roof covering, opening protection and fire resistance are designed to both protect the structure from external fires and to contain internal fires for longer periods.

Hazard reduction near structures (defensible space): The public image of defensible space as part of pre-fire management should be expanded to include such immediate benefits as improved aesthetics, increased health of large remaining trees and other valued plants, and enhanced wildlife habitat. The use of defensible space that provides landscape naturalness, along with its compatibility with wildlife, water conservation and forest health, should be emphasized.

Infrastructure: Effective fire protection in the intermix cannot be accomplished solely through the acquisition of equipment, personnel and training. The area's infrastructure also must be considered during the formulation of development plans. Specific fire hazard areas should be evaluated and reasonable safety standards adopted, covering such elements as adequacy of nearby water supplies, routes or throughways for fire equipment, addresses and street signs, and maintenance. The ultimate objectives for fire-safe planning and construction are (1) improve the ability of communities and other high value assets that will survive a large, high intensity wildfire with minimal fire suppression effort and (2) provide for improved citizen and firefighter safety.

California Fire Plan 2003

Fire History

Large Fires (over 300 acres) in 2003

INCIDENT #	% CONT.	COUNTY / UNIT	FIRE NAME	DATE START	DATE CONT.	ORIGIN DPA	ACRES BURNED CDF	ACRES BURNED OTHER	ACRES BURNED TOTAL	VEG. TYPE	CAUSE	STRUCTURES DEST.	STRUCTURES DAM.	FATALITIES FIRE	FATALITIES CIVIL
LAC-0300429	100%	Los Angeles	Pacific	1/6/2003	1/8/2003	CC	1300		1300		Under Inv.				
LAC-150988	100%	Los Angeles	Hauser	07/24/03	07/27/03	CC	2,044		2,044	B	Under Inv.	0	0	0	0
LAC-03220027	100%	Los Angeles	Verdale	10/24/03	10/28/03	CC	8,650		8,650	GB	Under Inv.	1	0	0	0
ANF-4490	100%	Los Angeles	Padua	10/21/03	11/02/03	USFS		10,446	10,446	B	Human	59	0	0	0
ANF-3468	100%	Los Angeles	Alamos	08/23/03	08/26/03	USFS		300	300		Under Inv.	0	0	0	0
ANF-003154	100%	Los Angeles	Middle	08/07/03	08/09/03	USFS		300	300	BT	Under Inv.	0	0	0	0

CDF Statistics

20 Largest California Wildland Fires by Structures Destroyed

	FIRE NAME/*CAUSE*	DATE	COUNTY	ACRES	*STRUCTURES*	DEATHS
1	TUNNEL *(REKINDLE)*	October 1991	ALAMEDA	1,600	2,900	25
*2	CEDAR *(HUMAN)*	October 2003	SAN DIEGO	273,246	2,820	15
*3	OLD *(HUMAN)*	October 2003	SAN BERNARDINO	91,281	1,003	6
4	JONES *(UNDETERMINED)*	October 1999	SHASTA	26,200	954	1
5	PAINT *(ARSON)*	June 1990	SANTA BARBARA	4,900	641	1
6	FOUNTAIN *(ARSON)*	August 1992	SHASTA	63,960	636	0
7	CITY OF BERKELEY *(POWERLINES)*	September 1923	ALAMEDA	130	584	0
8	BEL AIR *(UNDETERMINED)*	November 1961	LOS ANGELES	6,090	484	0
9	LAGUNA FIRE *(ARSON)*	October 1993	ORANGE	14,437	441	0
*10	PARADISE *(HUMAN)*	October 2003	SAN DIEGO	56,700	415	2
11	LAGUNA *(POWERLINES)*	September 1970	SAN DIEGO	175,425	382	5
12	PANORAMA *(ARSON)*	November 1980	SAN BERNARDINO	23,600	325	4
13	TOPANGA *(ARSON)*	November 1993	LOS ANGELES	18,000	323	3
14	49ER *(BURNING DEBRIS)*	September 1988	NEVADA	33,700	312	0
*15	SIMI *(UNDER INVESTIGATION)*	October 2003	VENTURA	108,204	300	0
16	SYCAMORE *(MISC. - KITE)*	July 1977	SANTA BARBARA	805	234	0
17	CANYON *(VEHICLE)*	September 1999	SHASTA	2,580	230	0
18	KANNAN *(ARSON)*	October 1978	LOS ANGELES	25,385	224	0
19	KINNELOA *(CAMPFIRE)*	October 1993	LOS ANGELES	5,485	196	1
*19	GRAND PRIX *(HUMAN)*	October 2003	SAN BERNARDINO	69,894	136	0
20	OLD GULCH *(EQUIP. USE)*	August 1992	CALAVERAS	17,386	170	0

Note that this list does not include fire jurisdiction. These are the Top 20 within California, regardless of whether they were state, federal, or local responsibility. Also note that "structures" is meant to include all loss - homes and outbuildings, etc.

4/22/2004

Los Angeles County accounts for 20%

20 Largest California Wildland Fires by Acres Burned

	FIRE NAME/CAUSE	DATE	COUNTY	*ACRES*	STRUCTURES	DEATHS
*1	CEDAR *(HUMAN)*	October 2003	SAN DIEGO	273,246	2,820	15
2	MATILIJA *(UNDETERMINED)*	September 1932	VENTURA	220,000	0	0
3	MARBLE CONE *(LIGHTNING)*	July 1977	MONTEREY	177,866	0	0
4	LAGUNA *(POWERLINES)*	September 1970	SAN DIEGO	175,425	382	5
5	MCNALLY *(HUMAN)*	July 2002	TULARE	150,696	17	0
6	STANISLAUS COMPLEX *(LIGHTNING)*	August 1987	TUOLUMNE	145,980	28	1
7	BIG BAR COMPLEX *(LIGHTNING)*	August 1999	TRINITY	140,948	0	0
8	CAMPBELL COMPLEX *(POWERLINES)*	August 1990	TEHAMA	125,892	27	0
9	WHEELER *(ARSON)*	July 1985	VENTURA	118,000	26	0
*10	SIMI *(UNDER INVESTIGATION)*	August 1996	VENTURA	108,204	300	0
11	HWY. 58 *(VEHICLE)*	August 1996	SAN LUIS OBISPO	106,668	13	0
12	CLAMPITT *(POWERLINES)*	September 1970	LOS ANGELES	105,212	86	4
13	WELLMAN *(EQUIP. USE)*	June 1966	SANTA BARBARA	93,600	0	0
*14	OLD *(HUMAN)*	October 2003	SAN BERNARDINO	91,281	1,003	6
15	KIRK *(LIGHTNING)*	September 1999	MONTEREY	86,700	0	0
16	REFUGIO *(MISC. - STRUCTURE)*	September 1955	SANTA BARBARA	84,770	20	0
17	FORK *(UNDETERMINED)*	August 1996	LAKE	82,980	40	0
18	SCARFACE *(LIGHTNING)*	August 1977	MODOC	79,904	0	0
19	LAS PILITAS *(EQUIP. USE)*	July 1985	SAN LUIS OBISPO	74,640	41	0
20	MANTER *(UNDER INVESTIGATION)*	July 2000	TULARE	74,439	15	0

There is no doubt that there were fires with significant acreage loss in years prior to 1932, but those records are less reliable, and this list is meant to give an overview of the large acreage-loss fires in more recent times. (Also note that this list does not include fire jurisdiction. These are the top 20 within the state, regardless of whether they were state, federal, or local responsibility.)

The City of Commerce has never been in danger from a large wild fire because of its central location in a heavily populated area and the lace of wild land areas around or adjacent to city boundaries. The greatest danger to the City of Commerce from wild fires in the area would perhaps be from the smoke caused by the fires.

Wildfire Smoke

Characteristics of Wildfire Smoke

The behavior of smoke depends on many factors, including the fire's size and location, the topography of the area and the weather. Inversions are common in mountainous terrain. Smoke often fills the valleys, where people usually live. Smoke levels are unpredictable: a wind that usually clears out a valley may simply blow more smoke in, or may fan the fires, causing a worse episode the next day. Smoke concentrations change constantly. By the time public health officials can issue a warning or smoke advisory, the smoke may already have cleared. National Weather Service satellite photos, weather and wind forecasts, and knowledge of the area can all help in predicting how much smoke will come into an area, but predictions are rarely accurate for more than a few hours.

Estimating Particulate Matter Levels

Particulate matter levels are measured as micrograms (*m*g) of particles per cubic meter of air. Most particle monitoring devices measure particulate matter with a median diameter of 10 micrometers or less (PM_{10}). An increasing number of monitors now measure smaller particles, also known as fine particles, which have median diameters of 2.5 micrometers or less ($PM_{2.5}$). In wildfire smoke, most particles are less than one micrometer, so the values obtained by measuring either PM_{10} or $PM_{2.5}$ are virtually interchangeable, and are treated as such in this document.

Communities with established air quality programs may issue public alerts based on predicted 24-hour average concentrations of particulate matter. Smoke emergencies need to be handled differently, however, as smoke concentrations generally tend to be very high for only a few hours at a time. These short-term peaks may cause some of the most deleterious health effects.

Another factor is public perception. Since smoke is so effective at scattering light, visibility changes drastically as smoke concentrations increase. Even without being told, the public can tell when the smoke is getting worse, and they want authorities to respond to changes as they are happening. Many communities don't have continuous PM monitoring, and therefore need to estimate particle levels. Continuous PM monitors give an instant reading of particulate matter concentrations. However, visibility can sometimes serve as a good surrogate. Even in areas with monitors, this index can be useful, since smoke levels change constantly and can vary dramatically even between monitors that are near one another. A visibility index gives members of the public a quick way to assess smoke levels for themselves.

Estimating particulate matter concentrations from visibility assessment

Categories	Visibility in Miles	Particulate matter levels* (1-hour average, $\mu g/m^3$)
Good	10 miles and up	0 - 40
Moderate	6 to 9	41 - 80
Unhealthy for Sensitive Groups	3 to 5	81 - 175
Unhealthy	1 1/2 to 2 1/2	176 - 300
Very Unhealthy	1 to 1 1/4	301 - 500
Hazardous	3/4 mile or less	over 500

*In wildfire smoke, most particles are less than one micrometer, so the values obtained by measuring either PM_{10} or $PM_{2.5}$ are virtually interchangeable, and are treated as such in this document. Therefore, in the table above, the different particle levels can be measured using either PM_{10} or $PM_{2.5}$ monitors.

Smoke Hazards as a Result of Wildland Fires

Smoke is composed primarily of carbon dioxide, water vapor, carbon monoxide, particulate matter, hydrocarbons and other organic chemicals, nitrogen oxides, trace minerals and several thousand other compounds. The actual composition of smoke depends on the fuel type, the temperature of the fire, and the wind conditions. Different types of wood and vegetation are composed of varying amounts of cellulose, lignin, tannins and other polyphenolics, oils, fats, resins, waxes and starches, which produce different compounds when burned.

Particulate matter is the principal pollutant of concern from wildfire smoke for the relatively short-term exposures (hours to weeks) typically experienced by the public. Particulate matter is a generic term for particles suspended in the air, typically as a mixture of both solid particles and liquid droplets. Particles from smoke tend to be very small - less than one micrometer in diameter. For purposes of comparison, a human hair is about 60 micrometers in diameter. Particulate matter in wood smoke has a size range near the wavelength of visible light (0.4 – 0.7 micrometers). Thus, smoke particles efficiently scatter

light and reduce visibility. Moreover, such small particles can be inhaled into the deepest recesses of the lung and are thought to represent a greater health concern than larger particles.

Another pollutant of concern during smoke events is carbon monoxide. Carbon monoxide is a colorless, odorless gas, produced by incomplete combustion of wood or other organic materials. Carbon monoxide levels are highest during the smoldering stages of a fire. Other air pollutants, such as acrolein, benzene, and formaldehyde, are present in smoke, but in much lower concentrations than particulate matter and carbon monoxide.

The effects of smoke range from eye and respiratory tract irritation to more serious disorders, including reduced lung function, bronchitis, exacerbation of asthma, and premature death. Studies have found that fine particles are linked (alone or with other pollutants) with increased mortality and aggravation of pre-existing respiratory and cardiovascular disease. In addition, particles are respiratory irritants, and exposures to high concentrations of particulate matter can cause persistent cough, phlegm, wheezing and difficulty breathing. Particles can also affect healthy people, causing respiratory symptoms, transient reductions in lung function, and pulmonary inflammation. Particulate matter can also affect the body's immune system and make it more difficult to remove inhaled foreign materials from the lung, such as pollen and bacteria. The principal public health threat from short-term exposures to smoke is considered to come from exposure to particulate matter. Wildfire smoke also contains significant quantities of respiratory irritants. Formaldehyde and acrolein are two of the principal irritant chemicals that add to the cumulative irritant properties of smoke, even though the concentrations of these chemicals individually may be below levels of public health concern.

Sensitive Populations

Most healthy adults and children will recover quickly from smoke exposures and will not suffer long-term consequences. However, certain sensitive populations may experience more severe short-term and chronic symptoms from smoke exposure. Much of the information about how particulate matter affects these groups has come from studies involving airborne particles in cities, though a few studies examining the effects of exposure to smoke suggest that the health effects of wildfire smoke are likely to be similar. More research is needed to determine whether particles from wildfires affect susceptible subpopulations differently.

Individuals with asthma and other respiratory diseases: Levels of pollutants that may not affect healthy people may cause breathing difficulties for people with asthma or other chronic lung diseases. Asthma, derived from the Greek word for panting, is a condition characterized by chronic inflammation of the airways, with intermittent bronchial-constriction and airflow obstruction, causing shortness of breath, wheezing, chest tightness, coughing, sometimes accompanied by excess phlegm production. During an asthma attack, the muscles tighten around the airways and the lining of the airways becomes inflamed and swollen, constricting the free flow of air. Because children's airways are narrower than those of adults, irritation that would create minor problems for an adult may result in significant obstruction in the airways of a young child. However, the highest mortality rates from asthma occur among older adults. Individuals with chronic obstructive pulmonary disease (COPD), which is generally considered to encompass emphysema and chronic bronchitis, may also experience a worsening of their conditions because of exposure to wildfire smoke. Patients with COPD often have an asthmatic component to their condition, which may result in their experiencing asthma-like symptoms. However, because their pulmonary reserve has typically been seriously compromised, additional bronchial-constriction in individuals with COPD may result in symptoms requiring medical attention. Epidemiological studies have indicated that individuals with COPD run an increased risk of requiring emergency medical care after exposure to particulate matter or forest fire smoke. Exposure to smoke may also depress the lung's ability to fight infection. People with COPD may develop lower respiratory infections after exposure to wildfire smoke, which may require urgent medical care as well. In addition,

because COPD is usually the result of many years of smoking, individuals with this condition may also have heart disease, and are potentially at risk from both conditions.

Individuals with airway hyper-responsiveness: A significant fraction of the population may have airway hyper-responsiveness, an exaggerated tendency of the bronchi and bronchioles to constrict in response to respiratory irritants and other stimuli. While airway hyper-responsiveness is considered a hallmark of asthma, this tendency may also be found in many non-asthmatics, as well; for example, during and following a lower respiratory tract infection. In such individuals, smoke exposure may cause bronchial-spasm and asthma-like symptoms.

Individuals with cardiovascular disease: Diseases of the circulatory system include, among others, high blood pressure, cardiovascular diseases, such as coronary artery disease and congestive heart failure, and cerebro-vascular conditions, such as atherosclerosis of the arteries bringing blood to the brain. These chronic conditions can render individuals susceptible to attacks of angina pectoris, heart attacks, sudden death due to a cardiac arrhythmia, acute congestive heart failure, or stroke. Cardiovascular diseases represent the leading cause of death in the United States, responsible for about 30 to 40 percent of all deaths each year. The vast majority of these deaths are in people over the age of 65. Studies have linked urban particulate matter to increased risks of heart attacks, cardiac arrhythmias, and other adverse effects in those with cardiovascular disease. People with chronic lung or heart disease may experience one or more of the following symptoms: shortness of breath, chest tightness, pain in the chest, neck, shoulder or arm, palpitations, or unusual fatigue or lightheadedness. Chemical messengers released into the blood because of particle-related lung inflammation may increase the risk of blood clot formation, angina episodes, heart attacks and strokes.

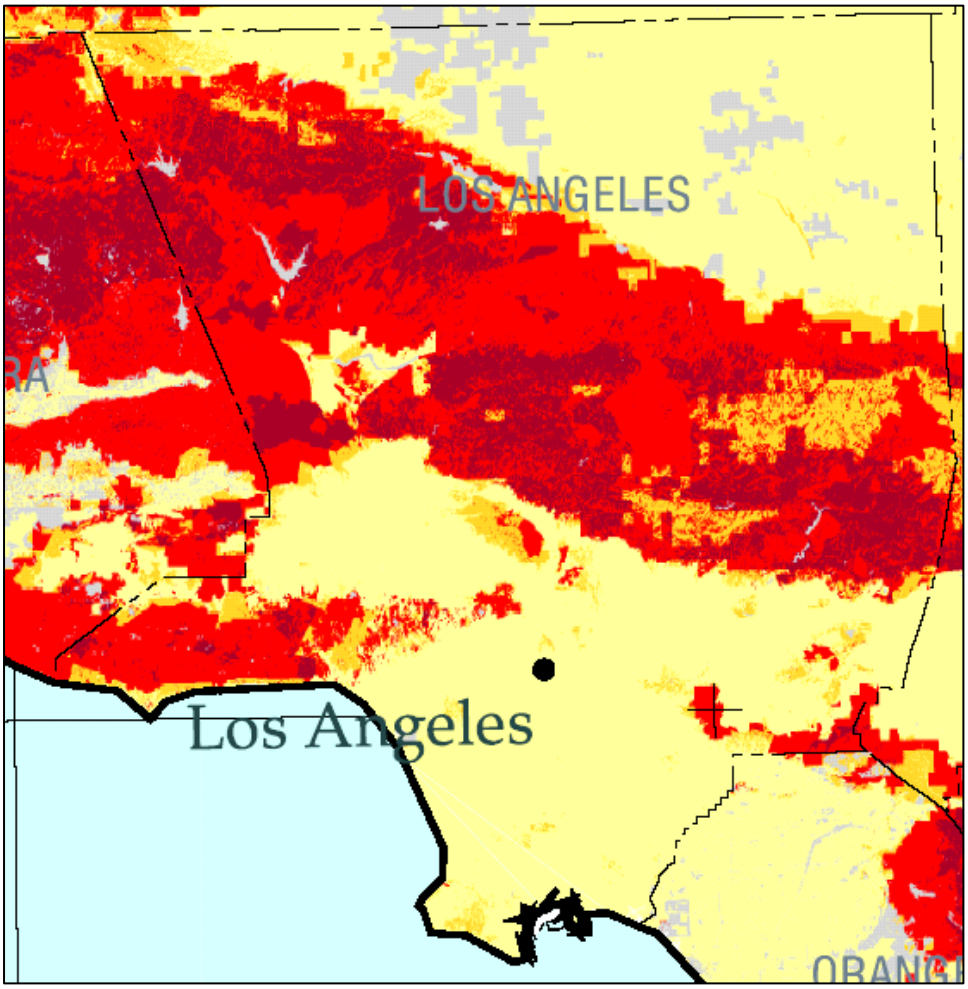
The elderly. In several studies researchers have estimated that tens of thousands of elderly people die prematurely each year from exposure to particulate air pollution, probably because the elderly are more likely to have pre-existing lung and heart diseases, and therefore are more susceptible to particle-associated effects. The elderly may also be more affected than younger people because important respiratory defense mechanisms may decline with age. Particulate air pollution can compromise the function of alveolar macrophages, cells involved in immune defenses in the lungs, potentially increasing susceptibility to bacterial or viral respiratory infections.

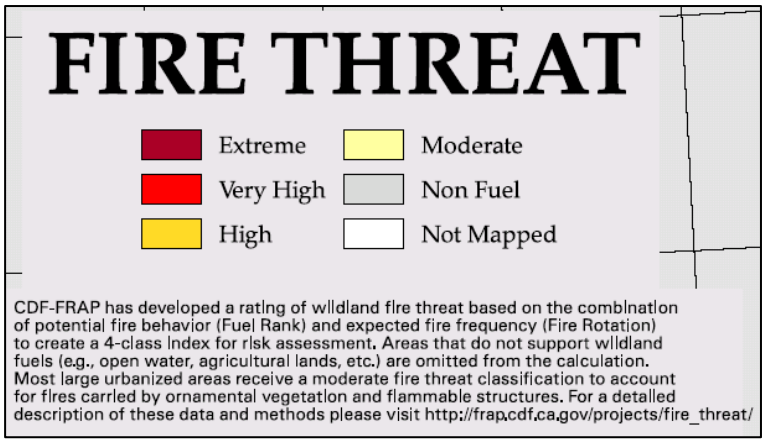
Children. Children, even those without any pre-existing illness or chronic conditions, are considered a sensitive population because their lungs are still developing, making them more susceptible to air pollution than healthy adults. Several factors lead to increased exposure in children compared with adults: they tend to spend more time outside; they engage in more vigorous activity, and they inhale more air (and therefore more particles) per pound of body weight. Studies have shown that particulate pollution is associated with increased respiratory symptoms and decreased lung function in children, including symptoms such as episodes of coughing and difficulty breathing. These can result in school absences and limitations of normal childhood activities.

Pregnant women. While there have not been studies of the effects of exposure to wildfire smoke on pregnancy outcomes, there is substantial evidence of adverse effects of repeated exposures to cigarette smoke, including both active and passive smoking. Wildfire smoke contains many of the same compounds as cigarette smoke. In addition, recent data suggest that exposures to ambient air pollution in cities may result in low birth weight and possibly other, more serious adverse reproductive effects. Therefore, it would be prudent to consider pregnant women as a potentially susceptible population as well.

Smokers. People who smoke, especially those who have smoked for many years, have already compromised their lung function. However, due to adaptation of their lungs to ongoing irritation, smokers are less likely to report symptoms from exposure to irritant chemicals than are nonsmokers. However, they may still be injured by wildfire smoke. Therefore, some smokers may unwittingly put

themselves at greater risk of potentially harmful wildfire smoke exposures, believing that they are not being affected.





Technological & Human-caused Hazards

Explosion

Explosion was rated a HIGH PRIORITY RISK by the City of Commerce Hazard Mitigation Planning Committee..

An explosion is a rapid release of stored energy characterized by a bright flash and an audible blast. Part of the energy is released as thermal radiation (flash); and part is coupled into the air as airblast and into the soil (ground) as ground shock, both as radially expanding shock waves.

To be explosive, the material:

1. Must contain a substance or mixture of substances that remains unchanged under ordinary conditions, but undergoes a fast chemical change upon stimulation.

2. This reaction must yield gases whose volume—under normal pressure, but at the high temperature resulting from an explosion—is much greater than that of the original substance.

3. The change must be exothermic in order to heat the products of the reaction and thus to increase their pressure.

Common types of explosions include construction blasting to break up rock or to demolish buildings and their foundations, and accidental explosions resulting from natural gas leaks or other chemical/explosive materials.

The rapid expansion of hot gases resulting from the detonation of an explosive charge gives rise to a compression wave called a **shock wave,** which propagates through the air. The front of the shock wave can be considered infinitely steep, for all practical purposes. That is, the time required for compression of the undisturbed air just ahead of the wave to full pressure just behind the wave is essentially zero.

If the explosive source is spherical, the resulting shock wave will be spherical. Since its surface is continually increasing, the energy per unit area continually decreases. Consequently, as the shock wave travels outward from the charge, the pressure in the front of the wave, called the **peak pressure**, steadily decreases. At great distances from the charge, the peak pressure is infinitesimal, and the wave can be treated as a sound wave.

Behind the shock wave front, the pressure in the wave decreases from its initial peak value. At some distance from the charge, the pressure behind the shock front falls to a value below that of the atmosphere and then rises again to a steady value equal to that of the atmosphere. The part of the shock wave in which the pressure is greater than that of the atmosphere is called the **positive phase**, and, immediately following it, the part in which the pressure is less than that of the atmosphere is called the **negative or suction phase**.

Conventional structures, in particular those above grade, are susceptible to damage from explosions, because the magnitudes of design loads are significantly lower than those produced by most explosions. The peak pressure in the blast pulse produced by 10 lb of TNT at a range of about 50’ is approximately 2.4 psi (which is 348 psf!) with a duration of the positive phase of 7.7 ms. Conventional structures are not normally designed to resist blast loads.

Recent terrorist attacks demonstrate the types of damage that can be produced. The 1993 terrorist attack on the World Trade Center in New York City removed several thousand square feet of concrete floor slabs in the general area of the explosion and severely damaged several buildings' communication, transportation and utility systems. Due to the inherent redundancy of the steel frames, the structures did not collapse.

The 1995 attack on the Alfred P. Murrah Federal Building in Oklahoma City revealed the vulnerability of conventional structural designs when subjected to blast loads. When a source is located at street level, the blast shock wave acts up against the underside of the floor slabs at upper stories. Floor slabs are not designed for this magnitude and direction of load—for this direction of load, the reinforcement is in the wrong place.

Explosion Hazards

There are many potential explosion hazards in Los Angeles County. Catastrophic explosions could be caused by:

- Exotic Chemicals and Substances
- Natural Gas and Propane
- Methane Gas
- Gasoline and other liquid fuels
- Manufactured and Military Explosives

The origin of a catastrophic explosion may be:

- Stationary pressure vessels and tanks
- Rail tank cars
- Truck tanks
- Pipelines
- Cargo ships carrying explosive materials

Explosions can be triggered by:

- Manual of Accidental Detonation of Explosives
- Fire/Open Flame
- Electrical Discharge
- Chemical Interaction
- Radiological Reaction
- Faulty Containment
- Equipment Malfunctions

Explosion Consequences

A catastrophic explosion could challenge responders to deal with:

- Mass casualties
- Fires
- Building and property destruction
- Infrastructure failure (telecommunications, transportation, etc.)
- Lifeline interruption
- Chemical or radiation contamination
- Debris removal

Transportation Loss

Transportation Loss was rated a HIGH PRIORITY TIS by the City of Commerce Hazard Mitigation Planning Team.

Transportation disruption and loss in Los Angeles County have the potential for catastrophic consequences on the populace. The area's heavy reliance on conveyances is a major factor in economic stability and survival during emergencies. Los Angeles County's transportation corridor interconnections link all parts of the county to neighboring jurisdictions and their stability and dependability is necessary to assure population health and welfare in an emergency. A catastrophic loss or extended disruption in any of the transportation forms listed below could have severe and long-lasting impacts on the area's economy and health.

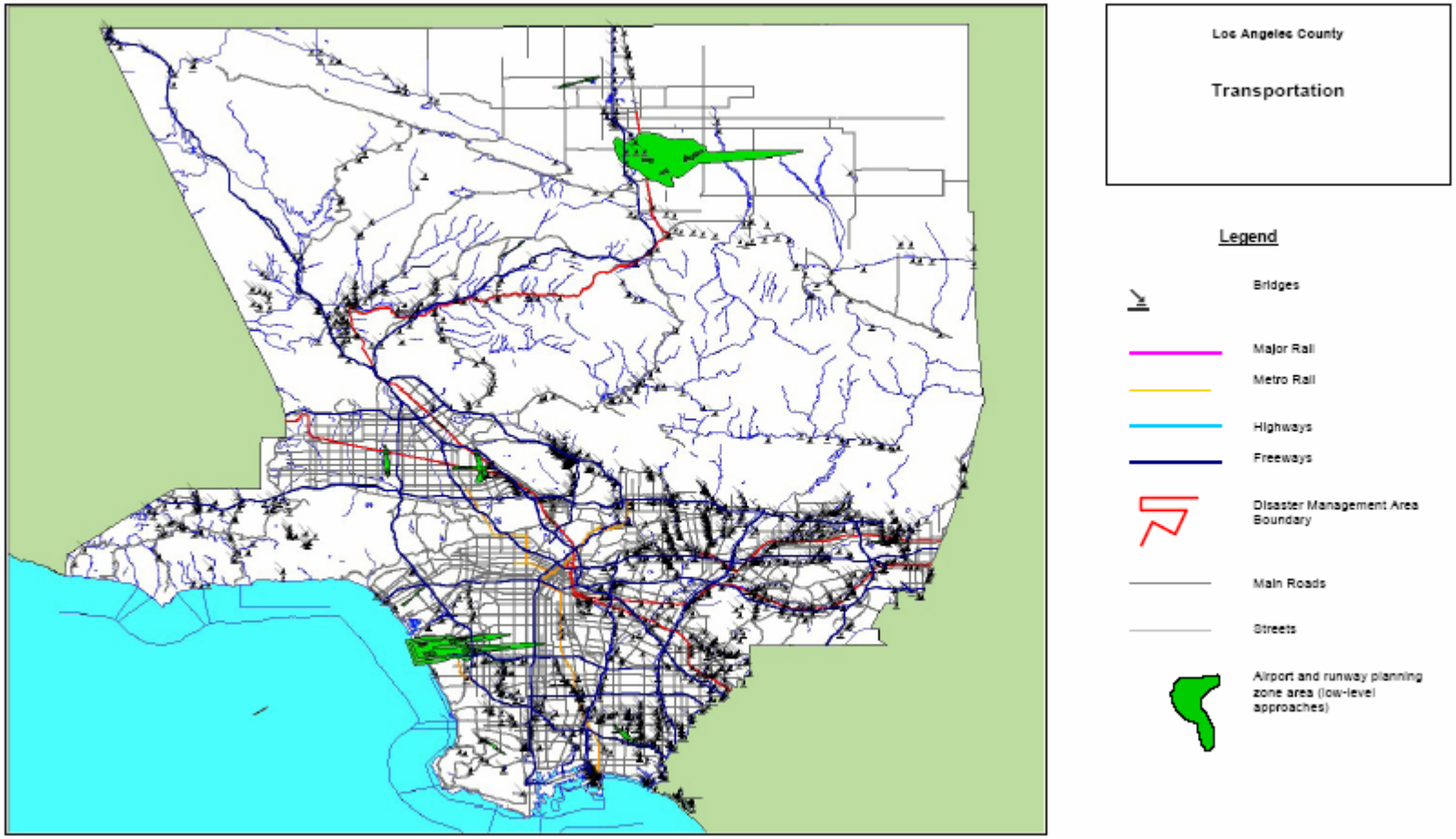
Roads, Road Miles, Motor Vehicles, & Drivers in L.A. County

- Los Angeles County has over 600 miles of freeway and 382 miles of conventional highway.
- On the average day, 92 million vehicle miles are driven in L.A. County.

Type of Vehicle Registrations	2000	1999	1998
Autos	5,134,168	4,935,605	4,825,512
Trucks	1,021,397	991,315	970,993
Trailers	283,402	283,402	262,506
Motorcycles	81,167	75,569	74,210
Total	6,520,134	6,290,976	6,133,221

Note: More than 600,000 cars are sold in Southern California every year, according to J.D. Powers & Associates of Agoura Hills and Calif. DMV

Los Angeles County Transportation Map Los Angeles County GIS Data



Public Transportation

Public Transit Ridership
Los Angeles County, Fiscal Year 1998-1999

System	Ridership	Vehicles in Operation at Peak Weekday Usage
MTA* - Motor Bus	344,536,072	1,815
MTA* - Street Car	22,889,800	51
MTA* - Rapid Rail	11,808,915	36
Long Beach Transit	27,118,943	154
Santa Monica Municipal Bus Lines	21,606,547	118
Foothill Transit	16,241,489	224
Montebello Transit	6,947,134	37
Southern California Regional Rail Authority (MetroLink)	6,734,076	103
Gardena Municipal Bus Lines	5,897,649	38
Culver City Transit	4,584,260	n/a
System	**Ridership**	**Vehicles in Operation at Peak Weekday Usage**
Torrance Transit	4,372,529	55
Antelope Valley Transit Authority	2,154,653	36
Santa Clarita Transit	2,119,481	41
Norwalk Transit	1,384,735	15
Los Angeles Department of Transportation (LADOT) (Commuter Express; Community Connection; DASH)	1,131,656	82
Commerce Municipal Bus Lines	1,012,429	6
Downey LINK Public Transit Service	332,647	6
Palos Verdes Transit Authority	107,737	13
Cerritos on Wheels (COW)	n/a	n/a

*LA County Metropolitan Transit Authority (MTA), once known as Southern California Rapid Transit District (SCRTD)
n/a information not available
Source: California State Controller
The MTA bus system operates 2,258 buses over 185 routes totaling. There are 18,500 bus stops in MTA's 1,433 square mile service area. There are more than 2,000 MTA buses in service on any average weekday

Los Angeles County Metropolitan Transportation Authority (MTA) uses its subway system and fleet of about 2,400 buses to move about 400 million passengers each year. It supports about 16 municipal bus operators. The MTA also operates a rail system that spans about 75 miles and incorporates more than 60 stations. It operates a light rail that runs between LA and Pasadena. Other MTA activities include funding community projects like bikeways, pedestrian facilities, and local road and highway improvements.

Metropolitan Transit Authority (MTA) Light Rail Lines

METRO BLUE LINE (Above ground) 22 miles and 22 stations Downtown Los Angeles to Long Beach Opened July 1990 Cost: $877 million 54 cars in fleet 66,225 average weekday boardings, 39,725 average weekend boardings (daily average, FY 2001) 17,881,974 total passenger boardings in FY 2001
METRO GREEN LINE (Above ground) 20 miles and 14 stations El Segundo to Norwalk Opened 1995 Cost: $714 million 15 cars in fleet 29,800 average weekday boardings, 15,125 average weekend boardings (daily average, FY 2001) 7,637,725 total passenger boardings in FY 2001
METRO RED LINE (Subway) 17.4 miles* and 16 stations Downtown LA to the Wilshire corridor Downtown LA through Hollywood to North Hollywood Segment One opened 1993 (Wilshire/Western Segment Opened 1996; Hollywood Segment Opened 1999; North Hollywood Segment Opened 2000) Cost: estimated at $4.5 billion 102 cars in fleet 147,775 average weekday boardings, 72,537 average weekend boardings (daily average, FY 2001) 33,825,491 passenger boardings in FY 2001 * includes yards and maintenance areas

Source: MTA

Rail

Rail Roads Operating in Los Angeles County In 1995, Burlington Northern merged with the Atchinson Topeka & Santa Fe Railway to form Burlington Northern & Santa Fe Railway. The following year, Southern Pacific Lines was acquired by Union Pacific Railroad.

Amtrak	Passengers	Union Station, 800 N Alameda St, LA 90012; (800) 872-7245
Metrolink (*Southern California Regional Rail Authority*)	Passengers	700 S Flower St, Ste 2600, Los Angeles 90017; (800) 371-LINK
Burlington Northern & Santa Fe Railway	Freight	3020 Saturn St, Brea 92811; (818) 812-9416
Los Angeles Junction Railway (*owned by Burlington Northern Santa Fe Railway*)	Freight	4433 Exchange Ave, Los Angeles 90058; (213) 267-3489 or 277-2004
Union Pacific Railroad Company	Freight	5500 Ferguson Dr, Los Angeles 90022; (213) 725-2222

Daily Truck & Train Movements to/from Los Angeles/Long Beach Harbor
1990, 2000 & Projections

Year	Truck Movements	Train Movements
1990	20,000	30
2000	25,000	50
2010	33,000	70
2020	50,000	100

Alameda Corridor Project

It is estimated that Los Angeles and Long Beach harbors will have double the current volume of incoming ocean freight traffic by the year 2020. The Alameda Corridor Project, started in 1997, was planned to divert much of this traffic from local freeways and street-level railroad crossings and provide, by the year 2002, a 20-mile express rail link between the Los Angeles and Long Beach harbors and the rail yards in Vernon. The $2.4 billion project will consolidate the operations of the Union Pacific and Burlington Northern Santa Fe railroads. Street level railroad crossings along Alameda Street will be eliminated and half of the route will run below street level. The project is under the direction of the Alameda Corridor Transportation Authority.

Amtrak Routes From/Through Los Angeles

Route	Major Stops
Coast Starlight	Los Angeles-San Jose-Oakland-Sacramento-Portland-Seattle
Pacific Surfliner	San Diego-Anaheim-Los Angeles-Ventura-Santa Barbara-San Luis Obispo
San Joaquins*	Los Angeles-Bakersfield-Fresno-Stockton-Oakland
Southwest Chief	Los Angeles-Flagstaff-Albuquerque-Topeka-Kansas City-Chicago
Sunset Limited	Los Angeles-Phoenix-Tucson-El Paso-San Antonio-Houston-New Orleans-Mobile-Orlando, Florida
Texas Eagle	Connects with the Sunset Limited at San Antonio-Dallas/Ft. Worth-Little Rock-St. Louis-Chicago

*Amtrak bus service ferries passengers between the Los Angeles and Bakersfield stations.

Air Transportation

Los Angeles County Airports & Airfields

Airport/Airfield	Location
Agua Dulce Airpark	Agua Dulce Canyon Rd, Saugus
Brackett Field (POC)	1615 McKinley Av, La Verne 91750 (909) 593-1395
Brian Ranch	Palmdale
Burbank-Glendale-Pasadena (BUR)	2627 N Hollywood Way, Burbank
Catalina (AVX)	Avalon
Catalina Air & Sea Terminal	Berth 95, San Pedro
Compton (CPM)	901 W Alondra Blvd, Compton 90220 (310) 631-8140
El Monte Airport (EMT)	4233 Santa Anita Av, El Monte 91731 (626) 448-6129
General William J. Fox Airfield (WJF)	4555 W Avenue G, Lancaster 93536 (661) 940-1709
Goodyear Blimp Base	19200 S Main St, Carson
Hawthorne Municipal (Jack Northrop Field) (HHR)	12101 Crenshaw Av, Hawthorne
Long Beach Municipal Airport (LGB)	4100 Donald Douglas Dr, Long Beach
Los Angeles International Airport (LAX)	World Way, Los Angeles
Palmdale Regional Airport	39516 N 20th St E, Palmdale 93550 (661) 266-7602
Palmdale Production Flight/Test Installation Plant 42	Palmdale
Santa Monica Municipal (SMO)	3200 Airport Dr, Santa Monica
Torrance Municipal (Zamperini Field) (TOA)	3115 Airport Dr, Torrance
Van Nuys (VNY)	16461 Sherman Way, Van Nuys
Whiteman Airport (WHP)	12653 Osborn St, Pacoima 91331 (818) 896-5271

Passenger Traffic Totals - Arriving & Departing, 1991-2000

Year	Total	Departing	Arriving
2000	67,303,182	33,836,077	33,467,105
1999	64,279,571	32,298,944	31,980,627
1998	61,215,712	30,826,859	30,388,853
1997	60,142,588	30,313,688	29,828,900
1996	57,974,559	29,162,942	28,811,617
1995	53,909,223	27,234,353	26,674,870
1994	51,050,275	25,812,087	25,238,188
1993	47,844,794	24,141,068	23,703,726
1992	46,964,555	23,732,371	23,232,184
1991	45,668,204	22,954,976	22,713,228

Highway Incidents

Smoother Roads Ahead For Santa Ana Freeway (I-5); Pavement Improvements Begin From Buena Park To Commerce

The California Department of Transportation (Caltrans) began work in late August to rehabilitate and improve 11 miles of the northbound and southbound Santa Ana Freeway (I-5) in the cities of Buena Park, La Mirada, Santa Fe Springs, Norwalk, Downey and Commerce. This pavement improvement project will result in a smoother driving surface, enhance safety and extend the life of the freeway. Overnight lane, ramp and full northbound and southbound freeway closures will be necessary intermittently throughout construction. Note: the northbound and southbound freeway or lane closures will not be performed simultaneously.

Construction dates and closures are weather-permitting and subject to change. The freeway will remain open during peak commute hours. Signs and detours will be posted to assist motorists. In addition, press releases on closures and updates will be distributed to the media, chambers of commerce and cities within the construction area – as well as posted on the Caltrans website – www.dot.ca.gov.dist07 -- to keep the public informed as work progresses. The California Highway Patrol will assist with traffic management when necessary.

Work will begin near the Orange County line in Buena Park. Construction will then proceed on the northbound I-5 lanes. When work is completed to Washington Boulevard in the city of Commerce, the project will then proceed on the southbound I-5 lanes back to the vicinity of the Orange County line.

Overnight traffic delays are expected to be minimal. Caltrans is aware of nighttime noise during construction and will do everything possible to keep the noise to a minimum. For additional information on this freeway improvement project, please call the Caltrans Public Affairs office from 8 a.m. to 5 p.m. Monday through Friday at (213) 897-3630 or (213) 897-3656.

Caltrans reminds motorists to PLEASE, SLOW FOR THE CONE ZONE.

Identified Issues

Commerce LASD has identified a number of traffic issues, particularly with the following intersections:

a. "Mixmaster"
b. Garfield/Telegraph
c. Slauson/Eastern
d. Bandini/Garfield
e. All of Washington, west of Atlantic

Economic Disruption

Economic Disruption was rated a HIGH PRIORITY RISK by the City of Commerce Hazard Mitigation Planning Team.

Los Angeles County is the most populous county in the nation. With approximately 10 million residents, it is home to about 30 percent of the state's population. The county has grown by nearly 2 million residents in the past 20 years, including more new immigrants than any other region of the country except the New York City area. Today, the county's population is 45 percent Latino, 31 percent non-Latino white, 12 percent Asian, and 10 percent black—similar to the racial/ethnic profile that state demographers predict for California by 2040. The county is also home to large numbers of low-income residents. Reflecting the size and diversity of the county, local government is large and complex, as are the problems of delivering local services to residents. In recent years, local governments in Los Angeles County have confronted difficult issues such as providing health care for the uninsured, reducing air pollution, improving low-performing schools, coping with racial/ethnic tensions involving police actions, and coming to terms with local efforts to secede from the city of Los Angeles. There are also housing, transportation, land use, and environmental issues relating to population growth and development. These factors tend to contribute negatively, on a large scale, to any economic downturn or disruption in the community.

"…Los Angeles County's suburban areas, like Orange County, are becoming so densely settled that they could be said to be urbanizing. Financial and social elites are withdrawing from civic leadership. "People think that most countries and cities and societies are moving away from industrialization," he says. "The notion of a postindustrial society is just wrong."

For example, the rise and decline of manufacturing jobs in American cities has taken a surprising twist in Los Angeles. The Chicago model of urban development assumed a growing industrial base. But in the 1960's and 70's, the traditional assembly-line factories that employed so many urban workers succumbed to cheaper labor overseas.

In the 1980's, the Pentagon's military buildup buoyed L.A.'s aerospace and defense companies and insulated the region from the industrial decline. After the cold war ended, however, cutbacks in defense spending hit Southern California particularly hard and deepened the recession of the early 1990's…."

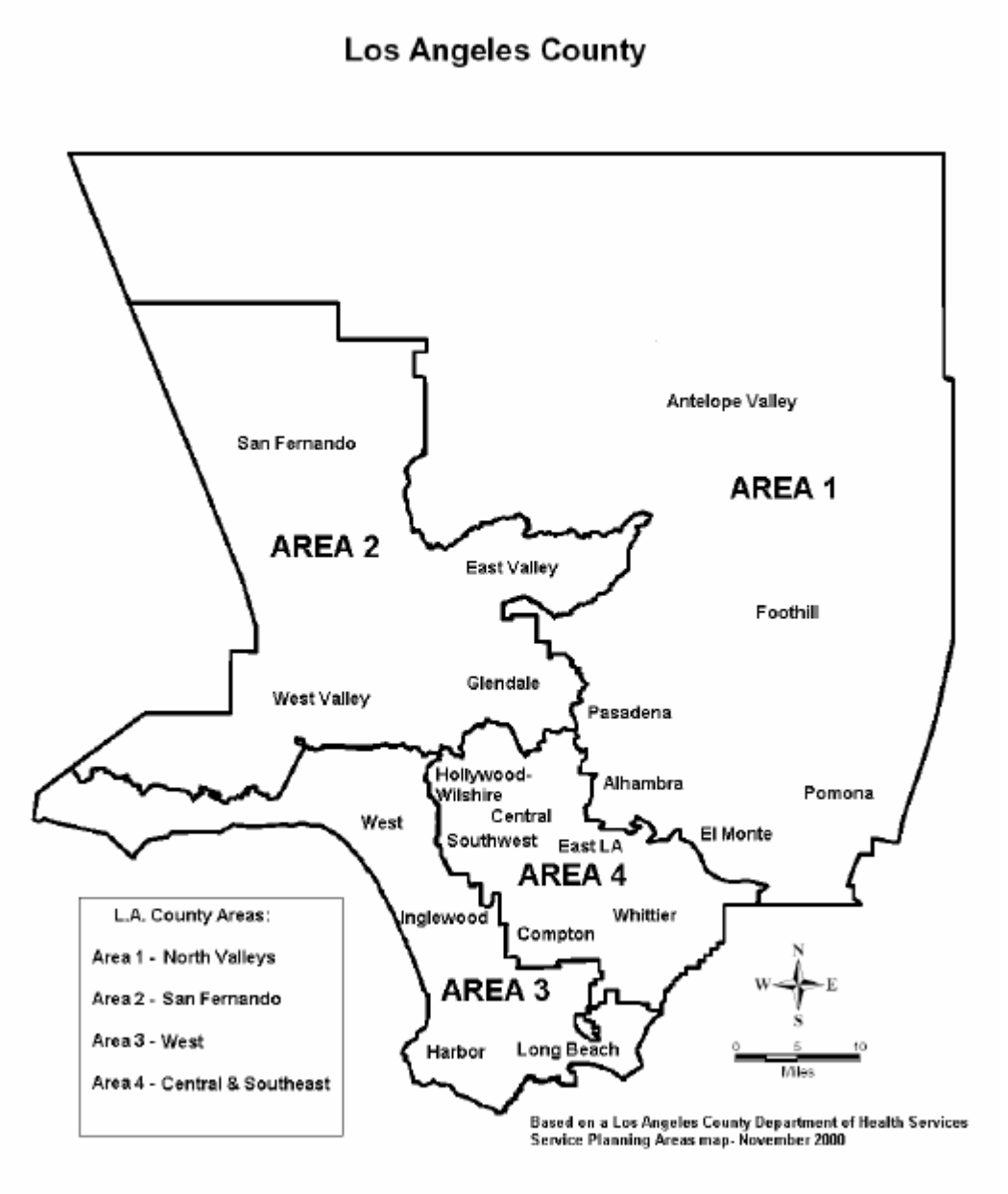
"The New Urban Studies"; Los Angeles scholars use their region and their ideas to end the dominance of the 'Chicago School'; By D.W. MILLER.

Recession

When asked to evaluate the LA County economy today, only 24 percent of residents rate it as excellent or good, while 48 percent say it is fair, and 27 percent poor. Half of county residents report that their area is in a mild (12%), moderate (25%), or serious (14%) recession, with Latinos (58%) and blacks (57%) more likely than whites (44%) to say their area is in recession. And far more residents today (67%) than just one year ago (52%) predict bad economic times for the state during the next 12 months. This economic angst is also taking its toll on residents' overall perception of the county:

40 percent of county residents say that the region is headed in the right direction, and 43 percent believe it is headed in the wrong direction, with whites, blacks, and San Fernando area residents more negative than others about the county's prospects.

Residents are divided about whether the county will be a better or worse place to live in the future (32% each), with an equal percentage (31%) expecting little change.



Government Perceptions

Economic and social conditions — as well as the lingering effects of recent secession efforts — are also affecting attitudes about local government. Seventy-one percent of residents say that the county government is fair (49%) or poor (22%) at solving problems, while only 24 percent rate it as excellent or good. San Fernando area residents (28%) are more likely than others to view county government in a negative light. While more residents (39%) say their city governments are excellent or good at

solving problems, a majority (54%) still gives them low ratings. Residents of LA City are far more critical than others. Given their disenchantment with government, LA residents are open to a number of proposals for reform.

Given the vast differences in attitudes among racial and ethnic groups in LA County, it is not surprising that many residents are concerned about the state of race relations in the region. A majority of residents (53%) believes race relations are not so good (39%) or poor (14%) in the county today. Blacks (65%) are more negative than Latinos (58%), whites (50%), or Asians (45%).

Percent seeing the issue as a big problem in their part of Los Angeles County	All Adults	County Area			
		North Valleys	San Fernando	West	Central / Southeast
Traffic congestion on freeways and major roads	67%	64%	69%	70%	63%
Availability of housing that you can afford	54	47	52	57	59
Crime	41	32	36	38	55
Lack of opportunities for well-paying jobs	40	37	35	36	49
Population growth and development	38	34	43	37	37
Air pollution	37	30	34	32	47

Overall Outlook

Los Angeles County residents are in a sour mood when it comes to the state of the economy in California, the county, and their local areas. Two in three county residents predict bad economic times for California during the next 12 months. This is a considerably higher percentage than we found in PPIC Statewide Surveys in 2000, 2001, and 2002. These pessimistic views are shared across geographic, racial/ethnic, demographic, and political groups.

"Turning to economic conditions in California, do you think that during the next 12 months we will have good times financially or bad times?

	Los Angeles County Adults			
	Feb 00	Jan 01	Feb 02	Mar 03
Good times	77%	50%	38%	25%
Bad times	16	39	52	67
Don't know	7	11	10	8

When asked to evaluate the Los Angeles County economy today, only 24 percent of residents rate it as excellent or good—48 percent say it is fair, and 27 percent rate it as poor. The low ratings are consistent across geographic areas and demographic groups.

As for their parts of Los Angeles County, half of county residents report their areas are now in a mild (12%), moderate (25%) or serious (14%) recession. The Central/Southeast area has the highest percentage of residents (58%) who say their part of the county is in a recession. Higher percentages of Latinos (58%) and blacks (57%) than whites (44%) say their areas are in a recession. Residents with lower incomes and less education and immigrants are also more likely than others to share this view.

Residents are divided about their overall outlook for the county: Forty percent say that Los Angeles County is headed in the right direction, and 43 percent believe that it is headed in the wrong direction. As for the future, 32 percent think the county will be a better place to live than it is today, 32 percent think it will be a worse place to live, and 31 percent think it will be about the same as now. Whites, blacks, and San Fernando area residents are more negative than others about the county's overall outlook.

Concerning quality of life, 61 percent of Los Angeles County residents say things are going well, and 36 percent say they are not. More than one-third of residents in all four areas believe things are going badly. Although 51 percent see themselves living in the same neighborhood five years from now, 22 percent expect to be living elsewhere in the county, and 17 percent expect to be living outside the county. Younger and more educated residents are most likely to say they will move out of the county in the next five years.

"Do you think that things in Los Angeles County are generally going in the right direction or the wrong direction?

		County Area			
	All Adults	North Valleys	San Fernando	West	Central / Southeast
Right direction	40%	41%	37%	42%	41%
Wrong direction	43	40	49	42	42
Don't know	17	19	14	16	17

State Budget Deficit and Local Tax Increases

Only 3 percent of county residents identify the state budget deficit as the most important issue facing Los Angeles County. Nevertheless, 92 percent of county residents say they are very concerned (71%) or somewhat concerned (21%) that the state budget deficit will cause severe cuts in areas such as city and county government and local schools. This concern is shared across the county's major areas and racial/ethnic groups. Women tend to be more concerned than men that the deficit will cause severe cuts in local services: 77% are very concerned, compared to 64% of men. Majorities in all partisan groups are concerned about potential cuts. However, Democrats (78%) are more likely than independents (68%) and Republicans (66%) to be very concerned.

Los Angeles County residents are willing to raise certain new taxes to fund some local services in light of the large state budget deficit. For example, 64 percent of county residents favor new taxes on alcoholic beverages and cigarettes in order to fund county-level public health and medical emergency services. However, there are large partisan differences: 69 percent of Democrats, 60 percent of independents, and 52 percent of Republicans support new alcohol and cigarette taxes. Women (69%) are much more likely than men (60%) and those under age 35 (68%) are more likely than those ages 55 and older (57%), to favor these so-called "sin taxes." Some six in 10 residents in each of the four geographic areas would support this tax increase to fund county-level services.

Public Policy Institute of California; Special Survey of Los Angeles in collaboration with the University of Southern California; Mark Baldassare, Research Director & Survey Director

Transportation Accident

Transportation Accidents were rated a HIGH PRIORITY RISK the City of Commerce Hazard Mitigation Planning Team.

Because of the tremendous volume of transportation (commercial and private) into and out of LA County, the potential for a disastrous transportation-related event exists. Generally, transportation accidents are incidents that are handled by local jurisdictions or by jurisdictional mutual aid responses. A transportation accident, combined with a volatile hazardous substance or a large number of people, has the potential for becoming an event that requires a major mobilization of local, county, state and federal agencies.

According to the Department of Transportation, from 1994 to 2000 there were more than 1,800 fatal tractor-trailer accidents in the state, and from 1990 to 2001 more than 4,200 train accidents.

Rail Incidents

Train derailments are so localized that the incidents themselves would not constitute a disaster. However, if there are volatile or flammable substances on the train and the train is in a highly populated or densely forested area, death, injuries, damage to homes, or wild fires could occur.
There have been 14 MAJOR train accidents in California since 1950.

Incident	Location
Metrolink collision	Glendale
Southern Pacific collision	Beaumont
Union Pacific derailment	Kelso
Freight train derailment	Cajon
Atchison, Topeka, & Santa Fe/Union Pacific collision	Cajon
Atchison, Topeka, & Santa Fe/ATSF collision	Corona
Amtrak passenger train collision	Stockton
Southern Pacific derailment	San Bernardino
Southern Pacific derailment	West Surf
Union Pacific collision	Kelso
Western Pacific derailment	Hayward
Southern Pacific collision	Thousand Palms
Southern Pacific collision	Tracy
Two Southern Pacific trains collision	Indio

In Los Angeles County, there was a total of 148 train accidents from January 2000 to June 2004. The following statistics append this figure:

- Deaths – 0
- Injuries – 13
- Loss - $7,978,342

TYPE OF ACCIDENT

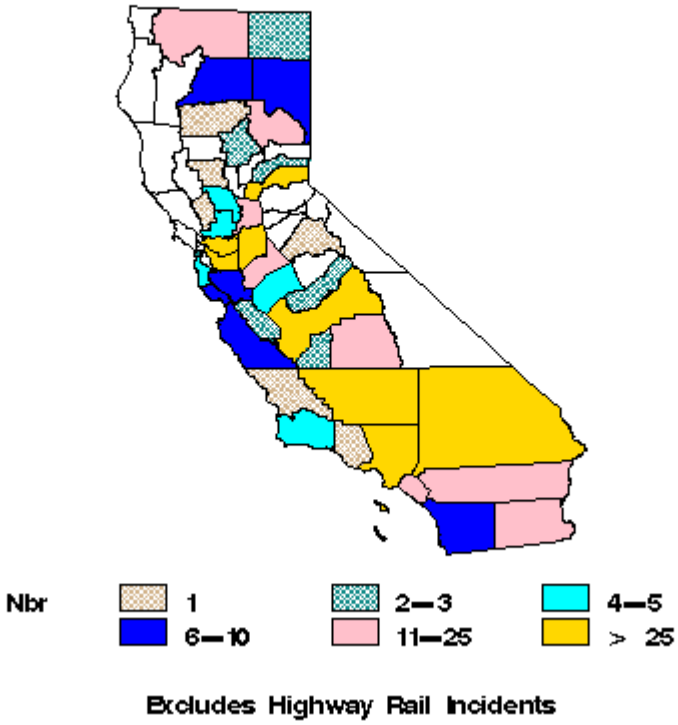
- Collisions – 9
- Derailments – 112
- Other – 27

CAUSE OF ACCIDENT

- Equipment – 1
- Human Error – 84
- Other – 13
- Signal Malfunction – 1
- Track Faulty – 49

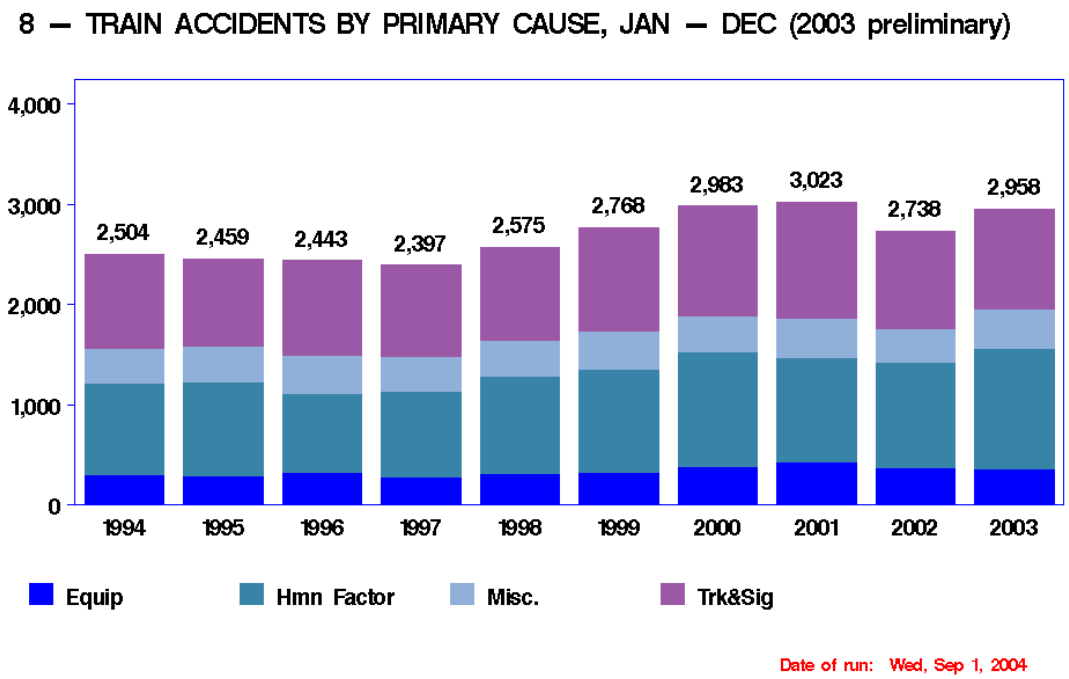
TRAIN ACCIDENTS FOR CALIFORNIA, January 2000 TO June 2004

RAILROAD: ALL TYPE OF TRACK: All



Excludes Highway Rail Incidents

Federal Railroad Administration, Office of Safety Analysis



City of Commerce Emergency Operations Plan

Railroad – Derailment, runaway trains and their containment are of concern to Commerce LASD. Union Pacific's internal policy appears to discourage release of information to the public. Lack of cooperation hinders LASD's ability to identify/contain damage and to notify appropriate agencies. Would like railroads to give employees OK to cooperate with emergency response teams, and want some type of statement issued for public safety purposes. *Discussion*: Committee agrees it is highly unlikely that representative from railroads will attend and/or participate in Hazard Mitigation Planning process. However, as a result of Union Pacific Railroad's derailment, Sheriff's department has become the central contact for the City of LA, and it's Emergency Ops' Bureau has been charged with notifying appropriate agencies. Per Bob Zarilli, railroad is trying to build a block wall encompassing 1700 linear feet, to help contain derailment/runaway trains. Bob will contact the railroads to see whether more cooperation with emergency response teams will be forthcoming.

A major train derailment that occurs in a heavily populated industrial area can result in considerable loss of life and property. As a train leaves it track, there is no longer any control as to the direction it will travel. Potential hazards could be overturned rail cars, direct impact into an industrial building or entering into normal street traffic.

Each of these hazards encompass many threats, such as hazardous materials incident, fire, severe damage to either adjacent buildings or vehicles and loss of life of those in either adjacent buildings or vehicles and pedestrians.

The City of Commerce is served by four railroads, operating 472 linear miles of railroad lines within the City. Three are transcontinental systems: Union Pacific Railroad services all rail lines east and north sections of the city, Burlington Northern Santa Fe Railroad services all east and west sections of the City, and Los Angeles Junction Railroad services the south sections of the City. Thus, virtually every industry and business is on a direct transcontinental rail line. Amtrak, a National rail service, passes through the eastern part of the City, enroute from Los Angeles to San Diego and back. Amtrak is a passenger line that come through the City as many as four times daily.

Local Elected Officials Encourage Railroads to Make Operations Safer In Wake of NTSB Report on Derailment

In response to the recently released National Transportation Safety Board's report, which blamed Union Pacific Railroad for the June 20, 2003 train derailment in the City of Commerce, which destroyed three homes and displaced more than 150 people, Commerce city officials, Congresswoman Lucille Roybal-Allard, Senator Martha Escutia and Assembly Member Marco Antonio Firebaugh released a joint statement encouraging railroads to make their railroad operations safer, especially in populated areas.

The joint statement reads, "We knew there were safety deficiencies in Union Pacific's operations, a fact now confirmed by the NTSB's report. What happened in Commerce is a tragedy that could have been much worse. We were very fortunate no lives were lost."

"Fundamental change in the way railroads operate is required so that this doesn't happen again. As elected officials, we encourage Union Pacific and the other railroads to make a focused and concerted effort to protect the health and safety of the people living along their rail lines. Standards similar to those Union Pacific has implemented since the derailment are a good beginning but far greater improvement is needed and must be implemented at a quicker pace."

According to the NTSB report, Union Pacific has implemented a number of safety measures. These include a reemphasis on methods for securing unattended trains, locomotives and railcars; audits of crews and supervisors to assess performance; updated maps for dispatchers; and split-point derail switches to stop runaway rail cars.

Officials from the National Transportation Safety Board released the full report on the Union Pacific train derailment last month. An official from the NTSB is pictured here on June 20 of last year speaking to the media near the scene of the derailment.

Additionally, encouraged by Assembly Bill 1618 (Firebaugh), UP has initiated a system-wide drill program to address runaway rail cars. The program details procedures for dispatchers and members of the UP Response Management Communications Center to follow in a derailment. The procedure calls for prompt notification of local emergency response agencies, a step that would allow the City of Commerce to use their Commerce Alert Network (CAN) System to notify affected residents if an evacuation becomes necessary.

Congresswoman Lucille Roybal-Allard (CA-34) added, "The NTSB report makes clear that the June 20 train derailment in Commerce resulted from negligence on the part of the Union Pacific (UP) Railroad train crews. I can assure you that I will continue to work at the federal level to find ways to prevent terrible accidents like this from happening again, not only in Los Angeles County, but elsewhere in the country."

The Commerce City Council will formally address the findings of the NTSB report at their regularly scheduled council meeting of May 4, 2004, being held at 7 p.m. in the Commerce City Council Chambers, 5655 Jillson Street, Commerce.

An axle that came free from one of the 31 freight cars landed here next to one of the eight residences struck by derailed equipment.

LA County Fire Department responded quickly to the scene of the derailment with numerous special units, including their Hazmat and the Urban Search and Rescue teams.

City staff provided assistance to residents affected by the derailment. Recreation Leaders Andres Solano and Tina Fierro are pictured here with a group of children who along with their families were affected by the derailment.

NTSB Docket Report for Residents Affected by the Derailment

Congresswoman Lucille Roybal-Allard has made advance copies of the NTSB's Docket Report on CD-Rom available only for residents affected by the June 20, 2003 Union Pacific Train Derailment. If you are an affected resident and would like to get your copy of the Report, contact Social Services Specialist Moyra Garcia-Canjura at (323) 887-4460.

The Railroad Accident Brief is available to the general public at the City Clerk's Office and each of the Commerce Public Libraries or on the NTSB's Website at http://www.ntsb.gov/Publictn/R_Acc.htm.

Commerce City Council Meeting

To address The National Transportation Safety Board
Report on the Union Pacific Train Derailment
Tuesday, May 4, 7 pm
Commerce City Hall Council Chambers 5655 Jillson Street Commerce

Recent Train Derailment: June 20, 2003,From the May 2004 issue of Report to the People Volume 44 No. 5

Municipal Notes

Council Approves Plans for Union Pacific Community Task Force

Efforts to improve issues related to the Union Pacific Railroad operation in the City of Commerce moved a step closer to reality as the Commerce City Council approved plans for a Community Task Force that is expected to address emergency notification procedures as well as other long standing community concerns.

The Council unanimously adopted the recommendation for the Task Force at its July 15, 2003 regular meeting. Representatives on the task force will include Commerce elected officials, Union Pacific Railroad representatives, community members and city staff. Invitations to participate will also be sent to the city's federal, state and county representatives.

Union Pacific railroad executives agreed to the formation of the Task Force following the derailment of 18 freight cars in the City of Commerce on Friday, June 20, 2003.

According to City Administrator Tom Sykes, Union Pacific Rail Road Vice President Jeff Verhaal appointed three Union Pacific representatives to the committee. The representatives will be reporting directly to Verhaal who has the authority to make commitments on behalf of Union Pacific. The representatives are General Superintendent of Transportation Services Oliver Cromwell, Director of Environmental Operations Brock Nelson and Senior Manager of Intermodal Terminal Operations Tony Jardino.

"It is very important that Union Pacific supports this issue and it appears Vice President Jeff Veerhall does based on these appointments," said City Administrator Tom Sykes.

Three community residents were appointed by members of the Commerce City Council; They are Ed Miles, Tina Baca Del Rio and Bob Eula. It is expected that the Council will continue to appoint community members to the task force.

The group will hold its first meeting at 2 p.m. on August 12 in the City Hall Conference Room. For more information, call Director of Community Development Stanley Smakowitz at (323) 722-4805.

Commerce Resolution Restricts Use of Remote Controlled Trains

Hoping to gain momentum to halt the use of Remote Controlled Locomotives within City limits, the Commerce City Council adopted a resolution that limits the operation of remote controlled rail cars and urges the Federal Railroad Administration (FRA) to take administrative action to ensure greater public safety. The resolution was unanimously adopted by the City Council at its July 15, 2003 regular meeting.

The key provisions of the resolution require that railroad operators contact the city before implementing the operation of remote controlled trains, prohibits the locomotives from moving hazardous materials or from being used near tracks occupied by cars containing hazardous materials, and requires that a trained operator be on board when the locomotives are used on a public or private rail crossing.

Other provisions of the resolution require that the cabs of the trains be secured to prevent acts of terrorism or unauthorized use in accordance with United States Homeland security measures.

The negative impact associated with the use of remote controlled locomotives throughout the United States was brought to the attention of the City Council by the Brotherhood of Locomotive Engineers on Thursday, June 26, 2003 during a special city meeting to report on the Union Pacific Railroad train derailment that occurred within the City of Commerce on Friday, June 20, 2003.

The FRA first issued guidelines on the use of remote controls in February 2001.

For more information on the resolution to restrict the use of remote controlled trains, call City Administrator Thomas Sykes (323) 722-4805.

From the May 2004 issue of Report to the People Volume 44 No. 5

Metro Rail

The Metro Rail system consists of:

Rail transit lines

- **Metro Blue Line** – operates in and through the cities of Los Angeles, Compton, Commerce and Long Beach. Estimated ridership—28,000-35,000 on a typical workday, growing 50,000 by the year 2000.

- **Metro Red Line** – the train will run underground fro downtown Los Angeles west along the Wilshire Corridor and eventually continue into the North Hollywood area. It is still currently construction and only a small portion is open.

- **Metro Green Line** – operates in and through the cities of Norwalk, Downey, South Gate, Paramount, Los Angeles, Hawthorne, Inglewood and El Segundo.

Metrolink – Commuter train network which connects long-distance commuters from outlying communities to Union Station in downtown Los Angeles.

An emergency condition begins when an LACTA employee becomes aware of the condition and makes the necessary notification. The employee will contact Central Control and will remain on-scene until a Rail Transit Operations Supervisor (RTOS) arrives or until released by the Central Control. Depending on the magnitude of the situation, the RTOS will act as the On-Scene Coordinator for the emergency response agencies or will release the train (if a train is involved) and handle any information needs relating to the situation.

Once everyone is safe and anyone needing medical attention is attended to, the first priority for the RTOS is to restore normal rail service. The RTOS will ask that power be restored if it has been removed and that the tracks are cleared of all vehicles and equipment. In a major incident the RTOS will work closely with the emergency response agencies to give any support or information needed. If one track can be cleared it is a priority to get that track open to service so that some train service can resume. The RTOS will remain on-scene until the incident scene is released by the appropriate agency.

NOTE: Evacuation of passengers from the trains, except in a dire emergency, must be with the Rail Controller's approval. The RTOS will monitor and remain in constant radio contact with the Rail Control Center at all times. Actual rescue of victims is the responsibility of the local Fire Department. On occasion, however, they may require assistance from transit system personnel equipment. This assistance shall be provided as requested. It is recognized that certain operations, such as lifting train cars and removing pinned victims, require specialized equipment and should only be done by trained LACTA personnel. Effective liaison between the Fire and/or Law Enforcement personnel in charge and the Accident Investigation Team is vital to avoid situations which may further endanger personnel or result in excessive damage to equipment.

The LACTA considers the following accidents/incidents as being major:

- Death
- Collision of a train with a maintenance vehicle of alighting personnel from a train tht requires medical attention.
- Mainline or yard derailments.
- Any accident/incident that requires evacuation of personnel
- Fire or explosion on a train or Metro Rail Line facility or construction site
- Collision between trains
- Collision between trains and track or way side equipment
- Accident/incident involving a runaway train resulting in damage or injury
- Accident/incident involving Mainline Inter-lockings
- Chemical spills or uncontrolled release of a compressed gas or hazardous materials
- Industrial injuries occurring at a Metro Rail Line Facility or construction site

Although the Metro Blue Line was designed to withstand the effects of an earthquake, damage to the line may still occur. Additionally, an earthquake may trigger secondary events which can impact the transit system's ability to safely conduct revenue services. In the event of a major earthquake on the Newport-Inglewood Fault (magnitude 7.0 or greater), it is expected that the entire Metro Blue Line can expect to sustain significant damage and will probably close. Segments of the line are also subject to liquefaction.

Segments of the line from Long Beach to Del Amo Passenger Station and from Artesia Passenger Station to Slauson Passenger Station as well as segments of the line between Del Amo and Artesia Passenger Stations and from Slauson to the 7th and Flower Station are expected to sustain serious

damage. Liquefaction is expected in Long Beach from First Street to Hill Street and from Imperial Highway to 103rd Street in Los Angeles.

There are also off-system hazards which may impact the system, including facilities that store or process hazardous materials, high voltage, petroleum pipelines and natural gas mains.

The Metro Link runs through the City of Commerce. The Metro Link substation is shared by the cities of Commerce and Montebello.

Trucking Incident

On any given day, Los Angeles County highways have thousands of large trucks carrying all sorts of cargos (including hazardous materials). The potential for a highway accident involving one or more trucks carrying volatile cargo is great. Generally, these accidents are handled as incidents by the appropriate jurisdiction; however, because of the dense population and shear volume of vehicular traffic, the risk of a crash becoming a catastrophic event grows.

In 2001, 429,000 large trucks (gross vehicle weight rating greater than 10,000 lbs.) were involved in traffic crashes in the United States: 4,793 were involved in fatal crashes. A total of 5,082 people died (12 percent of all the traffic fatalities reported in 2001) and an additional 131,000 were injured in those crashes.

In 2000, large trucks accounted for 4 percent of all registered vehicles and 7 percent of total vehicle miles traveled (2001 registered vehicle and vehicle miles traveled data not available). In 2001, large trucks accounted for 8 percent of all vehicles involved in fatal crashes and 4 percent of all vehicles involved in injury and property-damage-only crashes.

According to a 1999 study performed by the FMCSA (*Cost of Large Truck- and Bus-Involved Crashes*), the average cost per crash involving a large truck is $75,637. With 429,000 large truck-related crashes in 2001, the total monetary expense for 2001 is minimally $32,448,273,000.00 using 1999 cost estimates.

Chain reaction accidents on crowded interstate highways that intertwine Los Angeles County are also another consideration. These events can quickly grow into localized disasters that overstrain local responders. Potentially, they could expand into catastrophic incidents involving hazardous materials, mass casualties, fire, and transportation disruption. Depending on the occurrence, the response could involve mass evacuation, mutual aid and other aspects of managing a disaster.

A major truck incident that occurs in a heavily populated industrial area or residential area can result in considerable loss of life and property. When a truck is involved in an accident, there is no longer control as to the direction the truck will travel. Potential hazards could be overturned tank trailers, direct impact either into a residence or industrial building, or entering the normal flow of traffic.

Each of these hazards encompass many threats, such as hazardous materials incident, fire, severe damage to either adjacent buildings or vehicles, and loss of life of pedestrians or those in either the adjacent buildings or vehicles.

The City of Commerce is located within the southeast section of Los Angeles County. It is served by two major freeways, the 710 and 5 freeways, several major east-west truck routes and contains fourteen major truck terminal operations located on the east, west and south sections of the City's. The City also houses a major gas company loading terminal. Two major east-west routes serve the city.

Hazardous Materials Incident/Pipelines

Hazardous Materials Incident/Pipelines were rated as a HIGH PRIORITY RISK by the City of Commerce Hazard Mitigation Planning Team!

City of Commerce General Plan Safety Element

Commerce contains many industries which use, produce and store a variety of hazardous materials. Also, the extensive travel network traversing the City carries a relatively high percentage of industrial traffic. In the event of an industrial or traffic accident, many people may need to be evacuated.

Sound land use and emergency preparedness planning can reduce the risk of injury and property loss if an accident occurs. Recently enacted "right – to – know" laws enable City and County officials to identify high risk industries and work toward minimizing the exposure of persons to the hazard. Figure PS – 6 in the Technical Appendix locates those industries which have already been identified.

Technical Report

Many of the City's industries produce, use and store hazardous materials. Public safety issues involve not only the use of these materials in populated areas but also the transport and disposal of the substances in the urban environment.

The Commerce Public Safety Division has prepared a Hazard Analysis Map which store, use or produce hazardous materials. A "Disaster Response Summary" serves as a cross reference to the hazards map. This guide refers to each industry by number and indicates the type of hazard each particular industry presents. The hazard types include: Life Hazards (large numbers of people), Hazardous Materials (chemicals, explosives, vapors, etc.) Large Fire Loads, and Other and Unknown Hazards. The guide lists 14 high fire risk industries and 14 industries which pose potential widespread risks. Twelve industries are highlighted as special high risk industries, and these are shown on Figure PS-5, The list, which is not inclusive, categorizes fifty buildings in Commerce.

Of particular concern are the chemical industries. An accident at a chemical plant may easily impact areas beyond properties' boundaries. A number of chemical plants and chemical storage areas lie within the City limits, and in certain instances, chemical sites are adjacent to residential neighborhoods. Chemical spills or other such accidents have the potential to impact entire neighborhoods, as evidenced by the recent chemical accidents in the region.

The transportation of chemicals and other hazardous substances through the City also presents public safety problems. Two major freeways, three railway lines and numerous urban arterials traverse the City, and these transportation routes carry a variety of materials which could pose health risks to Commerce residents in the event of an accident. The possibility of such an occurrence may be relatively higher in Commerce given the number of heavily traveled traffic ways and the presence of the chemical and toher industries in the area.

The City of Commerce has prepared a Disaster Response Summary which provides an encompassing overview of the City's industrial locations and the potential involvement of hazardous material incidents. Coupling the database of potentially hazardous locations with other elements of the plan provides an analysis and planning tool that should prove most beneficial.

Hazardous materials are any substance or combination of substances which because of quantity, concentration, or characteristics may cause of significantly contribute to an increase in death or

serious injury, or pose substantial hazards to humans and/or the environment. The production land use of these hazardous materials is a part of our society over which local governments have little control.

Hazardous material incidents differ from other emergency response situations because of the wide diversity of causative factors and the pervasiveness of the potential threat. Circumstances such as the prevailing wind and geographic features in the vicinity of emergency incidents are relevant factors which may greatly increase the hazardous chemical dangers. Incidents may occur at fixed facilities where, most likely, the occupants have filed site specific emergency response contingency and evacuation plans. However incidents may also occur at fixed facilities where, most likely, the occupants have filed site specific emergency response contingency and evacuation plans. However incidents may also occur at any place along any land, water or air transportation routes, and (in event of vessel mishaps, aircraft accidents, misuse of agricultural chemicals and illegal dumping may occur in unpredictable areas, relatively inaccessible by ground transportation.

In Commerce the vast majority of hazardous material incidents are handled prior to their becoming a major disaster. Nevertheless, the emergency organization needs to be flexible and evolutionary in its response to a developing incident. This plan is designed to accommodate both the large number of relatively routine minor spill incidents and the truly catastrophic hazardous material disaster.

The increasing volume and variety of hazardous materials that are generated, stored, or transported within the City of Commerce is a problem of great concern to public officials and the community. A major hazmat accident and/or spill could endanger the health and safety of untold numbers of men, women and children who may be within a mile of the accident scene. A number of freight trains crisscross through the City hauling various types of hazardous and explosive materials including chlorine gas and LPG natural gas. Several fixed site industrial firms require potentially hazardous materials to operate their businesses. In addition there are numerous underground pipelines which carry flammable and hazardous liquids. Finally, commercial airliners overfly the City enroute to the Los Angeles International Airport which significantly increases the potential disaster threat.

The ongoing use, production, storage and transportation of hazardous materials in Commerce present constant and real threats to the safety of the community. The potential for chemical spills, gas leaks, structural fires and resource contamination results form the presence of over 100 major industries within the city limits involved in the production, storage or transportation of hazardous materials.

Superfund Clean-up Sites

50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO. EPA/ROD/R09-88/020	2.	3. Recipient's Accession No.
4. Title and Subtitle SUPERFUND RECORD OF DECISION San Gabriel Valley Areas 1, 2 and 4, CA Second Remedial Action			5. Report Date 09/29/88 6.
7. Author(s)			8. Performing Organization Rept. No.
9. Performing Organization Name and Address			10. Project/Task/Work Unit No. 11. Contract(C) or Grant(G) No. (C) (G)
12. Sponsoring Organization Name and Address U.S. Environmental Protection Agency 401 M Street, S.W. Washington, D.C. 20460			13. Type of Report & Period Covered 800/000 14.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

The San Gabriel Valley sites consist of four large areas of ground water contamination located approximately 10-20 miles east of Los Angeles in Los Angeles County, California. The sites include industrial, commercial, residential, and undeveloped areas. The contaminated ground water underlies significant portions of several cities and outlying areas of the San Gabriel Valley, and appears to be the result of inadequate handling and disposal of industrial solvents by dozens of industrial/commercial facilities. The Main San Gabriel Water Basin, which underlies the San Gabriel Valley, provides over 90% of the water supply for over 1 million people. Ground water and surface water, including the San Gabriel and Rio Hondo rivers, flow predominantly to the southwest through Whittier Narrows. Drainage through Whittier Narrows enters Central Basin to the south, another major water supply source. Ground water discharges to surface water in several locations including a creek in the southwest portion of the valley and the San Gabriel and Rio Hondo rivers near Whittier Narrows. Ground water contamination by VOCs has been detected in over 50 wells at concentrations above the action levels established by the California Department of Health Services. This ROD addresses contamination in the Bartolo Well Field, a private water utility, owned and operated by Suburban Water Systems (SWS) and
(See Attached Sheet)

17. Document Analysis a. Descriptors
Record of Decision
San Gabriel Valley Areas 1, 2 and 4, CA
Second Remedial Action
Contaminated Media: gw
Key Contaminants: VOCs (PCE, TCE)
b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report) None	21. No. of Pages 60
	20. Security Class (This Page) None	22. Price

(See ANSI-Z39.18) *See Instructions on Reverse* OPTIONAL FORM 272 (4-77) (Formerly NTIS-35) Department of Commerce

RECORD OF DECISION

DECISION SUMMARY

1.0 SITE LOCATION AND DESCRIPTION

The San Gabriel Valley Areas 1-4 sites are located approximately 10-20 miles east of Los Angeles in Los Angeles County in southern California (Figure 1). The sites are four large areas of groundwater contamination that underlie significant portions of the cities of Azusa, Baldwin Park, La Puente, City of Industry, West Covina, El Monte, South El Monte, Monrovia, Arcadia, Rosemead, Alhambra, and other municipalities or unincorporated areas of the San Gabriel Valley. The general areas of contamination associated with the four San Gabriel Sites are shown in Figure 2. The sites include industrial, commercial, residential, as well as undeveloped areas.

The San Gabriel Valley is an alluvial basin bounded by the San Gabriel Mountains, which rise up to 10,000 feet in the north, and to the east, southeast, southwest, and west by a series of low-level (under 1000 feet) sedimentary hills--the San Jose, Puente, Merced, and Repetto Hills. The major surface water drainage in the San Gabriel Valley is the San Gabriel and Rio Hondo Rivers which flow from the northeast to the southeast where they flow from the valley through the Whittier Narrows, a two-mile gap between the Merced and Puente Hills. There is typically no flow in the rivers during the summer dry season except near the Whittier Narrows area, where the flow is primarily a combination of sewage treatment plant effluent and groundwater discharge. The valley is a broad plain that slopes at an average of 65 feet per mile from the foot of the San Gabriel Mountains toward Whittier Narrows.

The Main San Gabriel Groundwater Basin, which underlies the San Gabriel Valley, consists primarily of highly permeable gravel and cobble deposits. Numerous interbedded lenses of clays also occur, particularly in the southern portion of the basin and near the surrounding hills. Regional groundwater flow velocities range as high as 1000 feet per year. Groundwater flows generally in the same pattern as the surface water drainage with subsurface drainage flowing out of the San Gabriel Basin through the Whittier Narrows area into Central Basin to the south. In some areas of the valley, however, such as in the west valley near San Gabriel, large-scale groundwater pumping has resulted in a reversal of the historical groundwater flow direction. Groundwater also discharges to surface water along San Jose Creek in the southeast portion of the valley and in the San Gabriel and

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Rio Hondo Rivers near Whittier Narrows. Substantial recharge of groundwater occurs in the unlined San Gabriel river bed and in spreading basins located in the northern portion of the valley.

The San Gabriel Basin provides over 90% of the water supply for a population of over 1 million people. Forty-five different water purveyors extract groundwater from the basin, as well as additional commercial/industrial users. Water rights within the basin have been adjudicated. Water rights for the basin's pumpers have been determined as a percentage of the Operating Safe Yield, which is established annually by the Main San Gabriel Basin Watermaster based on water level measurements within the basin. The location and quantity of groundwater pumped is not controlled, however, an assessment fee is charged for any pumping in excess of water rights. The assessment fee is essentially a charge for the purchase of imported surface water to be artificially recharged in the basin to replace the excess groundwater pumped.

In addition to the intrabasin adjudication, there is also an adjudication of water rights between users of the Main San Gabriel Basin and Central Basin to the south (see Figure 1). This interbasin adjudication guarantees an average annual usable flow (groundwater plus surface water) into Central Basin through Whittier Narrows. If the guaranteed flow requirement is not met, the Main San Gabriel water users must pay for the purchase of replacement surface water that is used for artificial recharge of Central Basin just south of Whittier Narrows.

The subject of this Record of Decision, Suburban Water Systems'(SWS) Bartolo Well Field, consists of four public water supply wells located along the east side of the San Gabriel River in the Whittier Narrows area (Figure 3). The contamination in this area may be associated with either the San Gabriel Valley Areas 1, 2, or 4 sites (see § 6.0, page 9) or some combination thereof. These four wells provide about 55-60% of the water supply for approximately 17,000 commercial and residential water customers in SWS's Whittier Service District. In addition, the Bartolo Well Field provides a small percentage of the water supply for the neighboring La Mirada Service District. SWS is a private water utility with numerous groundwater wells in the San Gabriel Valley.

2.0 SITE HISTORY

Prior to World War II, the San Gabriel Valley was primarily an agricultural area. During the war, several industries that

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used large amounts of industrial solvents were located in the valley. This was followed by the rapid development of industrial/commercial and residential areas in the valley during the postwar period. Today, many different industries in the valley are large users of the chlorinated solvents that have contaminated groundwater in the basin. Given this history of industrial development, in all likelihood the contamination of the groundwater basin began as early as the increase in industrial activity during the war. Recent investigations of potential sources of groundwater contamination by the Los Angeles Regional Water Quality Control Board have indicated that the basin's contamination is the cumulative result of the solvent and waste handling and disposal practices of dozens of different industrial/commercial facilities located throughout the valley.

Groundwater contamination by volatile organic compounds (VOC) was first detected in the valley when Aerojet Electrosystems in Azusa sampled a nearby groundwater well owned by Valley County Water District and found 1800 parts per billion (ppb) of trichloroethylene (TCE). Subsequent sampling by the California Department of Health Services (DHS) and the Los Angeles County Department of Health Services identified over 50 wells contaminated with TCE, perchloroethylene (also known as tetrachloroethylene or PCE), or carbon tetrachloride (CTC) at concentrations above the action levels established by DHS. The action levels are those concentrations above which DHS recommends that public water suppliers take action to reduce the level of contamination in drinking water supplies; they have been set at 5, 4, and 5 ppb, respectively, for TCE, PCE, and CTC. All water purveyors in the San Gabriel Valley, except for three small mutual water companies in El Monte, were able to supply water that met the DHS action levels by a combination of shutting down the most highly contaminated wells, blending water from contaminated wells with water from clean wells, or using simple aeration systems for treatment of water contaminated with low levels of VOCs.

Four areas of groundwater contamination in the San Gabriel Valley, designated as San Gabriel Valley Areas 1-4, were proposed for inclusion on the National Priorities List in September 1983, attaining final NPL status in May 1984. A San Gabriel Management Committee was established by DHS in 1983 for the purposes of coordinating remedial action in the San Gabriel Valley. The committee, which consisted of representatives of EPA, state and local regulatory agencies, water purveyors, and a public interest group, agreed on three primary goals: (1) take immediate action to supply the three mutual water companies in El Monte with a clean water supply that meets DHS action levels; (2) identify the

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sources of groundwater contamination and take action to control existing sources; and (3) develop a long-term strategy for remedial action in the San Gabriel Basin.

To address the first goal, EPA prepared a focused feasibility study (FFS) to evaluate interim remedial measures (IRM) to solve the water quality problems of the three mutuals in El Monte. The FFS was released for public comment in December 1983 and a Record of Decision (ROD) selecting air stripping treatment as the IRM action was signed in May 1984. Subsequent to the May 1984 ROD, a pre-design study was initiated that led to substantial revisions to the cost estimates for the alternatives considered in the FFS. Based on the revised cost estimates, EPA proposed in October 1986 to revise its remedy selection for the IRM and instead select installation of carbon adsorption treatment systems for the three mutuals. After a public comment period, an amendment to the 1984 ROD changing the remedy selected to carbon adsorption was signed in September 1987. Construction of a treatment system for one of the mutual water companies--Richwood Mutual Water Company--is currently underway. Design of a treatment system for a second mutual water company--Rurban Homes--was completed, but construction was put on hold as VOC levels in their wells have dropped below DHS action levels. The third mutual water company involved--Hemlock--declined EPA assistance and has installed a carbon adsorption treatment system on its own.

To address the second management committee goal, EPA and state agencies have conducted several activities to identify potential sources of VOC contamination within the basin (see § 3.0, Enforcement, for further discussion). The third management committee goal is the focus of the San Gabriel sites remedial investigation/feasibility study (RI/FS). An overall RI/FS for all of the San Gabriel sites is being conducted rather than a separate RI/FS for each site. EPA is managing the sites through one large basinwide study because all of the areas of contamination are located in one hydraulically-connected basin, where actions to address the contamination in one area may have a significant effect on the contamination in nearby areas.

The RI/FS for the San Gabriel sites was initiated by EPA in 1984 with a preliminary investigation termed the Supplemental Sampling Program (SSP). This investigation, which was completed in May 1986 with the release of a draft report, included the sampling of 70 existing groundwater wells for a full range of organic chemical contamination, collection and evaluation of existing data, and regional groundwater flow modeling. The EPA sampling was coordinated with sampling conducted by water

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purveyors under a new state law (Assembly Bill 1803) and by DHS, so that a total of 195 existing wells were sampled in 1985. The primary findings of the SSP were:

- VOCs were the only major organic contaminants affecting public water supply wells in the basin;
- the areas of contamination were much larger than previously thought based on sampling data obtained prior to 1985;
- the potential for significant migration of contamination was great and a large number of currently clean wells were threatened by contamination;
- contamination may potentially migrate through Whittier Narrows into Central Basin, thereby threatening additional wells; and
- use of an alternative water supply (imported surface water) to replace the contaminated groundwater supply in the San Gabriel basin was not feasible on a regional basis.

The modeling results from the SSP showed that 36 wells were potentially threatened by contamination above DHS action levels and EPA proposed Maximum Contaminant Levels (MCL) within 5 years if the contamination migrated at the same velocity and direction as regional groundwater flow. In planning for the next phase of the RI/FS, EPA considered whether any operable units should be planned to address the water quality problems of specific water companies, as the IRM had done for the three mutuals. The owners of the 36 wells were invited to a meeting in April 1987 to inform them of their potential problem and to obtain information on the potential public health threat if these wells became contaminated.

Prior to that meeting, in the fall of 1986, SWS contacted EPA concerning contamination at its Bartolo Well Field in Whittier Narrows. VOC levels had recently increased in these wells, which were located directly downgradient of contaminated wells (the Bartolo wells were included on the list of 36 potentially threatened wells). The Bartolo wells provide the major portion of the water supply (over 55 percent) for a population of approximately 70,000 residents of the City of Whittier. In addition, as a center of large capacity pumping in the Whittier Narrows area, the pumping has a potentially large

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effect on the migration of contaminants through the Whittier Narrows area into Central Basin. The current pumping capacity of the Bartolo Well Field is approximately 9,300 gallons per minute. When SWS contacted EPA, they had completed a study evaluating various options to provide clean water in the event contaminant levels increased above DHS action levels. After discussions with SWS regarding the Bartolo well field contamination, EPA initiated the Suburban Water Systems Bartolo Well Field Operable Unit Feasibility Study (OUFS) in March 1987 with the goal of evaluating alternatives to address the public health threat posed by contamination of the Bartolo well field, as well as evaluating the role that extraction at the Bartolo Well Field could play in controlling contaminant migration in the Whittier Narrows area. On June 22, 1988, the draft SWS Bartolo Well Field OUFS was released for public comment.

3.0 ENFORCEMENT

The San Gabriel sites were first discovered based on contamination of public supply wells. At the time of listing, the sources of contamination were unknown. EPA and the Los Angeles Regional Water Quality Control Board have conducted numerous activities over the last several years to identify the sources of groundwater contamination in the San Gabriel Valley. In August 1983 and January 1984, EPA issued 88 RCRA Section 3007/CERCLA Section 104 information request letters to facilities suspected of being major users of chlorinated solvents in the San Gabriel Valley. Federal, state, and local agency files pertaining to 49 facilities (including 29 major solvent users as identified by the information request letter responses and 19 landfills in the San Gabriel Valley) were reviewed in 1986-87. Site inspections were also conducted for 6 facilities in the San Gabriel Valley. In 1987 and 1988, EPA issued information request letters to an additional 208 facilities in the Baldwin Park/Azusa area, as well as follow-up information request letters to 12 high priority sites out of the original 88 letter recipients.

The RWQCB began source investigation activities in 1980 with an industrial survey to determine major solvent users in the San Gabriel Valley. The results of this investigation were used to develop EPA's list of the first 88 information request letter recipients. More recently, in 1986, the RWQCB began a major source investigation program called the AB 1803 Followup Program. Under this program, an area (typically one square mile) surrounding contaminated public supply wells was established within which a door-to-door industrial survey would be completed. Inspections are conducted at all facilities potentially using

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solvents. Facilities that may have had a release due to their handling or storage practices are requested to conduct a leak detection program for their facility. If soil contamination is found, an expanded soil and groundwater investigation is required. As of this time, the RWQCB is currently involved in investigations in the El Monte, La Puente, and City of Industry areas. Approximately 60 facilities have reached the groundwater investigation phase. EPA plans to provide funding to the RWQCB through a Cooperative Agreement to expand their AB 1803 Followup Program into additional areas of the San Gabriel Valley.

EPA is currently reviewing the RWQCB files to determine which facilities are potential sources of groundwater contamination and should receive general notice letters. Although EPA plans to issue general notice letters in the near future, the investigation is not yet sufficiently advanced to issue special notice letters for implementation of the SWS Bartolo Well Field Operable Unit.

4.0 COMMUNITY RELATIONS

The public comment period for the OUFS and the proposed plan opened on June 22nd and continued through July 22, 1988. A public meeting was held on July 13th at the Whittier Community Center Theatre in Whittier and was attended by approximately 60 people.

Prior to the beginning of the public comment period, EPA published a notice on June 19th in both the San Gabriel Valley Tribune and Whittier Daily News. The notice briefly described the proposed plan and announced the public comment period and the public meeting. The notice also announced the availability of the proposed plan and the draft OUFS for review at the information repositories established at the Whittier Public Library the La Puente Public Library, the Upper San Gabriel Valley Municipal Water District offices in El Monte, and the EPA Region 9 office in San Francisco.

A fact sheet describing the proposed plan was delivered to all of the information repositories on June 22nd. Copies of the fact sheet were mailed on June 24th to the EPA general mailing list for the San Gabriel sites, which included about 800 names of members of the general public, elected officials, and media representatives. In addition, EPA sent a letter notifying the City Manager of Whittier of the proposed plan and upcoming public meeting. Copies of the proposed plan and draft OUFS report were also provided to the state and local agencies on the San Gabriel

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Valley Superfund Project Technical Advisory Committee, the Central and West Basin Replenishment District, and Suburban Water Systems. Intergovernmental review was initiated in a letter of July 22nd through the Governor's Office of Planning and Research/State Clearinghouse.

The OUFS evaluated two different locations for siting of a new water treatment facility. To solicit comment from the community on locating the treatment facility remote from the Bartolo Well Field at the Bartolo Transmission Main High Point alternative site, EPA delivered notices door-to-door in the vicinity of the High Point site. The notices included the proposed plan fact sheet, a map of the Bartolo Well Field/north Whittier area showing the High Point location, and a cover letter encouraging public comment regarding the alternative locations. The delivery was made in two phases. On July 9th, the notices were delivered to about 800 homes in the residential area near the High Point location who were thought to be in visual range of the potential site. On July 13th, notices were delivered to about 2,400 homes located somewhat further from the High Point location.

In addition to EPA's community relations activities, SWS cooperated in notifying their customers of EPA's proposed plan. A notice was mailed on June 22nd to all of their approximately 34,000 customers in the Whittier and La Mirada service districts (who would potentially receive drinking water from the proposed treatment plant). The notice briefly described the OUFS, announced the public comment period and public meeting, and invited SWS's customers to contact SWS to obtain a copy of the proposed plan fact sheet. EPA provided about 800 copies of the fact sheet to SWS that were distributed to customers who called in a request. SWS also sent letters to the City Managers of Whittier and La Mirada notifying them of the proposed plan and the public meeting.

EPA has prepared the attached responsiveness summary, which provides responses to the comments submitted in writing during the public comment period, as well as comments made by attendees at the July 13th public meeting.

5.0 DECISION SCOPE

As discussed in the Site History (page 4), EPA has previously selected a remedy to address the public health threat posed by contamination of the public water supply wells of the three mutual water companies in El Monte. The response action

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that is the subject of this decision document constitutes the second EPA remedial action in the San Gabriel Valley and is designed to achieve two objectives:

- to partially control the movement and spread of contaminants in the Whittier Narrows area of the San Gabriel Valley, thereby contributing to aquifer restoration at the San Gabriel Valley Areas 1, 2, and 4 sites; and

- to address the potential public health threat posed by contamination of SWS's Bartolo Well Field.

This response action is the first phase of a larger response action planned for the Whittier Narrows area to control the migration of contamination into Central Basin to the south, where additional public supply wells are potentially threatened by contamination. EPA is currently conducting a Whittier Narrows operable unit RI/FS that is scheduled to be released for public comment in 1989, leading to a Record of Decision by January 1990. The response action selected in this decision document will be incorporated into the EPA response action for the entire Whittier Narrows area.

This response action addresses a small part of the overall groundwater contamination problem in the San Gabriel Valley Areas 1,2,and 4 sites. It is expected that several additional operable units will be planned to address other aspects of the the San Gabriel sites' contamination problems. EPA is currently working to identify and set priorities for future operable units that are necessary to address the public health threat posed by the San Gabriel Valley sites.

6.0 NATURE AND EXTENT OF CONTAMINATION

Large areas of the San Gabriel Valley have groundwater contaminated with volatile organic compounds at concentrations that exceed EPA MCLs or DHS action levels (Figure 2). Although there are substantial gaps of data concerning the extent of contamination in the San Gabriel Valley (including areas as large as a mile across for which no groundwater quality data exists), it is known that the regional groundwater flow from the Area 1, 2, and 4 sites is toward the Whittier Narrows area. The areas of contamination shown in Figure 2, which is based on current available groundwater quality data in the San Gabriel Valley, have been drawn conservatively in that if no data is available, the area is assumed to be uncontaminated. Based on regional

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groundwater flow patterns and limited available data regarding the vertical extent of contamination (see discussion below), it is highly probable that the "clean" areas separating the contamination in the Whittier Narrows area from the major plume areas in the Area 1, 2, and/or 4 sites are actually contaminated.

Figure 4 shows the maximum historical concentrations of the two primary contaminants of concern, PCE and TCE, in wellhead samples from production wells in the Whittier Narrows area, including the Bartolo Well Field. Based on this data, a map of the areas of groundwater contamination in the Whittier Narrows area has been prepared (Figure 5). The Bartolo Well Field is located near the western edge of the main area of contamination in the Whittier Narrows area. Table 1 shows the maximum concentrations found in SWS's wells in the Bartolo well field, along with EPA MCLs and DHS action levels for the contaminants detected. As of this date, only one contaminant has been detected at levels above EPA's MCLs or DHS action levels: Well 201W4 (Recordation No. 01901433) has recently showed TCE concentrations above the MCL of 5 ppb (6.3 ppb). The concentration of contaminants in SWS's wells has been increasing over the last two years. Figures 6 and 7 show the increasing trend of historic TCE and PCE concentrations for Wells 201W2 and 201W4. The trend for the other two SWS wells is more equivocal, showing no clear increasing trend. Simple analytical modeling of the zone of capture of the Bartolo wells was completed and showed that Well 201W4 may be pulling much of its water from the contaminated area to the east.

Limited testing of production wells has also been conducted to determine the vertical extent of contamination in the vicinity of the Bartolo well field. The special testing was completed for one of SWS's wells (201W4) and the nearest well upgradient to the Bartolo wells, San Gabriel Valley Water Company Well B2. The testing procedure, referred to as "well logging and depth specific sampling," utilizes existing production wells with multiple perforated intervals to determine the quantity of water produced from each interval, and the depth-specific water quality. The results of this testing are shown, along with a representation of the local geologic conditions based on available well logs, in Figure 8. The limited data shows that the most contaminated water may occur within the zones of intermediate depth (200-350 feet). The shallower zones are contaminated at lower levels, and the deepest zones are even less contaminated. This suggests that sources of contamination far upgradient of the Bartolo well field may contribute a significant portion of the groundwater contamination found in this area, since if local sources were the primary source of contamination,

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air emissions. A recent court ruling has stayed enforcement of this rule, so it is not legally considered an ARAR at this time, but instead as a "to be considered" requirement (see ARARs--§ 10.0 on page 18). In this decision document, the remedy selected still incorporates the air emissions control despite the fact that SCAQMD Rule 1167 is not considered an ARAR.

The rationale behind this is that SCAQMD fully intends to pursue the procedural steps needed to establish Rule 1167 as a legally enforceable promulgated regulation in the near future. In addition, the South Coast Air Basin is considered nonattainment for ozone under the Clean Air Act. As the intent of Rule 1167 was to control the VOC precursor emissions to ozone, it is reasonable to include air emissions control as part of this response action to assist SCAQMD's efforts to reach attainment status in the South Coast Basin. Finally, public comment submitted to EPA in writing and made by attendees at the public meeting was overwhelmingly in support of including air emissions controls regardless of the legal status of SCAQMD Rule 1167.

The proposed plan included incorporation of well modifications to selectively extract groundwater from the most contaminated zones in the aquifer. This recommendation was based on the limited data available that showed well modification may be feasible. The actual extent of incorporating well modification in the response action depends on whether additional data collected during the design phase supports its feasibility.

During the design phase, well logging and depth-specific sampling of wells in the Bartolo Well Field will be conducted, and one or more groundwater monitoring well clusters may be installed nearby and sampled to better determine the vertical distribution of contamination. Based on the data obtained through this testing, a determination of the feasibility of well modification will be made. If well modification is determined to be feasible, the actual modifications to SWS's wells will be designed. In addition, the need or desirability of drilling new extraction well(s) to extract the most highly contaminated groundwater will be subsequently determined and new wells designed if so indicated.

The proposed plan also described how, at a minimum, EPA will incorporate floodproofing features into the design of the treatment system at the Bartolo Well Field. During the design phase, alternative floodproofing options will be identified. The actual floodproofing measures incorporated into the design will be selected at that time based on their potential to reduce flood damage and their cost-effectiveness.

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9.0 DESCRIPTION OF ALTERNATIVES

As described in the Decision Scope section (page 8), EPA established two primary remedial response objectives for the SWS Bartolo Well Field response action:

- to control migration of contaminants from the San Gabriel Basin through Whittier Narrows into the Central Basin, thereby contributing to aquifer restoration at the San Gabriel Valley Areas 1, 2, and 4 sites; and

- to address the potential public health threat posed by contamination of SWS's Bartolo Well Field by providing residents in SWS's Whittier District with a water supply meeting federal and state drinking water standards.

General response actions that may be applicable to groundwater contamination were screened based on two criteria--the ability to meet the remedial response objectives and the applicability of the technology to the site conditions. Several technologies were dismissed from further consideration based on these criteria. For instance, containment options involving vertical barriers such as slurry walls were dismissed because they are physically limited to about 200 feet in depth and groundwater contamination has been detected to greater depths in the Whittier Narrows area. Similarly, in situ treatment was not evaluated further since the technology has not advanced to the state where it could be reliably used in an aquifer such as the San Gabriel Basin where the horizontal and vertical extent of contamination is so large.

For response actions involving extraction and treatment of contaminated groundwater, options for disposal of treated groundwater that did not involve discharge to SWS's water supply distribution system were eliminated from further consideration. The reason for this is that direct discharge of treated water to SWS's water supply system is the only way that the second response objective can be met without supplying an alternative water supply in addition to the groundwater response action at a substantial additional cost.

Figure 9 shows the alternatives developed and evaluated in the OUFS. One alternative (Alternative I) was developed--alternative water supply--that would only meet one of the remedial response objectives. This alternative would involve replacing the water supply currently obtained from the Bartolo Well Field with water purchased from the Metropolitan Water

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District of Southern California (MWD) and conveyed through a new pipeline. This alternative would meet the objective of supplying SWS's customers with water that meets federal and state drinking water quality standards. However, it would not meet the objective of controlling the migration of contaminants through the Whittier Narrows area. Under this alternative, response action to meet the second objective would be deferred to the future Whittier Narrows operable unit.

All of the other remedial alternatives considered (except the no action alternative) involve extraction of groundwater from the Bartolo Well Field (to meet the first remedial response objective), treatment of the contaminated water, and use of the treated water as water supply for SWS's customers (to meet the second remedial response objective). The alternatives differed in their choice of treatment technology, level of treatment, treatment technology configuration, and location of the treatment system.

Two treatment technologies, identified by EPA's Drinking Water Office as the Best Available Technologies for treatment of VOCs in drinking water applications, were evaluated in detail:

- Packed tower air stripping treatment (Alternatives A-E); and

- Liquid phase granular activated carbon adsorption (GAC) treatment (Alternatives F-H).

All of the treatment system alternatives were developed to treat contaminated water at a rate of 10,000 gallons per minute, at about the nominal production capacity of the wells in the Bartolo Well Field. In addition, all of the treatment system alternatives are assumed to operate over the expected design life of the installed equipment (30 years). Whether the treatment facilities would need to operate longer than 30 years depends on the selected remedy for the Whittier Narrows Operable Unit and other operable units at the San Gabriel Valley Areas 1, 2, and 4 sites.

Several alternative air stripping alternatives were developed by using different combinations of three components--level of treatment, control of emissions, and location. Two different levels of treatment were evaluated. The alternative termed "minimum air stripping" would treat the contaminated water to a level where the contaminant concentrations would meet EPA MCLs and DHS action levels (Alternatives A & C). The "maximum air stripping" alternative

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would treat to levels below MCLs and action levels at which the cumulative residual public health risk would be at or below the 10^{-6} level (Alternatives B, D, & E). Air stripping alternatives were developed that did not incorporate any air emissions controls (Alternatives A, C, & D), as well as alternatives that did include gas phase GAC treatment of off-gas emissions (Alternatives B & E). The alternatives with air emissions controls would reduce expected VOC emission levels by an estimated 90%. Air stripping alternatives were also developed for two alternative treatment system locations. One location was on SWS property at the Bartolo Well Field (Alternatives C-E). Since this location is in the 100-year floodplain of the San Gabriel River, an alternative site (termed the Bartolo Main high point location) for the treatment system was considered that is about one and one-half miles to the south along the transmission main that carries water from the Bartolo Well Field to SWS's Whittier Service District (Alternatives A & B).

Two configurations of carbon adsorption systems were evaluated for consideration. Under one configuration (single bed), water would flow through a single carbon vessel before entering the treatment system (Alternative H), while under the other configuration (dual bed), the water would flow through two carbon vessels in a series combination (Alternatives F & G). The dual bed configuration has a higher capital cost, but provides an extra level of protection since if contamination "breaks through" the first carbon bed there is still a second carbon bed to provide treatment of the contaminated water. In addition to the alternative treatment system configurations, carbon adsorption alternatives were also developed for the two different locations for the treatment system described above (Alternatives F & G at the Bartolo Well Field site and Alternative H at the Bartolo Main high point site).

An additional extraction alternative was developed as an option that could be combined with any of the treatment system alternatives--well modification. Based on the limited well logging and depth-specific sampling that was conducted (see § 6.0, pp. 10), it appears that the contamination is more prevalent in specific zones of the aquifer at the Bartolo Well Field. Under the well modification alternative, the existing Bartolo wells would be modified and/or new production wells would be installed to selectively extract water from the depths where the most contamination is found. In this way, the amount of groundwater contamination removed from the aquifer by the response action will be maximized, which will assist in the control of migration of contaminants in the Bartolo Well Field area. Figures 10 and 11 show conceptually how well modification

could increase the removal of groundwater contamination from the aquifer.

Further testing during the design phase will have to be conducted to determine what, if any, well modifications are feasible. For the purposes of estimating the cost of this alternative, it was assumed that the four existing wells are modified so that only water from the upper two zones are extracted and one new production well is installed to make up for the lost production capacity.

Estimates have been made of the maximum potential depth-specific contaminant concentrations, based on the results of the depth-specific sampling conducted at San Gabriel Valley Water Company Well B2, located upgradient of the Bartolo Well Field. The estimates were obtained by multiplying the maximum historical wellhead concentrations found in Well B2 by the ratio between the maximum depth-specific concentration and the wellhead concentration found during the depth-specific sampling of Well B2. Since selective extraction of contaminated water may be implemented with any treatment system alternative, the estimated maximum potential depth-specific contaminant concentrations were used in estimating influent concentrations for the treatment system alternatives' conceptual designs.

Estimated total present worth costs for the treatment system alternatives that were developed in detail range from about 6.6 to 26.1 million dollars. The estimated cost of the well modification option (which would be in addition to the cost of any of the treatment system alternatives) is about $2.6 million. The alternative water supply alternative alone would have an estimated total cost of $42.1 million. Table 2 gives a summary of the capital and operations and maintenance costs for the alternatives.

10.0 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)

Applicable or relevant and appropriate requirements (ARARs) can be grouped into three categories: chemical-specific ARARs; action-specific ARARs; and location-specific ARARs. The chemical-specific ARARs that apply to this response action are the Safe Drinking Water Act MCLs. California DHS has set action levels for VOCs, a few of which are more stringent than the MCLs or for which no MCL has been established. While the DHS action levels are not promulgated standards and are not, therefore, ARARs, they have been taken into consideration during development of remedial action alternatives. In addition, DHS has recently

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proposed MCLS for a number of VOCs. Of particular significance, the proposed MCL for PCE is 2 ppb, which is lower than the current DHS action level of 4 ppb. Although the proposed MCLs are not yet promulgated, they have been taken into consideration during the remedy selection process. Table 3 lists the MCLs and DHS action levels for the primary contaminants from the Public Health Evaluation.

Table 3 also lists the Maximum Contaminant Level Goals (MCLGs) for the primary contaminants. MCLGs, which are based only upon health criteria, are not directly applicable as chemical-specific requirements because they are not enforceable standards. In accordance with the EPA "Interim Guidance on Compliance with Applicable or Relevant and Appropriate Requirements (OSWER Directive 9234.0-05)," the MCLs are considered the chemical-specific ARARs because they are (1) the enforceable drinking water standards, (2) required to be set as close to the MCLGs as is feasible, taking into consideration the best technology, treatment techniques and other factors (including cost), and (3) protective of public health to within EPA's acceptable carcinogen risk range of 10^{-4} to 10^{-7}.

The primary action-specific requirement affecting this response action is the South Coast Air Quality Management District's (SCAQMD) Rule 1167. The purpose of Rule 1167 was to control VOCs as precursor emissions to ozone formation in the South Coast Air Basin. The South Coast Air Basin is currently in nonattainment status with respect to the National Ambient Air Quality Standards (NAAQS) for ozone. In California, authority to regulate stationary sources of emissions has been delegated to local air quality management districts. Therefore, this rule, having been duly promulgated by SCAQMD in early 1988, constituted a promulgated state requirement under a state environmental law--as set forth in section 121(d) of the Superfund Amendments and Reauthorization Act of 1986 (SARA)--that is generally applicable.

This rule requires that all air stripping facilities treating contaminated groundwater that emit more than one pound per day of total VOC emissions install air emission controls capable of reducing air emissions by 90%. At the current contaminant levels found in the Bartolo wells, an air stripping facility would be expected to emit just below one pound per day of total VOCs; however, with the projected future wellhead and depth-specific contaminant concentrations that are expected to be extracted from the Bartolo Well Field for treatment in the near future, the air emissions will exceed the one pound per day limit.

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Rule 1167 was considered an ARAR in the proposed plan since the rule was promulgated on January 8, 1988 and scheduled to take effect before installation of a treatment system at the Bartolo Well Field. Therefore, the proposed plan included the installation of air emission controls (off-gas vapor phase GAC treatment) to comply with SCAQMD Rule 1167. Subsequent to the release of the proposed plan, a state court ruled on a lawsuit filed by the Upper San Gabriel Valley Municipal Water District challenging the adoption of Rule 1167 without preparation of an Environmental Impact Report (EIR) as required under the California Environmental Quality Act (CEQA). The court's decision ordered SCAQMD to rescind its adoption of the rule and refrain from re-adopting a rule governing emissions from air stripping equipment pending completion by SCAQMD of an EIR focused on the potential impact of the rule on groundwater supplies, groundwater quality, and imported water supplies in the SCAQMD area. Since the rule is no longer generally applicable to existing or proposed air stripping systems operated by private parties within the South Coast Basin, it is not legally an ARAR. It has been taken into consideration during the remedy selection process, however, since SCAQMD has indicated that it fully intends to proceed to adopt Rule 1167 as a promulgated requirement.

Several of the alternatives developed included construction of treatment systems at the Bartolo Well Field. The Bartolo Well Field is located within the flood retention basin of the Whittier Narrows Dam. The proposed treatment system location is located within the 100-year floodplain of the San Gabriel River. Two location-specific ARARs apply to actions that would take place within the floodplain. First, the Floodplain Management Executive Order (E.O. 11988), directs EPA to avoid actions located within or affecting the 100-year floodplain unless the floodplain location is the [redacted]. In addition, in the absence of a practicable alternative, actions must be designed or modified in order to minimize potential harm to or within the floodplain. Second, EPA drinking water regulations adopted under the authority of the Safe Drinking Water Act (40 CFR, 141.5) require that the construction or modification of public water supply systems, [redacted], should not be located within the 100-year floodplain. To determine compliance of potential alternatives with these ARARs and to comply with the EPA implementing regulations for E.O. 11988 (40 CFR Part 6, Appendix A, Statement of Procedures on Floodplain Management and Wetland Protection), a floodplain assessment was prepared as part of the OUFS. The next section describes the findings of the floodplain assessment.

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Although more than 20 organic chemical contaminants have been detected in SWS's Bartolo well field or in upgradient wells in the Whittier Narrows area, many of these did not enter into the calculation of the baseline site cancer risk. Only TCE, PCE, carbon tetrachloride, chloroform, 1,1 -dichloroethylene, 1,2-dichloroethane, methylene chloride, and 1,1,2,2-tetrachloroethane are considered potential carcinogens in water. In addition, because of equivocal evidence of carcinogenicity, 1,1-dichloroethylene and 1,1,2,2-tetrachloethane were not considered a carcinogen in the Public Health Evaluation calculations for this site.

At sufficiently high exposure levels, the noncarcinogens, along with some of the carcinogens, have chronic (noncarcinogenic) or subchronic (short-term) health effects associated with them. The contaminant concentrations currently found or estimated to be found in the future in the Bartolo Well Field are all below levels believed to have the potential to cause noncarcinogenic health effects.

The primary exposure pathway is ingestion of groundwater. Other exposure pathways of concern for contaminated groundwater used for domestic purposes include absorption through the skin (dermal exposure route) and inhalation of volatilized chemicals, which could occur during showering, cooking, or other water uses in the home. These exposures would tend to increase the baseline risk from ingestion. While there is no scientific consensus on the significance of these pathways, some current literature suggests that these pathways may be equal to or greater than the exposure due to ingestion. The risk from these pathways, however, are not currently quantifiable.

8.0 CHANGES TO THE PROPOSED PLAN

This decision document selects the response action described in the proposed plan. The only change that has been made is in the determination of applicable or relevant and appropriate requirements (ARAR) that would apply to the proposed action, however, this does not change the selection of remedy. Some uncertain aspects of the response action that were included in the proposed plan are clarified in this section.

In the proposed plan, South Coast Air Quality Management District (SCAQMD) Rule 1167 is identified as an ARAR. This ARAR is presented as the rationale behind including activated carbon adsorption treatment of the air stripper off-gas for control of

Hazardous Materials Targets

Hazardous Materials Manufacturing

The second most likely serious hazmat threat exists from an accidental spill and/or incident at one of the estimated 100 known facilities that manufacture, warehouse, and process toxic chemicals and/or generate hazardous waste materials within or next to City boundaries. Although numerous facilities involved with hazardous materials they are less of a threat due to required plant contingency and evacuation plans. Also, the Waters Bill (AB 2185) effective January 1, 1987, strengthens previous emergency plans by levying fines on violators who fail to supply plans and requiring industrial firms to disclose the types of chemicals being manufactured, used, and stocked (right to know law)

Pipelines

Both the Mobil Oil Company and Chevron USA, Inc. maintain petroleum pipelines in Commerce. Mobil has an eight inch line which parallels Sheila Street, turns south down Eastern Avenue to Atchinson Topeka an Santa Fe Railroad line and travels east to the Santa Ana Freeway. Chevron's transmission lin roughly follows the course of the SCE power easement.

Cladestine Dumping

Cladestine dumping is the criminal act of disposing of toxic materials and hazardous waste on public of private property. As the costs and restrictions increase for legitimate hazardous materials will increase proportionately.

Hazardous Materials Transportation

The greatest probability of a major hazmat incident is from a transportation accident. Interstate 710, the Long Beach Freeway, runs north-south on the eastern perimeter of the City. Heavy truck traffic travels to and from the Long Beach harbor each day. Vehicles easily gain access to Commerce at the following off ramps: Atlantic Blvd., North/Bandidni Blvd., and Washington Blvd.

In addition, the Interstate 5, Santa Ana Freeway, traverses through the City of Commerce carrying vehicles to and from the heart of Los Angeles. Vehicles converge into the City of Commerce at the following off ramps:

- Triggs Street
- Atlantic Blvd. North/Eastern Ave.
- Washington Blvd.
- Garfield Ave.
- Slauson Ave

Another major form of transportation that exists in Commerce is that of the railway industry. The numerous rail lines traversing the city connect industry within the city to the regional rail network. Three mainline railroad routes traverse the city in an east to west fashion. The Union Pacific Railroad operates a mainline that connects the Union pacific rail yard in the extreme northwestern portion of the city. The Atchison Topeka and Santa Fe Railroad (AT&SF) operates a mainline that generally parallels Bandini Boulevard through the city providing a connection to the AT&SF rail yard in the eastern portion of Vernon. Finally, the Southern Pacific Railroad operates a mainline that parallels Randolph Street in

the southernmost portion of the city. In addition, many of the individual parcels in the industrial portions of the city are served by railroad spurs.

Although the odds of occurrence are less for a railroad hazmat incident, the severity is greater because of the numerous rail tanker cars involved and the potential for chemicals and explosive substances being mixed together.

Terrorism & Weapons of Mass Destruction

Terrorism & Weapons of Mass Destruction were rated as a HIGH PRIORITY RISK by the City of Commerce Hazard Mitigation Planning Team.

Terrorism is defined in the Code of Federal Regulations as "the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives." When terrorism strikes, communities may receive assistance from State and Federal agencies operating within the existing Integrated Emergency Management System. FEMA is the lead Federal agency for supporting State and local response to the consequences of terrorist attacks.

FEMA's role in managing terrorism includes both **antiterrorism** and **counterterrorism** activities. Antiterrorism refers to defensive measures used to reduce the vulnerability of people and property to terrorist acts, while counterterrorism includes offensive measures taken to prevent, deter, and respond to terrorism. Within the emergency management arena, antiterrorism is a hazard mitigation activity and counterterrorism falls within the scope of preparedness, response and recovery.

Terrorism is often categorized as "**domestic**" or "**international**." This distinction refers not to where the terrorist act takes place but rather to the origin of the individuals or groups responsible for it. For example, the 1995 bombing of the Murrah Federal Building in Oklahoma City was an act of domestic terrorism, but the attacks of September 2001 were international in nature. For the purposes of consequence management, the origin of the perpetrator(s) is of less importance than the impacts of the attack on life and property; thus, the distinction between domestic and international terrorism is less relevant for the purposes of mitigation, preparedness, response, and recovery than understanding the capabilities of terrorist groups and how to respond to the impacts they can generate.

City of Commerce Emergency Operations Plan

General Situation

Los Angeles County has a diverse population of 9.3million persons. The County and its cities are also home to many business and government agencies, transportation infrastructure, and cultural facilities which are vulnerable to terrorist attack. Terrorism remains a continuing threat throughout the world and within the United States. A variety of political, social, cultural and economic factors underlie terrorist activities. Terrorists occasionally target civilian targets to spread their message or communicate dissatisfaction with the status quo. The media interest generated by terrorist attacks makes this a high visibility threat.

Specific Situation

Recent trends toward large scale incidents generating significant casualties make preparedness and mechanisms for effective response essential. In addition to large scale attacks, a full range of assault styles must be considered. Contemporary terrorist activity runs the gamut from simple letter bombings, through assassinations with small arms, up to and including major car bombings.

Bombings and arson remain significant sources of terrorist activity. Related threats include bomb threats which disrupt the normal operations of transit systems and government or corporate facilities. Venues likely to suffer the impact of terrorism include aviation targets, mass transit targets, and

government facilities. Entertainment and cultural facilities may also be targeted. Conventional political motivations for terrorism continue, however issues involving weapons proliferation, organized crime and narcotic trafficking are seen as having increased influence. The potential for nuclear, biological, or chemical (NBC) terrorism employed by sub-national actors also is a potential concern.

Recent events make NBC emergencies a plausible scenario necessitating detailed contingency planning and preparation of emergency responders to protect the civilian populace in major urban centers such as Los Angeles County. Among the events heightening the threat level are the Sarin attack on the Tokyo subway, followed by an attempted cyanide assault on the subway six weeks later. The presence of cyanide residue in the debris of the World Trade Center bombing in New York heightens domestic concern. Biological incidents of note include the synthesis of Ricin by and anti-government, tax protest group whose members were convicted for violating the Biological Weapons Anti-Terrorism Act. Nuclear terrorism occurred in Moscow when Chechen insurgents claimed to have placed radiological waste in Moscow parks to further their cause.

The Federal Bureau of Investigation (FBI) is the lead federal agency with responsibility for crisis management (efforts geared toward preventing, interdicting and responding to the criminal aspects of terrorism) at all terrorist acts within the United States. The FBI closely coordinates this activity with local law enforcement through the Los Angeles Task Force on Terrorism (LATFOT) which includes representatives from the Los Angeles Sheriff's and Police Departments.

Los Angeles County established the Operational Area Terrorism Working Group (TWG) in response to the heightened threat of terrorism and national security emergencies. The TWG is charged with developing and guiding terrorism response planning, and to develop training for first responders in NBC warfare. The TWG is a multi-agency, multi-jurisdictional group which includes representatives from local law enforcement, fire, the County Department of Health Services and emergency management as well as state and federal agencies. During non-emergency periods the TWG is a planning committee. During terrorist emergencies the collective brain trust of the TWG will serve in an advisory capacity to support strategic and tactical planning.

Los Angeles County also developed a Terrorism Early Warning (TEW) group which assesses potential threats to determine if they are credible. The TEW is also a multi-agency, multi-jurisdictional group and is in constant contact with key federal agencies such as the FBI. TEW shares its findings with key county decision-makers and local law enforcement agencies.

Efforts to resolve life safety threats to the public, including firefighting, rescue operations, and treatment of persons wounded by terrorist activity are known as consequence management. These efforts are primary responsibility of local government and require close coordination between law enforcement, the fire service, health care and medical providers. During non-emergency periods consequence management planning is carried out through the TWG. During the interagency Los Angeles County Operational Area Terrorism Response Plan. The Sheriff's Emergency Operations Bureau (EOB) has responsibility for marshaling interagency consequence management efforts.

From the October 2004 issue of Report to the People Volume 45 No. 9

Emergency Preparedness Update

Last month was declared as National Prevention Month by the U.S. Department of Homeland Security. The City of Commerce takes prevention and emergency preparedness very seriously, which is why the City Council joined its emergency preparedness partners throughout the nation by also proclaiming September as National Prevention month.

Currently the Emergency Preparedness Office is working hard to ensure the safety of the community in a variety of ways. In late September, members of the Commerce Light Urban Search & Rescue Team completed its third quarter training at the Rio Hondo College Fire Academy at the Santa Fe Springs Training Center where their activities focused on rappelling & ladder training.

In addition, Emergency Preparedness is working on getting all city employees to take the introductory course for Standardized Emergency Management System as mandated by the state. This month city employees will be participating in this course in the City of Lakewood, who is sponsoring the SEMS Intro class for Area E.

This month we also want to provide the community with tips on emergency preparedness that apply to terrorism, earthquakes, fires, floods, and other disasters. Remember, preparedness is the key to your survival and the survival of your loved ones.

1. Finding out what can happen is the first step. Determine what the possible threats are and discuss them with your family, household, and co-workers.
2. Create an emergency communications plan. Be sure to include your out-of-town contact to check on each other if local telephones are jammed or out of service.
3. Assemble disaster supply kits, in easy-to-carry containers, for home, for work and your car. Include a three-day supply of water, non-perishable food, a first aid kit and book, flashlights, battery-powered radio, extra batteries, fire extinguisher, tools, prescription medications, copies of important documents, duct tape, plastic sheeting, and towels to seal door cracks.
4. Learn basic first aid and CPR. The American Red Cross provides training.
5. Be aware of your surroundings and report any suspicious activities to local authorities.
6. Know where the emergency exits, staircases, and fire extinguishers are at home, at work or when traveling, and practice emergency evacuation proce dures.
7. Check on school and daycare emergency plans for your school-age children.
8. Learn what to do if asked by officials " shelter in place " (remain indoors or in your car) or to " evacuate " (leave the hazard area).
9. Be prepared to do without services you normally depend on, such as elec tricity, telephone, natural gas, gasoline pumps, ATM machines, and Internet transactions.
10. If there is an attack or strong warnings of an attack remain calm and follow the advice of local emergency officials. Listen to the radio or television for news and instructions.

For more information, call the City of Commerce Emergency Preparedness Office at (323) 887-4460 EXT. 2809 or visit the following websites:

Centers for Disease Control and Prevention: www.bt.cdc.gov
Health Department: www.labt.org
Department for Homeland Security: www.ready.gov
American Red Cross: www.redcross.org/services/disater/foreignmat

Types of Risks

Explosives/Nuclear

While the likelihood of large scale nuclear war has diminished since the restructuring of the Soviet Union, continued threats resulting from weapons proliferation still remain. A potential threat involves the dispersal of radiological material or the use of crude nuclear device by terrorists. The diversion of a nuclear weapon (known as loose nukes) is somewhat more remote, but cannot be completely discounted. Future threats may arise as smaller regional powers acquire intercontinental missile capability. While somewhat remote, the ability to respond to or manage a nuclear incident remains necessary.

The complexity, scope, and potential consequences of a terrorist threat or incident require that there be a rapid and decisive capability to resolve the situation. The resolution to an act of terrorism demands an extraordinary level of coordination of crisis and consequence management functions and technical expertise across all levels of government. No single Federal, State, or local governmental agency has the capability or requisite authority to respond independently and mitigate the consequences of such a threat to national security.

The incident may affect a single location or multiple locations, each of which maybe a disaster scene, a hazardous scene and/or a crime scene simultaneously.

Differences Between WMD Incidents and Other Incidents

As in all incidents, WMD incidents may involve mass casualties and damage to buildings or other types of property. However, there are several factors surrounding WMD incidents that are unlike any other type of incidents that must be taken into consideration when planning a response. First responders' ability to identify aspects of the incident (e.g., signs and symptoms exhibited by victims) and report them accurately will be essential to maximizing the use of critical local resources and for triggering a Federal response.

The situation may not be recognizable until there are multiple casualties. Most chemical and biological agents are not detectable by methods used for explosives and firearms. Most agents can be carried in containers that look like ordinary items.

There may be multiple events (e.g., one event in an attempt to influence another event's outcome).

Responders are placed at a higher risk of becoming casualties. Because agents are not readily identifiable, responders may become contaminated before recognizing the agent involved. First responders may, in addition, be targets for secondary releases or explosions.

The location of the incident will be treated as a crime scene. As such, preservation and collection of evidence is critical. Therefore, it is important to ensure that actions on-scene are coordinated between response organizations to minimize any conflicts between law enforcement authorities, who view the incident as a crime scene, and other responders, who view it as a hazardous materials or disaster scene.

Contamination of critical facilities and large geographic areas may result. Victims may carry an agent unknowingly to public transportation facilities, businesses, residences, doctors' offices, walk-in medical clinics, or emergency rooms because they don't realize that they are contaminated. First responders may carry the agent to fire or precinct houses, hospitals, or to the locations of subsequent calls.

The scope of the incident may expand geometrically and may affect mutual aid jurisdictions. Airborne agents flow with the air current and may disseminate via ventilation systems, carrying the agents far from the initial source.

There will be a stronger reaction from the public than with other types of incidents. The thought of exposure to a chemical or biological agent or radiation evokes terror in most people. The fear of the unknown also makes the public's response more severe.

Time is working against responding elements. The incident can expand geometrically and very quickly. In addition, the effects of some chemicals and biological agents worsen over time.

Support facilities, such as utility stations and 911 centers along with critical infrastructures, are at risk as targets.

Specialized State and local response capabilities may be overwhelmed.

State of California Terrorism Guidance

The catastrophic attacks on the World Trade Center Building in New York City and the Alfred P. Murrah Federal Building in Oklahoma City shocked the nation into the reality that there are no domestic safe havens from acts of terrorism. These two apparently unrelated events punctuate our nation's vulnerability, and highlight California's risk of similar attack against its public officials, private and multi-national corporations, public infrastructure, and government facilities.

Historically, California has had a long experience combating terrorist groups, both domestic and international. Domestic terrorist groups in the state have been largely issue-oriented, while the few known internationally based incidents have mostly targeted the state's émigré communities and been related to foreign disputes. Today, however, both groups are more likely to be aligned nationally and/or internationally through electronic networking. The issues and politics of these groups remain essentially unchanged but now include increasing expressions of hatred for existing forms of government. The World Trade Center Incident demonstrates that international terrorist groups have the potential to operate with deadly effectiveness in this country. Such groups may offer no allegiance to any particular country but seek political or personal objectives that transcend national/state boundaries.

There is appropriate concern that such attacks as witnessed in Tokyo, New York City, and Oklahoma City could occur in California. A terrorist acting alone or in concert with any of the known national or international groups could readily commit acts of terrorism in California. The open availability of basic shelf-type chemicals and mail order biological research materials, coupled with an access to even the crudest laboratory facilities, could enable the individual extremist or an organized terrorist faction to manufacture proven highly lethal substances or to fashion less sophisticated weapons of mass destruction. The use of such weapons could result in mass casualties, long term contamination, and wreak havoc to both the state and national economies.

The freedom of movement and virtually unrestricted access to government officials, buildings, and critical infrastructure afforded to California's citizens and foreign visitors, presents the terrorist with the opportunity and conditions of anonymity to deliver such devastation and its tragic consequences with only the crudest devices of nuclear, chemical, or biological content.

Terrorist incidents create a unique environment in which to manage emergency response. Local responders are typically the first on scene during an actual incident and local government has primary responsibility for protecting public health and safety. Ordinarily, the local first response will be conducted under California's Standardized Emergency Management System (SEMS) which forms the basis of California's concept of operations for managing any kind of emergency or disaster, including terrorist incidents. The local responders will manage all aspects of the incident until the FBI assumes

command, by virtue of its legal authority, of the law enforcement aspects relating to identifying, apprehending, and neutralizing the terrorists and their weapons. Local and state authorities always maintain control of their response resources and continue to operate utilizing SEMS.

Governor's Office of Emergency Services Terrorism Response Plan

Los Angeles County Terrorism Early Warning (TEW) Group

Effective and rapid dissemination of indications and warnings to local emergency response agencies is an essential yet problematic element of terrorism management efforts. For bio-terrorist threats, such efforts must integrate ongoing real-time surveillance efforts. Terrorism Early Warning Groups are a multilateral, multidisciplinary effort to monitor open source data to identify trends and potential threats, monitor potential threat information during periods of heightened concern, assess potential targets and perform net assessments to guide decision making during actual events. TEW provides integrated threat and net assessment from a multi-jurisdictional perspective. City and county fire departments work together with emergency management, FBI, local law enforcement agencies, Department of Health Services, as well as other state and federal offices. The formation of TEW groups supports field response in the preparation for and response to acts of terrorism.

IAFC, October 2001 (et sec)

The Los Angeles Operational Area TEW Group provides Unified Command Structure with the impact of an attack on the operational area, gauges resource needs and shortfalls, continuously monitors and assesses situational awareness and status, and acts as the point of contact for inter-agency liaison in order to develop options for courses of action for incident resolution. TEW is an Emerging Threat Workspace (Civil Battle Lab) for stimulating National Strategy for emerging threat issues:

Terrorism and Infrastructure Protection

Public Order (Riots/Disturbances)

Civil-Military Interoperability for Urban Operations

Civilian Police (CIVPOL) for Peace Officers

Networked Threats and Emerging Threats

Counterterrorism Technology Test Bed

Biological & Chemical Terrorism

The Public Health Response to Biological and Chemical Terrorism: Interim Planning Guidance for State Public Health Officials (hereafter referred to as the Planning Guidance) outlines steps for strengthening the capacity of the public health system to respond to and protect the nation against the dangers of a terrorism incident. Although the Planning Guidance focuses on the biological and chemical terrorism preparedness efforts of state-level health department personnel, it can be used as a planning tool by anyone in the response community, regardless of his or her position within that community or level of government.

The public health community at large also can use this document to improve its terrorism preparedness and develop terrorism response plans. The preparedness program outlined in this Planning Guidance, once implemented, should improve the ability of all public health agencies to respond to emergency situations arising from all sources, not just terrorism.

The Planning Guidance focuses on the capabilities that state health departments are likely to need to respond effectively to a terrorism incident. Despite the public health focus of this document, the terrorism plan ultimately should not be agency-specific. Instead, the terrorism plan should be integrated, outlining the roles and responsibilities of all agencies that participate in a response. This coordinated terrorism plan should then be annexed to the state=s all-hazard Emergency Operations Plan (EOP)

Background

The intentional release of sarin, an organophosphate nerve agent, into the Tokyo subway system helped to focus the United States on its need to prepare for what was once unthinkable. Aum Shinrikyo, the group responsible for the Tokyo incident, disbursed botulinum toxin and anthrax bacteria, and the group attempted to obtain Ebola (1).

The World Trade Center and Oklahoma City bombings confirm that terrorism is not an event that occurs only on foreign soil. Terrorism incidents or threats involving *Salmonella* (2) and ricin (3) amply demonstrate that the United States is vulnerable not only to bombs but to biological and chemical threats as well.

These and other events caused health departments across the country to consider their ability to respond to a terrorism incident. In addition to their more traditional responsibilities in disease surveillance and management, health departments are defining their roles to respond effectively to an intentional release of biological organisms or hazardous chemicals into an unsuspecting population.

Because states differ in size, population, risks, needs, and capabilities, terrorism preparedness and response efforts inevitably must differ. This document does not establish a Aone-size-fits-all@ model; rather, it addresses important areas of preparedness and response that can be tailored to meet the needs of individual jurisdictions. Health department officials should consider the information contained in this guidance, identify the health and medical effects that an explosion or the intentional release or threatened release of a biological organism or hazardous chemical could have on the population, and prepare to address the public health consequences of those effects.

Well-developed surveillance and epidemiologic capacity is the foundation on which health departments will detect, evaluate, and design effective responses to terrorism events. Not only will this capacity facilitate the initial detection and response in a terrorism event, it will be essential to monitoring the impact of these events and the effectiveness of public health responses. Detection of acute or insidious terrorism attacks using biological (or certain chemical) agents also will require linking of data from a variety of sources. An effective public health response will depend on the timeliness and quality of communications among numerous public health agencies at local, state, and federal levels; clinicians; laboratories; poison centers; medical examiners; and other health response partners.

Complementing the need for accurate and timely case reports is the need for expertise to analyze the information properly. Epidemiologic expertise is critical to judging whether the incident involves biological or chemical agents or is a consequence of a natural phenomenon, an accident, or terrorism. Expertise also is critical in determining the likely site and time of the exposure; size and location of the population exposed; prospect for delayed exposure or secondary transmission of an infectious agent; and whether any people should receive prophylaxis (either medications or vaccines) and, if so, which population groups.

Timely and accurate information and analysis must be coupled with effective and rapid dissemination of information to those who need to know (e.g., response partners and the public) to instill confidence in both the short- and long-term response of the affected community.

Utility Loss

Utility Loss was rated a HIGH PRIORITY RISK by the City of Commerce Hazard Mitigation Planning Team..

The 2000-2001 California electricity crisis brought to light many critical issues surrounding the state's power generation and distribution system, including its dependency on out-of-state resources. Although California has implemented effective energy conservation programs, the state continues to experience both population growth and weather cycles that contribute to a heavy demand for power.

Hydro-generation provides approximately 25 percent of California's electric power, with the balance coming from fossil fuels, nuclear, and green sources. As experienced in 2000 and 2001, blackouts can occur due to losses in transmission or generation and/or extremely severe temperatures that lead to heavy electric power consumption.

The Impact of Loss of Power on Water & Sewer Systems

California is a populous state that receives minimal rainfall. Approximately 70% of the population obtains its drinking water from surface sources with the remainder relying on ground water supplies. The basic types of system used by the water companies are pressurized (pressure fed) and non-pressurized (gravity fed) systems. The basic types of system used by the sewer companies are collection and treatment systems that use force pumps to move sewerage.

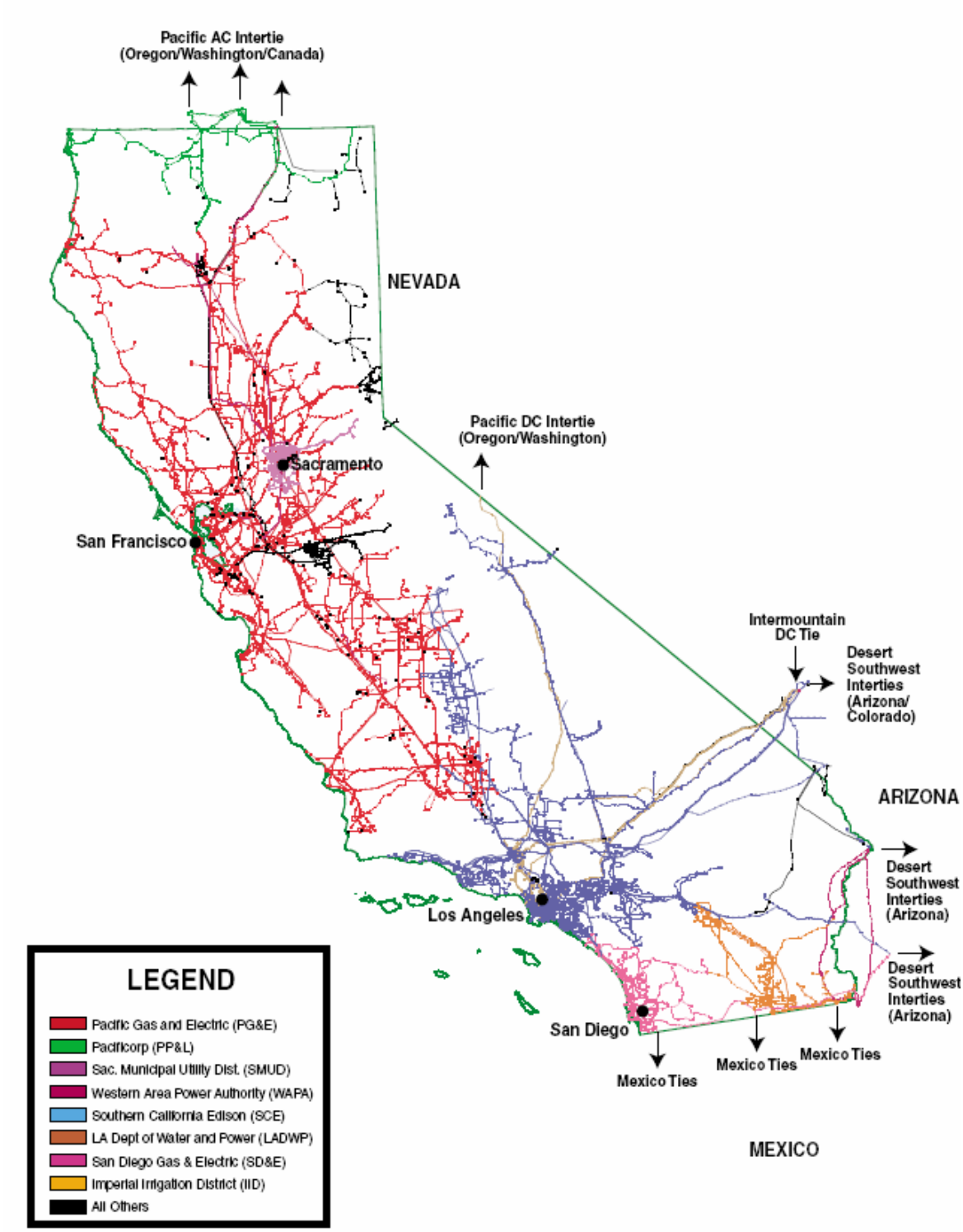
Drinking water is supplied to California residents through a myriad of governmental agencies, cities, districts, private utilities, mutual water companies, private businesses, and individually owned wells. There are over 10,000 public water suppliers in the state serving water to approximately 29 million consumers. Less than 10% of the public water systems in the state serve collectively more than 95% of the state's population. The remaining 90% of the systems serves less than 5% of the population. D.01-05-089 added Category M (limited other customers as necessary to protect public health and safety, to the extent exempted by the Commission) to the list of essential customers normally exempt from rotating outages.

Due to the energy situation and rolling blackouts that occurred earlier in the year, the Water Division has conducted an informal inquiry into the impact of the rolling blackouts and has concluded that during the first four months of the year, California energy situation and rolling blackouts have had no significant impact upon the California Water and Sewer System Industries, in part due to the "Y2K" efforts in 1999. Water utilities and sewer system utilities appear to have the matter well under control with little to no impact on customer service at this time.

The Effects on Public Health & Safety

Public health and safety must be the primary factor used to evaluate a customer's eligibility for exemption from rotating outages. Exempting a fire department from rotating outages is of little value if the water resources needed to fight these fires are not available to it, particular during the high fire season. Fires that start during extreme fire weather conditions are a high risk to the safety of the residents and firefighters, and have a high probability of spreading rapidly and inflicting major property loss, if water pumping facilities are compromised.

Power Transmission Lines in California

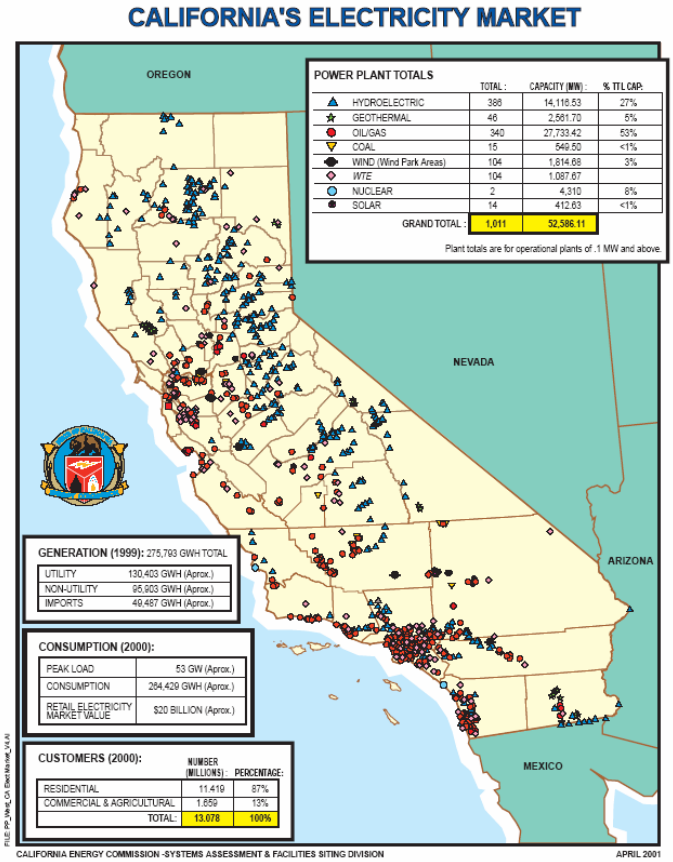


California Department of Energy

A review of the Chief of the Los Angeles County Fire Department's (LACFD) comments indicated that the emergency restoration procedures are likely inadequate and do not ensure that sufficient water supplies will be available in an emergency. LACFD also is concerned that the procedures have not been activated nor tested, the procedures may not have been communicated consistently between the electric utilities, water agencies and fire fighting forces, the procedures do not provide for the instantaneous supply of water required in a fire emergency, and the current procedures require the caller to identify the exact location of the power restoration.

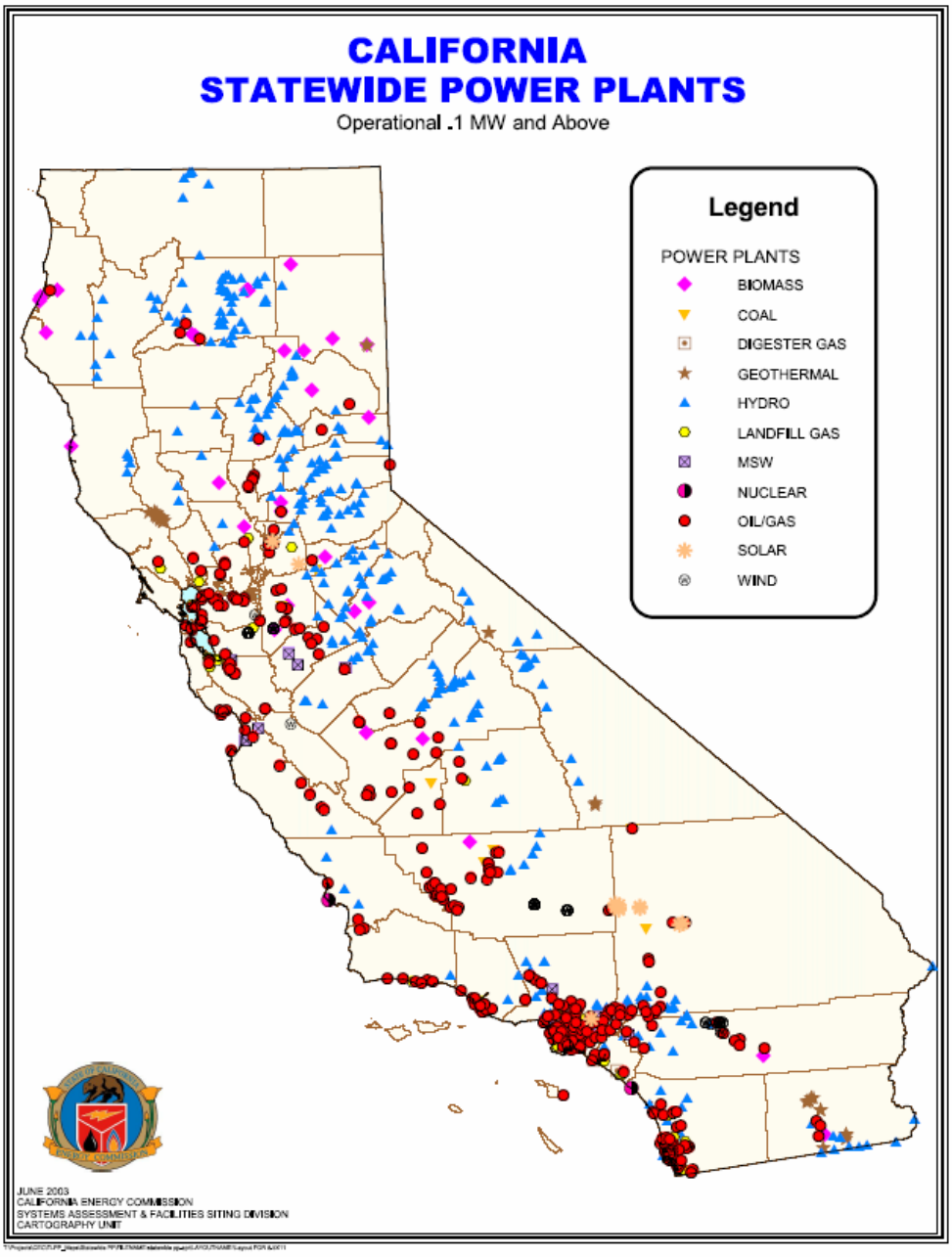
California has experienced many power outages from natural disasters such as fires, floods, earthquakes, and rainstorms. This means that water and sewer systems must have adequate back up power for extended electric outages independent of rolling blackouts. Many large water systems have adequate storage facilities and have installed backup generators to maintain system pressures during power failure due to "Y2K" efforts. Rotating power outage duration is usually less than two hours or between two to four hours. Therefore, rolling blackouts have little impact on customer service.

In addition, water and sewer treatment utilities may request partial or complete rotating outage exemption from electric utilities in times of emergency identified as requiring their service, such as fire fighting. The Water Division believes that it is reasonable to order electric companies to notify all of their water and sewer customers and test the emergency restoration procedures to minimize the effects on public health and safety. The Water Division recommends that water and sewer companies be excluded from the Category M.



Mitigation measures available for these systems

Backup power was a big issue due to the energy situation and rolling blackouts that occurred this summer. Many water systems have argued that backup power was not necessary since they received electrical power from more than one substation, but the power shortage has negated that argument. Many large water systems have adequate storage facilities and have installed backup generators to maintain system pressures during power failures due to "Y2K" efforts. It is the smaller systems that generally do not have backup power. To mitigate possible public health and safety impacts due to a loss of power, the Water Division recommends that all water companies with pressurized systems and sewer companies install backup generators on the wells with the largest pumping capacity or the lead wells. This will assure system integrity.



Water/Waste Water Emergency

Water/Waste Water Emergencies were rated a HIGH PRIORITY RISK by the City of Commerce Hazard Mitigation Planning Team.

Water

With a growing population and economy, increasing environmental concerns and vibrant agriculture industry at play, how we choose to collect, store, distribute, use and dispose of water has never been more critical.

Every drop of water not used by a household, farm or business can be used to create higher river flows to benefit fisheries and floodways. Likewise, recycled water stored in new reservoirs can be used to recharge over-drafted groundwater aquifers. In short, new and innovative ideas are on the table that will help California rework its waterworks so that it is not necessary to choose between the environment, the economy, and people's livelihoods and lifestyles.

From the northern reaches to the San Joaquin Delta, which provides two-thirds of the state's residents with their drinking water, California is under the gun to reconstruct and rehabilitate its water and wastewater systems. The challenge is being met on many fronts. On these pages you will find a summary of the water and wastewater challenges California faces today, along with the lowdown on solutions in the works.

Problems

- Our groundwater basins are over-drafted and our existing surface storage cannot meet future water demands, particularly in times of drought.

- The gap between water supply and demand in California is predicted to total 2.4 million acre feet during drought years and up to 6.2 million acre feet in drought years by 2020. (An acre foot is enough to meet the annual needs of between one and two households.) Six million feet is roughly triple the amount of water the Bay Area uses in a year. At the same time, growers, manufactures and businesses are demanding more reliable and better quality water.

- It can take 20 years or longer to develop and finance a supplemental water supply for new developments.

- About 894 gallons of water are needed to grow the food for the daily diet of an average person. On an annual basis, an individual's water use is about 326, 310 gallons.

- Some of our cities rely on water mains and sewers that are more than 100 years old.

- In 2001 California officials issued more than 2,000 beach closings and health advisories because of sewer spills and overflows. Spills and overflows typically happen because wastewater systems have not been upgraded to facilitate new growth, and sewer pipes have not been replaced in time to avert a main break.

- When it rains, at times as little as one-quarter inch, the volume of combined runoff and wastewater becomes too great for sewage treatment plants to handle, and the flow is diverted

to outfall points that discharge raw sewage, toxic industrial waste and floatables such as garbage and syringes.

- California needs an estimated $8.4 billion for local wastewater treatment improvements.

Solutions - Water

Through a state/federal partnership known as CALFED, for example, some $10 billion in expanded storage, increased recycling and conservation, ecological restoration of key watersheds, and improved water distribution and conveyance has been identified that over the next few decades help meet some of these challenges. Cities are expanding wastewater treatment systems, improving water distribution infrastructure, and developing local recycling programs as well, some using funds from the CALFED program.

To offset water shortages, the state's water recycling program needs more investment. In 1998, the last year it revised its state Water Plan, the California Department of Water Resources issued a 10-year capital improvement forecast calling for more than $1.6 billion in spending to ensure delivery of clean water. In addition, a state/federal partnership known as CALFED is overseeing a vast reworking of the state's water storage and distribution system. The CALFED program as it is known foresees $10 billion in environmental and ecological restoration projects, new storage facilities, recycling programs, water transfer arrangements to help strike a balance the state's competing water needs.

Solutions - Wastewater

State and federal water quality regulations require cities and other municipalities to upgrade wastewater treatment and distribution systems to prevent overflows during wet weather no later than 2014. Pipe replacement projects, construction of new retention ponds, increased recycling and conservation programs, and expanded treatment facilities are all part of the mix of solutions.

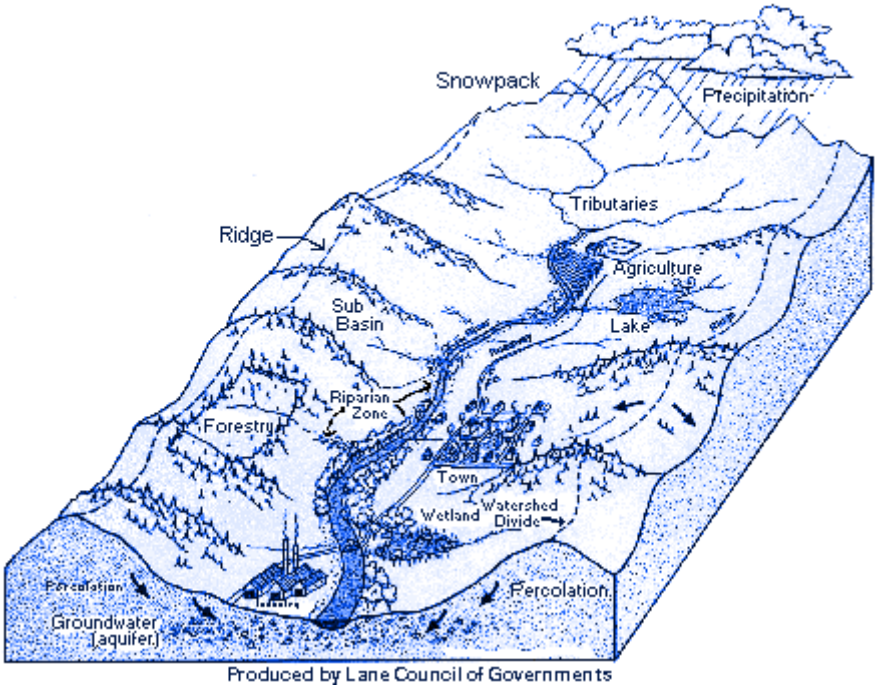
California Dept. of Water Resources, Water Education Foundation, Natural Resources Defense Council

Water Sheds

A watershed is the area of land where all of the water that is under it or drains off of it goes into the same place. John Wesley Powell, scientist geographer, put it best when he said that a watershed is:

"that area of land, a bounded hydrologic system, within which all living things are inextricably linked by their common water course and where, as humans settled, simple logic demanded that they become part of a community."

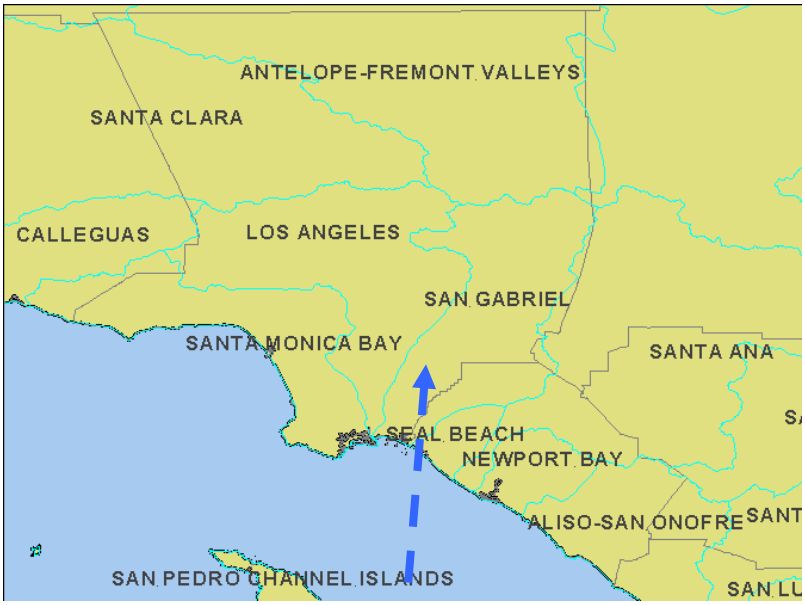
Watersheds come in all shapes and sizes. They cross county, state, and national boundaries. No matter where you are, you're in a watershed!



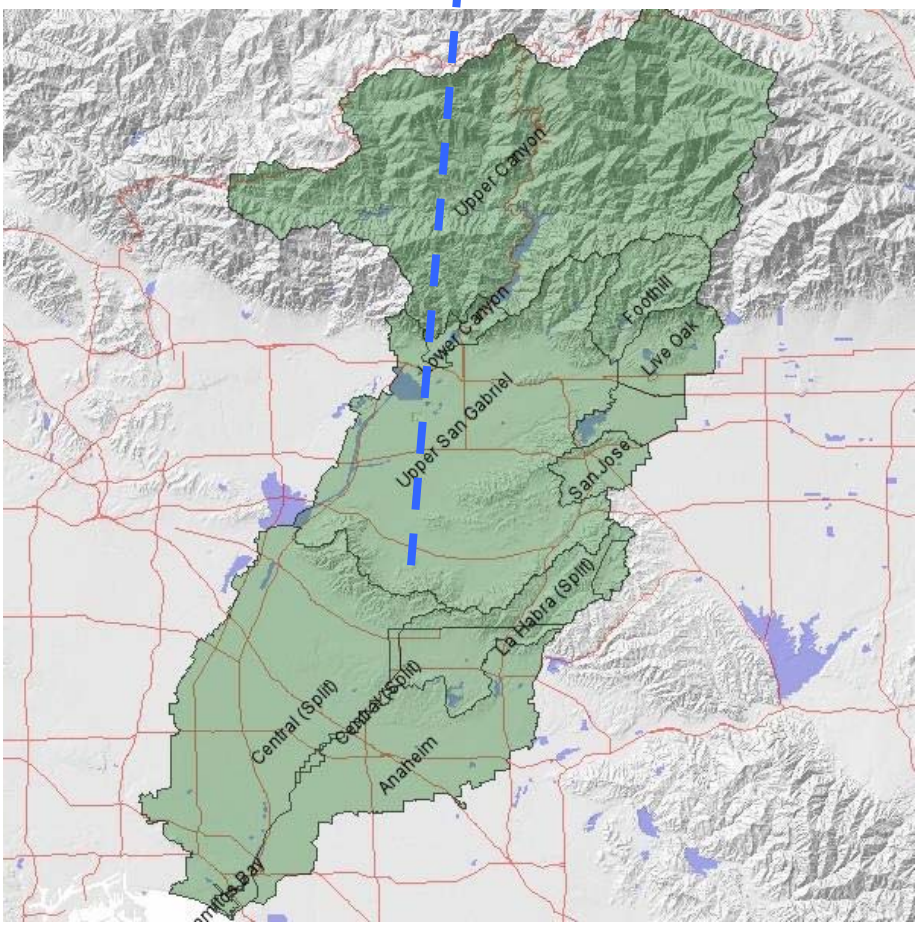
Produced by Lane Council of Governments

There are 6 water sheds serving Los Angeles County; Antelope-Fremont Valleys, Santa Clara, Los Angeles, San Gabriel, Santa Monica Bay, and San Pedro/Channel Islands (see map on next page). The map below shows the area of South Coast Water Sheds.

Watersheds in Los Angeles County



San Gabriel Water Shed



The Small Watershed Program in California - PL 83-566 and PL 73-534

The USDA's Small Watershed Program assists local organizations in conducting watershed surveys and investigations, and in planning and installing structural and land treatment measures for watershed protection and flood prevention. In California, the Watershed Planning and Engineering staffs are responsible for implementation of these programs.

The watershed is the unit of landscape and framework around which to think together about the land and its role in peoples' lives. The lessons learned through the implementation of PL 78-534 and PL 83-566 - the ability to work with private landowners and communities to plan and install conservation measures on a watershed scale - forms the foundation upon which locally-led conservation is built and supported by NRCS.

Background

USDA's Small Watershed Program was authorized by the Flood Control Act of 1944, Public Law 78-534, and the Watershed Protection and Flood Prevention Act of 1954, Public Law 83-566. The original program, PL 78-534, was established for 11 selected watersheds throughout the country, including the Los Angeles River and Santa Ynez River in California. The subsequent legislation, PL 83-566, was passed to expand the program to all of the nation's watersheds.

USDA's Small Watershed Program has three general purposes: 1) preventing damage from erosion, floodwater and sediment, 2) furthering the conservation development, utilization, and disposal of water, and 3) further the conservation and proper utilization of land.

The program applies to watersheds 250,000 acres and smaller. At least 20 percent of any project benefits must related directly to agriculture, including rural communities. A local sponsoring organization is needed to carry out, maintain, and operate works of improvement.

The program has two main components, each of which is funded separately: 1) watershed surveys and planning; and 2) watershed and flood prevention operations and construction.

Status of the Program in California

The Small Watershed Program in California has been used primarily for flood control, agricultural water management, and watershed protection work. There are 30 completed watershed projects in California and 15 operational projects. About 30 watersheds are currently receiving technical assistance for local planning activities.

From 1978 through 2002, over $100 million was spent in California under PL83-566 operations to install conservation measures. During this same time period, over $120 million was spent in 45 counties in California under Emergency Watershed Protection to provide emergency flood and fire repair work.

In fiscal year 2002, California received PL83-566 annual appropriations of $950,000 for watershed planning, $1,390,000 for technical assistance, and $3,351, 136 for installing practices.

Emergency Response Plans

All water systems serving a population of 3,300 or more (1,000 connections or more) must update their Emergency Response Plan (ERP) and send a completed certification form to EPA within 6 months of completing their Security Vulnerability Assessment (Security VA). All water systems are required to have an Emergency Notification Plan (ENP). CRWA is putting on a series of FREE ERP classes, which

will include a free manual and a free CD that will assist you in updating or creating an Emergency Response Plan for your water system. It also includes a special section on how to prepare a Drought Response Plan as a key component of your ERP. All systems no matter what size are invited to attend and will benefit from this class, and attendees will earn contact hours for Distribution and Water Treatment certification renewal.

Ground Water

Ground water is an important component of our nation's fresh water resources. The use of ground water is of fundamental importance to human life and is also significant to economic vitality. Inventories of ground water and surface water use patterns in the United States emphasize the importance of ground water. The United States Geological Survey (USGS) compiles national water use information every 5 years and publishes a report that summarizes this information.

Groundwater is a hidden resource. At one time, its purity and availability were taken for granted. Now contamination and availability are serious issues. The following should be considered:

- Scientists estimate groundwater accounts for more than 95% of all fresh water available for use.
- Approximately 50% of Americans obtain all or part of their drinking water from groundwater.
- Nearly 95% of rural residents rely on groundwater for their drinking supply.
- About half of irrigated cropland uses groundwater.
- Approximately one third of industrial water needs are fulfilled by using groundwater.
- About 40% of river flow nationwide (on average) depends on groundwater.

Thus, groundwater is a critical component of management plans developed by an increasing number of watershed partnerships.

Definition

Groundwater is the water that saturates the tiny spaces between alluvial material (sand, gravel, silt, clay) or the crevices or fractures in rocks.

Aeration zone: The zone above the water table is known as the zone of aeration (unsaturated or vadose zone). Water in the soil (in the ground but above the water table) is referred to as soil moisture. Spaces between soil, gravel and rock are filled with water (suspended) and air.

Capillary water: Just above the water table, in the aeration zone, is capillary water that moves upward from the water table by capillary action. This water can move slowly in any direction, from a wet particle to a dry one. While most plants rely on moisture from precipitation that is present in the unsaturated zone, their roots may also tap into capillary water or into the underlying saturated zone.

Aquifer: Most groundwater is found in aquifers-underground layers of porous rock that are saturated from above or from structures sloping toward it. Aquifer capacity is determined by the porosity of the subsurface material and its area. Under most of the United States, there are two major types of aquifers: confined and unconfined.

Confined aquifers (also known as artesian or pressure aquifers) exist where the groundwater system is between layers of clay, dense rock or other materials with very low permeability.

Water in confined aquifers may be very old, arriving millions of years ago. It's also under more pressure than unconfined aquifers. Thus, when tapped by a well, water is forced up, sometimes above the soil surface. This is how a flowing artesian well is formed.

Unconfined aquifers are more common and do not have a low-permeability deposit above it. Water in unconfined aquifers may have arrived recently by percolating through the land surface. This is why water in unconfined aquifers is often considered very young, in geologic time. The top layer of an unconfined aquifer is the water table. It's affected by atmospheric pressure and changing hydrologic conditions. Discharge and recharge rates depend on the hydrologic conditions above them.

Saturation zone: The portion that's saturated with water is called the zone of saturation. The upper surface of this zone, open to atmospheric pressure, is known as the water table (phreatic surface).

Water-bearing rocks: Several types of rocks can hold water, including:

- Sedimentary deposits (i.e. sand and gravel)
- Channels in carbonate rocks (i.e. limestone)
- Lava tubes or cooling fractures in igneous rocks
- Fractures in hard rocks

Groundwater and Surface Water Connection

Groundwater and surface water are fundamentally interconnected. It is often difficult to separate the two because they "feed" each other. This is why one can contaminate the other.

Hydrologic (water) Cycle

- As rain or snow falls to the earth's surface:

- Some water runs off the land to rivers, lakes, streams and oceans (surface water).

- Water also can move into those bodies by percolation below ground.

Water entering the soil can infiltrate deeper to reach groundwater which can discharge to surface water or return to the surface through wells, springs and marshes. Here it becomes surface water again. And, upon evaporation, it completes the cycle. This movement of water between the earth and the atmosphere through evaporation, precipitation, infiltration and runoff is continuous.

How Groundwater "Feeds" Surface Water.

One of the most commonly used forms of groundwater comes from unconfined shallow water table aquifers. These aquifers are major sources of drinking and irrigation water. They also interact closely with streams, sometimes flowing (discharging) water into a stream or lake and sometimes receiving water from the stream or lake.

An unconfined aquifer that feeds streams is said to provide the stream's baseflow. (This is called a gaining stream.) In fact, groundwater can be responsible for maintaining the hydrologic balance of surface streams, springs, lakes, wetlands and marshes.

This is why successful watershed partnerships with a special interest in a particular stream, lake or other surface water body always have a special interest in the unconfined aquifer, adjacent to the water body.

How Surface Water "Feeds" Groundwater

The source of groundwater (recharge) is through precipitation or surface water that percolates downward. Approximately 5-50% (depending on climate, land use, soil type, geology and many other factors) of annual precipitation results in groundwater recharge. In some areas, streams literally recharge the aquifer through stream bed infiltration, called losing streams. Left untouched, groundwater naturally arrives at a balance, discharging and recharging depending on hydrologic conditions.

Defining Combined Boundaries

Partnerships using the watershed approach to protect natural resources identify and understand the individual resources-water, soil, air, plants, animals and people-early in the process. This is why watershed partnerships select or define boundaries to address all natural resources - not just one. They realize that groundwater, surface water, air quality, and wildlife and human activities all affect each other.

Occasionally watershed partnerships run into difficulty combining boundaries of surface water (watersheds) and recharge areas (groundwater). If this occurs, consider combining surface and groundwater into a single, larger area. In other situations-for example if water is being transferred from one watershed or aquifer to distant users-there can be, and should be, two distinct areas. Thus, watershed partnerships' boundaries may combine the wellhead area, aquifer, watershed, or many other areas depending on the issue(s).

Common Boundaries

Aquifers are often difficult to delineate. It requires someone with an understanding of the aquifer, the geology, the surface above it, and the land that drains toward the surface.

An unconfined aquifer area often extends to the surface water body's (i.e. lake, river, estuary) watershed. When determining an aquifer protection area, pumping (working) wells are not considered. The biggest risk to an unconfined aquifer is contaminated water moving through the permeable materials directly above it. This area is known as the primary recharge area. Depending on the depth and overlying geologic characteristics, travel time from the surface to the aquifer can be relatively short.

Less permeable deposits located at higher elevations than the aquifer form a secondary recharge area. These areas also recharge the aquifer through both overland runoff and groundwater flow. Because they are less permeable and tend to be a greater distance from the aquifer, they often filter out contaminants.

Additional recharge areas to consider include an adjacent stream that potentially contributes to the aquifer through infiltration. When pumping wells are located near a stream or lake, infiltration can be increased. Infiltrating streams typically provide an aquifer with large quantities of water and a pathway for bacteria, viruses and other contaminants.

A confined aquifer area may be limited to the outcrop of the aquifer unit and its immediate contributing area. This area may actually be isolated from the location of water supply wells within the aquifer.

Semi-confined aquifers may receive water from both outcrop areas and overlying aquifers. Delineating the aquifer protection area can be extensive and complex.

Sole-source aquifers are delineated based on aquifer type - confined, semi - confined or unconfined - and local geologic and hydrologic conditions. Defined as providing a minimum of 50% of the water for

its users, sole-source aquifers usually exist only where there simply are no viable alternative water sources.

Wellhead protection areas (also known as zone of contribution and contributing areas) are the surface and subsurface areas surrounding a well or field of wells (well field) supplying a public water system.

The area is calculated by determining the distance contaminants are reasonably likely to move before reaching a well. Some common methods for determining the wellhead protection area include:

- Arbitrary fixed radius
- Calculated fixed radius
- Simplified variable shapes
- Analytical method
- Numerical method
- Hydro-geologic mapping

When selecting the best method, consider available funds and the level of concern. Other factors to consider include the cone of depression and drawdown.

Surface watersheds are defined by a simple process of identifying the highest elevations in land that drains to the surface water body (i.e. lake, pond, river, estuary, etc.). Watersheds are all shapes and sizes, ranging from just a few acres to several million acres ... many smaller watersheds "nested" inside a larger watershed.

Most successful watershed partnerships work with a manageable size yet encompass all the different, but integrated, areas. This enables faster measurable progress and stronger ties between stakeholders and the water body they affect.

Threats to Groundwater

Threats To Quantity

An increased quantity of groundwater is being withdrawn to meet the demands of a growing population. Some of the typical threats associated with this include overdraft, drawdown and subsidence.

Overdraft occurs when groundwater is removed faster than recharge can replace it. This can result in

- A permanent loss of a portion of its storage capacity

- Changes that can cause water of unusable quality contaminate good waterIn coastal basins, salt water intrusion can occur.

Generally, any withdrawal in excess of safe yield (the amount that can be withdrawn without producing an undesirable result) is an overdraft.

Drawdown differs significantly from overdraft. It results in a temporarily lowered water table generally caused by pumping. In this situation, the water table recovers when the supply is replenished.

Subsidence is one of the dramatic results from over-pumping. As the water table declines, water pressure is reduced. This causes the fine particles that held water to become compacted. In addition to

permanently reducing storage capacity, the land above the aquifer can sink ... from a few inches to several feet ... causing a sinkhole. This can damage property and fields.

Inorganic compounds, pathogens and organic compounds can harm water quality, affecting the health of humans, fish and wildlife. Scientists continually learn more about contaminants, their sources and prevention practices.

Each state is responsible for designating uses for groundwater, surface waters, wetlands, etc. Designated uses include fishable, swimable, drinkable, recreational, agricultural, aquatic life, and more. Each state is also responsible for developing water quality standards for each use. For example, while most rivers are designated to be used for fishing, a few river sections are designated to be used for drinking water. The same is true for groundwater. Uses are defined and standards identified. A few groundwater uses and standards are:

- Drinking water
- Meet MCL* for pollutants
- Industrial process
- Quality & quantity criteria
- Stream base flow
- Discharge quantity & quality

*MCL: Maximum Contaminant Level

Note that, for most groundwater uses, quality and quantity are important, while for surface water uses, generally quality is the primary concern (with the realization the quantity affects quality).

Inorganic Compounds include all compounds that do not contain carbon. Nutrients (nitrogen and phosphorus) and heavy metals are two examples.

- *Nitrates* can cause problems in drinking water or marine waters
- *Phosphorus* can reduce uses of fresh surface waters
- *Heavy metals* include selenium, arsenic, iron, manganese,
    - sulfur, cadmium and chromium and others. Some (iron,
    - manganese and arsenic) occur naturally

Pathogens, including bacteria and viruses, have been credited with causing more than 50% of the waterborne disease outbreaks in the U.S. *Cryptosporidium Parvum* and *Giardia* both commonly cause illnesses when consumed.

Organic Compounds include Volatile Organic Compounds (VOCs) like benzene, toluene, xylene; semi-volatile compounds like napthaline and phenol; PCBs and pesticides.

Potential Sources

Point sources are easily identified because they usually come out of a "pipe." Examples include sewage treatment plants, large injection wells, industrial plants, livestock facilities, landfills, and others.

Regulated by the state water quality agency and the U.S. EPA, point sources are issued a National Pollutant Discharge Elimination System (NPDES) permit when they meet regulations.

Many point sources were established generations ago, before the threat they posed was understood. Some of these sources have been "grandfathered" into compliance with some regulations. Thus, you may find some point sources located in areas that would be considered inappropriate now.

Non-point sources refer to widespread, seemingly insignificant amounts of pollutants which, cumulatively, threaten water quality and natural systems. Examples of non-point sources include septic systems, agriculture, construction, grazing, forestry, recreational activities, careless household management, lawn care, and parking lot and other urban runoff.

Non-point sources are not required to have a permit. Individually, each may not be a serious threat, but together they may be a significant threat.

Other sources that aren't classified under point or non-point sources include underground petroleum storage systems and many large and small businesses like dry cleaners, restaurants, and automotive repair shops. Although a large number of underground storage tanks have been removed or upgraded, a significant number remain. Businesses can threaten groundwater with a wide variety of potentially contaminating substances.

Groundwater Contaminant Sources

Source	Contaminant
Salting practices & storage	Chlorides
Snow dumping	Chlorides
Agricultural fertilizers	Nitrates
Manure handling	Nitrates, pathogens
Home fertilizer	Nitrates
Septic systems	Nitrates, pathogens
Urban landscapes	Hydrocarbons, pesticides, pathogens
Agricultural dealers	Hydrocarbons, pesticides, nitrates
Agricultural feedlots	Nitrates, pathogens
Solid waste landfills	Hazardous materials
Industrial uses RCRA 'C'	Hazardous materials
Industrial uses RCRA 'D'	Hazardous materials
Small quantity generators	Hazardous materials
Households	Hazardous materials
Gas stations	Hydrocarbons
Auto repair shops	Hydrocarbons
Recycling facilities	Hydrocarbons
Auto salvage yards	Hydrocarbons
Underground storage tanks	Hydrocarbons
Industrial floor drains	Hydrocarbons
Injection wells	Hydrocarbons
Junkyards	Hydrocarbons

Mitigation

The Watershed Management Approach

A quick review of key components of the local, voluntary watershed approach to protecting natural resources will help you evaluate groundwater management approaches and how they may be used in your particular situation. The most critical component to the watershed management approach is the involvement and consensus of all key stakeholders (or organizations representing them) at each step in the process. Other key components include:

- Assess natural resources-soil, water (including groundwater), air, plants, animals, and people.
- Identify and prioritize problems.
- Develop measurable objectives-based on local environmental, economic and social goals.
- Identify and agree upon strategies for reaching objectives.
- Implement strategies and assess results.

Some of the activities, as they pertain to groundwater, are described in this guide. For example:

- Determining boundaries of the groundwater and watershed areas is typically part of assessment.
- Discussing existing and future uses of water is part of setting goals.
- Defining pollutants and sources is part of assessment, goal setting and solution identification.
- Understanding various tools is part of identifying and implementing solutions.

Existing Groundwater Programs

Over the past 20 years many federal and state programs have been developed to improve management of groundwater. Four of the most useful can also easily be incorporated into your watershed plan. These include:

- *Comprehensive State Groundwater Protection Program*
- *Sole Source Aquifer Program*
- *Source Water Protection Program*
- *Wellhead Protection Program*

These approaches can be used in a complementary fashion to manage all resources, including groundwater, for multiple uses-ranging from human consumption to industrial processes to maintaining ecological integrity within a wetland.

Comprehensive State Groundwater Protection Program is a statewide program that looks at groundwater's uses, including drinking water, and its role in sustaining the health of surface waterbodies (rivers, streams, wetlands, marshes).

The Sole Source Aquifer Program, Source Water Protection Program, and Wellhead Protection Program all are intended to protect a drinking water supply. The programs generally are compatible with the *Comprehensive State Groundwater Protection Program,* but are applied to very defined geographic areas:

- *The Sole Source Aquifer Program* applies to the aquifer boundaries.

- *The Source Water Protection Program* applies to water that drains into a reservoir (used as a drinking water source) or intake.

- *The Wellhead Protection Program* applies to defined wellhead areas.

Special Issues

Although groundwater programs are often used within the watershed framework, there are some issues that may arise as you attempt to integrate them. These issues have been listed to simply make you aware of them. Each is best addressed through cooperation and consensus. Water quality use designations often do not reflect the presence of groundwater intakes for drinking water. Water quality criteria and drinking water maximum contaminant levels (MCLs) often are not consistent in terms of chemical specific values and parameters.

Minor dischargers and permitted management measures under the NPDES program may not sufficiently reduce the risk to drinking water intakes. Where agriculture activities are reducing drinking water quality, changes in management practices may or may not take a long time to result in water quality improvements depending on weather, geography etc. Source water areas for groundwater drinking supplies (wellhead areas) generally do not coincide with surface water drainage areas. Long-term drinking water treatment may be necessary for certain public water supply systems because of the nature of the contaminant sources and the size of the contributing area.

Mitigation & Management Tools

There are many, many tools that can be used to manage groundwater resources:

Zoning: Regulations are used to segregate different, and possibly conflicting, activities into different areas of a community. This approach can be limited in its ability to protect groundwater due to "grandfather" provisions.

Overlay Water Resource Protection Districts: Similar to zoning regulations in their goals of defining the resource, these ordinances and bylaws map zones of contributing boundaries and enact specific legislation for land uses and development within these boundaries.

Prohibition of Some Land Uses: These are not typically considered very creative tools. However, prohibition of land uses such as gas stations, sewage treatment plants, landfills, or the use/storage/transport of toxic materials is a first step towards the development of a comprehensive groundwater protection strategy.

Special Permitting: The special permitting process can be used to regulate uses and structures that may potentially degrade water and land quality.

Large Lot Zoning: Large lot zoning seeks to limit groundwater resource degradation by reducing the number of buildings and septic systems within a groundwater protection area.

Eliminating/Modifying Septic Systems: Septic system problems can be reduced or eliminated by extending or developing community sewage treatment systems. Other options include specifying minimum design requirements like mound systems.

Transfer of Development Rights: A government entity prepares a plan designating land parcels from which development rights can be transferred to other areas. This allows land uses to be protected (i.e. for a gas station) while assuring that these uses are outside sensitive areas.

Growth Control/Timing: Growth controls are used to slow or guide a community's growth, ideally in concert with its ability to support growth. One important consideration is the availability of groundwater.

Performance Standards: This assumes that any given resource has a threshold, beyond which it deteriorates to an unacceptable level. Performance standards assume that most uses are allowable in a designated area, provided that the use or uses do not and will not overload the resource. With performance standards, it is important to establish critical threshold limits as the bottom line for acceptability.

Underground Storage Tanks: Three additional protection measures are often adopted to enhance local water resource protection. They include:

- Prohibit new residential underground storage tanks
- Remove existing residential underground storage tanks
- Prohibit all new underground storage tank installation in groundwater and surface water management areas

Septic System Maintenance: Septic system maintenance is frequently overlooked. Many times the system will not function properly, causing "breakout" of solids at the surface, which can lead to bacterial contamination. In addition, when systems fail, any additives used can become contaminants.

Land Donations: Land owners are often in the position of being able to donate some land to the community or to a local land trust.

Conservation Easements: Conservation easements allow for a limited right to use the land. Easements can effectively protect critical lands from development.

Purchase Lands: Many communities purchase selected parcels of land that are deemed significant for resource protection.

Well Construction/Closure Standards: Wells are a direct conduit to groundwater. Standards for new well construction, as well as identification and closure of abandoned wells, can prevent groundwater from being contaminated.

Groundwater Protection Tools

Technique	Tool
Zoning Districts	Overlay Groundwater Protection
Prohibit Various Land Uses	Special Permitting
Large Lot Zoning	Transfer of Development Rights
Cluster/PUD Design	Growth Controls/Timing
Performance Standards	Geographic Information Systems
Overlay Wetlands	Identify Local Wellhead Protection Areas
Subdivision Control	Drainage Requirements
Growth Management in Sensitive Areas	Health Regulations
Underground Fuel Storage Systems	Small Sewage Treatment Plants
Septic Cleaner Bans	Septic System Upgrades
Toxic & Hazardous Material Regulations	Private Well Protection
Voluntary Restrictions	Sale, Donation or Trust
Conservation Easements	Limited Development
Other non-regulatory	Monitoring
Contingency Plans Hazardous Waste Collection	
Public Education Land Banking	

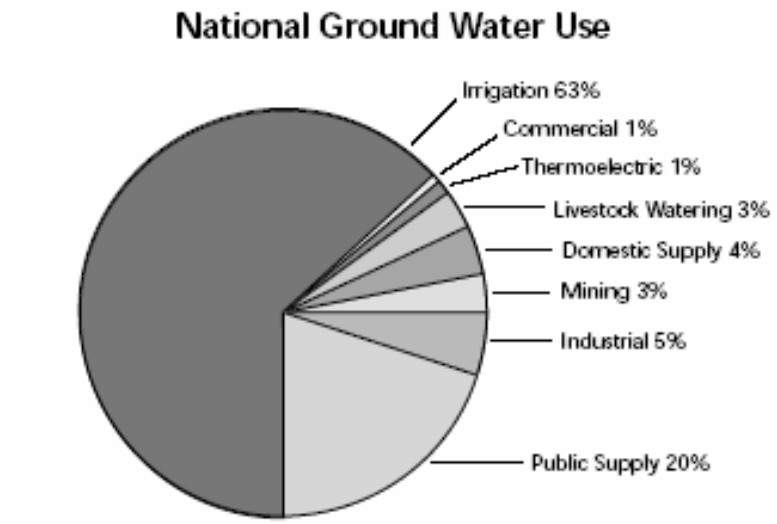
Groundwater Management Practices

Zoning Districts	Practices
Groundwater recharge	Impervious area restriction
Artificial wetlands	Grass lined channels
Impoundment structures (ponds)	Subsurface drains (tiles)
Infiltration trenches	Native tree and shrub plantings
Pollutant reduction	Buffer strips
Filter strips	Riparian zones
Pollution prevention	Soil nitrate testing
Integrated pest management	Manure testing
Variable rate applications	Abandoned well closure

The latest USGS report was issued in October 1998 for the 1995 water year. The USGS report shows that ground water provides water for drinking and bathing, irrigation of crop lands, livestock watering, mining, industrial and commercial uses, and thermoelectric cooling applications.

Figure 1 illustrates how ground water use is proportioned among these categories. As shown, irrigation (63%) and public water supply (20%) are the largest uses of ground water. About 77,500 million gallons of ground water are withdrawn daily.

Figure 1



Source: *Estimated Use of Water in the United States in 1995.* U.S. Geological Survey Circular 1200, 1998.

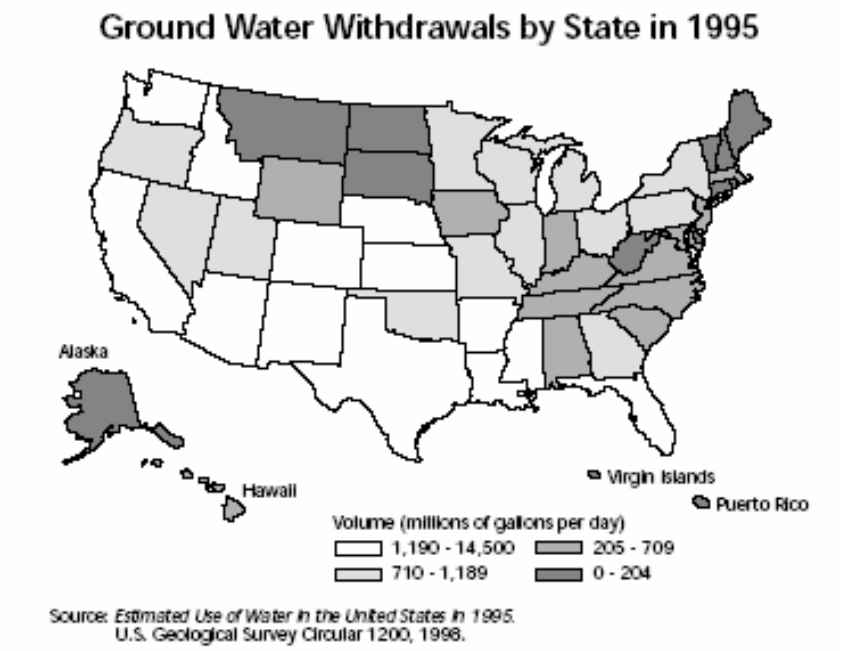
In 1995, the USGS reported that ground water supplied 46% of the nation's overall population and 99% of the population in rural areas with drinking water. Our nation's dependence on this valuable resource is clear.

Every state uses some amount of ground water. Nineteen states obtain more than 25% of their overall water supply from ground water. Ten states obtain more than 50% of their total water supply from ground water.

Each state uses its ground water differently. Ground water use in individual states is a result of numerous interrelated factors generally associated with geography and climate, the principal types of business activities occurring in the state, and population distribution. Fresh ground water withdrawals during 1995 were highest generally in the western states, primarily to supply an increasing population and to sustain important agricultural activities.

Figure 2 shows the volume of ground water withdrawn by states. The 13 states that have the greatest withdrawals account for 69% of all ground water that is withdrawn nationally.

Figure 2



Source: *Estimated Use of Water in the United States in 1995.* U.S. Geological Survey Circular 1200, 1998.

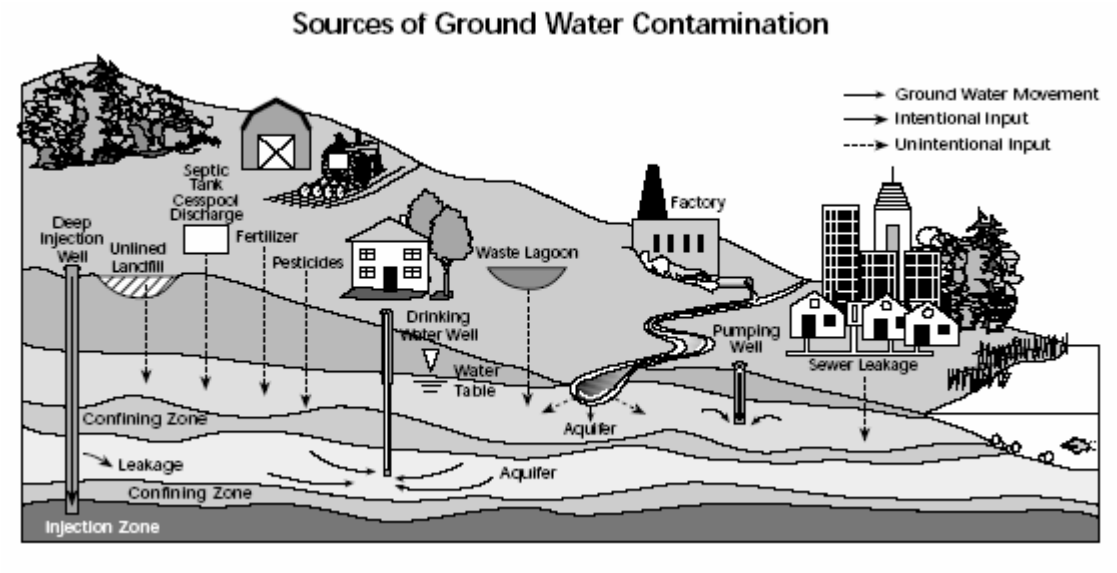
Sources of Ground Water Contamination

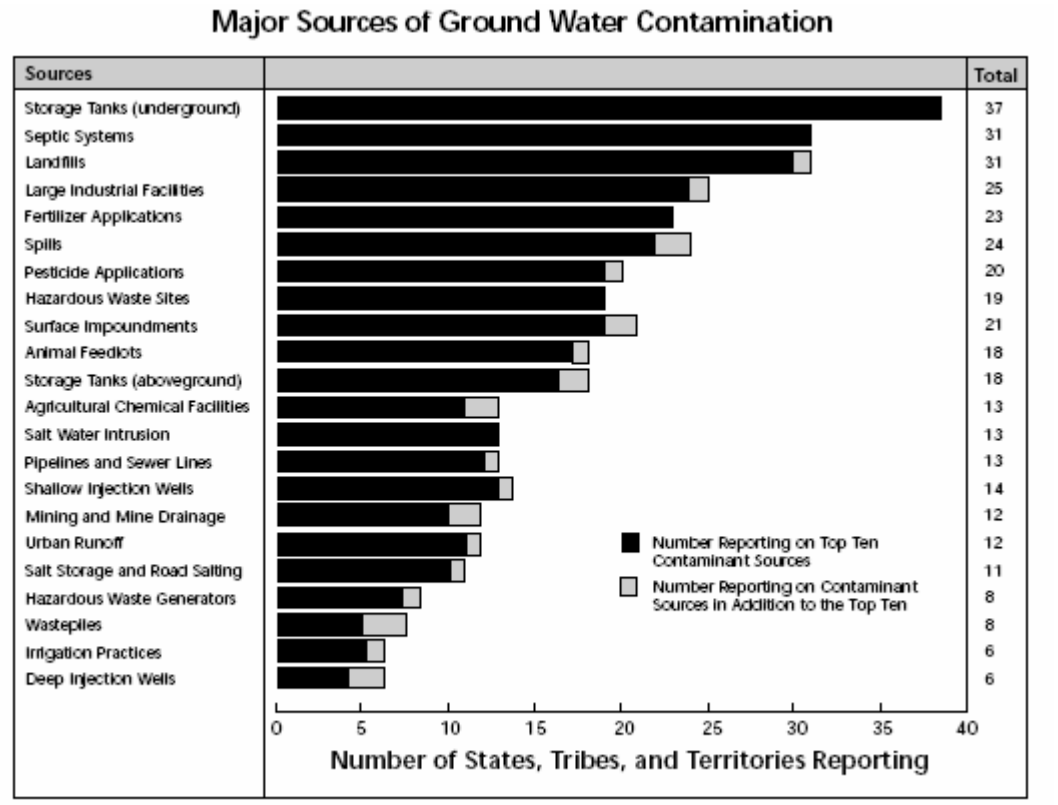
Ground water quality may be adversely impacted by a variety of potential contaminant sources. It can be difficult to identify which sources have the greatest impact on ground water quality because each source varies in the amount of ground water it contaminates. In addition, each source impacts water quality differently.

An EPA/state workgroup developed a list of potential contaminant sources and requested each state to indicate the 10 top sources that potentially threaten their ground water resources. States added sources as was necessary based on state-specific concerns. When selecting sources, states considered numerous factors, including _ The number of each type of contaminant source in the state

- The location relative to ground water sources used for drinking water purposes
- The size of the population at risk from contaminated drinking water
- The risk posed to human health and/or the environment from releases
- Hydro-geologic sensitivity (the ease with which contaminants enter and travel through soil and reach aquifers)
- The findings of the state's ground water assessments and/or related studies.

Ground Water Protection





EPA,
"National Water Quality Inventory"

Methyl Tertiary Butyl Ether (MTBE)

Senate Bill 521 was introduced February 24, 1997 in response to a growing awareness of the possible environmental and health effects associated with the use of Methyl Tertiary Butyl Ether (MTBE) as an oxygenate blending agent in gasoline fuels throughout California (Appendix A). Since 1979, MTBE had been used in the State as a replacement for tetraethyl lead and as an octane booster. Although used in California since 1979 in volumes ranging from 0.5 to 3.5 percent, the volumes of MTBE in gasoline have increased to 11 percent since 1996. SB 521, which became effective January 1, 1998, called for the University of California to perform an assessment of the benefits and risks associated with the uses of MTBE in California.

This assessment report addresses: 1) the current impacts of MTBE to the state's groundwater used for drinking; 2) risks to the state's groundwater resources associated with MTBE leaking from storage tanks and other petroleum storage and conveyance facilities; and 3) potential future risks to the state's groundwater should MTBE continued to be used.

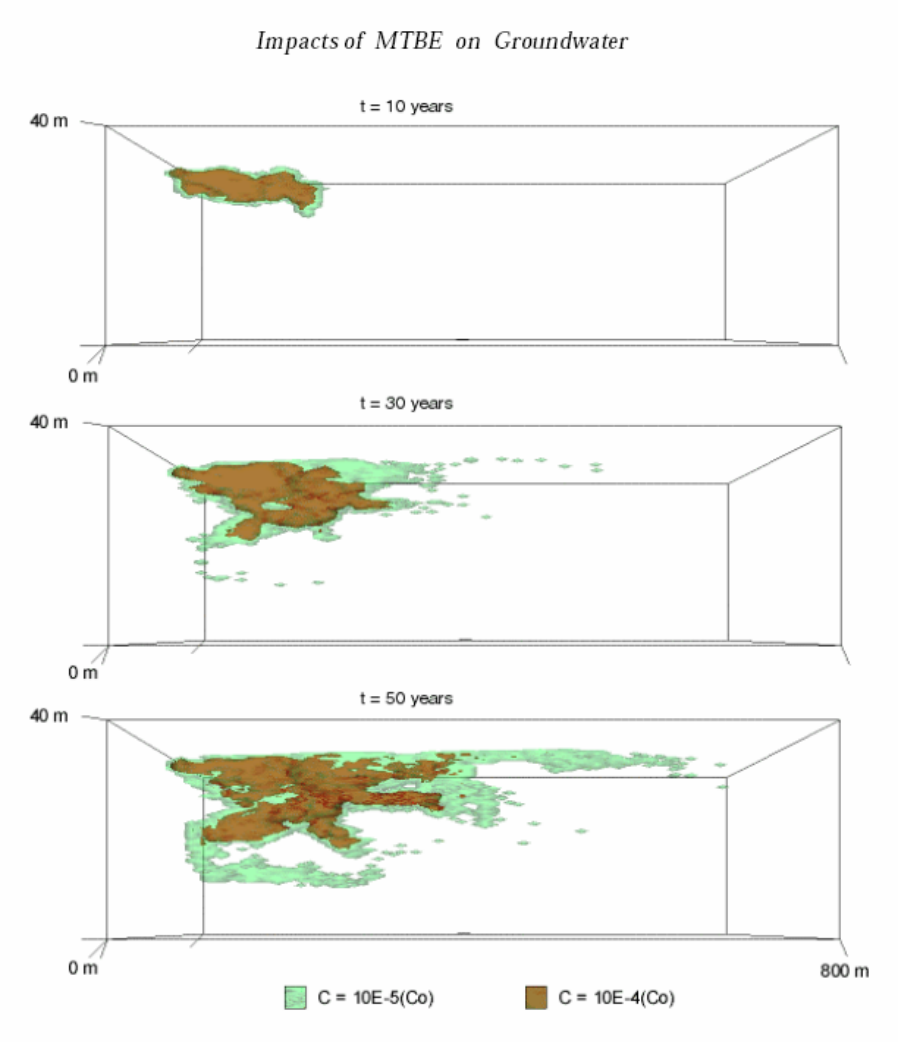
The general approach was to compile statewide data on the occurrence of MTBE groundwater contamination. The data consisted of MTBE detections and concentrations at leaking underground storage tank sites from Regional Water Quality Control Boards and MTBE detections and concentrations in water supply wells based on information from the Department of Health Services, Local Primacy Agencies, and Regional Water Quality Control Boards. We used various modeling approaches to then assess potential future impacts of MTBE on groundwater resources, focusing primarily on plume behavior in aquifer systems consisting of alluvial materials (i.e., sand, gravel, silt and clay). This report also includes specific information on MTBE impacts on groundwater in the Tahoe Basin.

A recent investigation into the impacts of MTBE on California groundwater by Happel et al. (1998) provided an important foundation for this study. The analysis of groundwater impacts contained herein complements the work of Happel et al. (1998) by accumulating more recent statewide information with broader geographic coverage. Moreover, we use plume length statistics compiled by Happel et al. (1998) as a basis for calibrating models that simulate future MTBE plume growth.

The use of MTBE in gasoline has increased steadily since it was first approved for use in gasoline by the United States Environmental Protection Agency (USEPA) in 1979. MTBE is produced from isobutene, a waste product of the petroleum refining process. In 1994, MTBE was ranked as the eighteenth most produced chemical in the United States. By 1995 it was ranked twelfth, and by 1997 it was ranked second (OEHHA, 1998). MTBE was used in California's lead phase out program in 1979 at volumes up to 2 percent as a lead substitute and octane booster.

The US EPA approved use of MTBE in 1981 up to 10 percent and in 1988 approved its use up to 15 percent by volume (CAEPA, 1998). As early as 1988, MTBE use in southern California had begun to increase. In 1988, a refiner introduced an environmentally clean fuel in California that included 6 to 8 percent MTBE by volume. This refiner reportedly supplied 30 percent of the fuel in California of which approximately 20 percent of this refiner's sales was the environmentally clean fuel. This fuel was sold principally in southern California (D. Simeroth, personal communication, 1998).

The complete phase out of lead in fuel occurred in 1992, at which time the Winter Time Oxygenate Program began in California. There was an increased use of MTBE in the southern part of the state, with longer wintertime intervals and an earlier commencement of the year-round oxygenate program starting in 1995 rather than 1996. After March 1, 1996, all gasoline sold in California was Phase 2 reformulated gas containing 11 percent by volume MTBE. Approximately, 92 billion gallons of MTBE was produced in 1997 (Zogorski et al., 1998). California is reportedly the third largest worldwide consumer of MTBE, second only to the rest of the United States and the former Soviet Union (OEHHA, 1998).



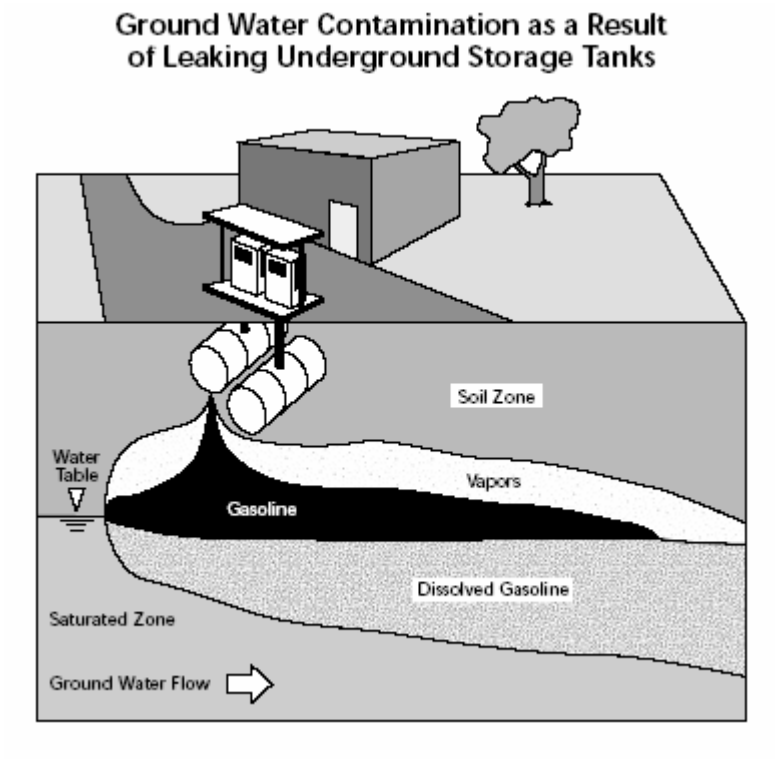
3-D simulated MTBE plume snap shots at (top to bottom) 10, 30, and 50 yr. Total thickness of the box is 40.5 m, and total length is 810 m. Regional flow is left to right. Screened interval of the pumping well is located in the center of the domain at a depth of 20 m.

University of California at Davis; "Impacts of MTBE on California Groundwater"

Sources of MTBE in Groundwater

MTBE sources of groundwater contamination include leaking underground fuel tanks (LUFT's), above ground storage tanks, farm tanks, leaking petroleum fuel pipelines, underground storage tanks containing fuels other than gasoline, surface spills due to automobile or tanker truck accidents, surface spills due to abandoned or parked vehicles, MTBE contaminated surface water, and precipitation. The LUFT sites are numerous, widely dispersed, proportional to the state's population, and involve enormous volumes of fuel products. As of June 30, 1998 there were 32,779 known sites where chemical compounds, including gasoline and non-gasoline products, were discharged to the environment from underground storage tanks. Ninety percent of these discharges involve petroleum products.

University of California at Davis; "Impacts of MTBE on California Groundwater"



Ground Water Protection

The responsibility for ground water protection collectively belongs to government agencies at the federal, state, and local levels. Federal and state governments regulate ground water through laws, regulations, and policies. In many cases, state and local laws are stricter versions of federal legislation, which serves as a valuable baseline on which state and local laws can build.

At the federal level, the Clean Water Act (CWA) ensures protection of surface waters designated, in part, for use as drinking water. Other environmental laws—the Safe Drinking Water Act (SDWA) (which includes the Wellhead Protection [WHP] Program, the Sole Source Aquifer [SSA] Program, and the Underground Injection Program); the Resource Conservation and Recovery Act (RCRA); the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); and the

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)—provide authorities, financial support, and technical assistance to protect sources of drinking water, especially ground water.

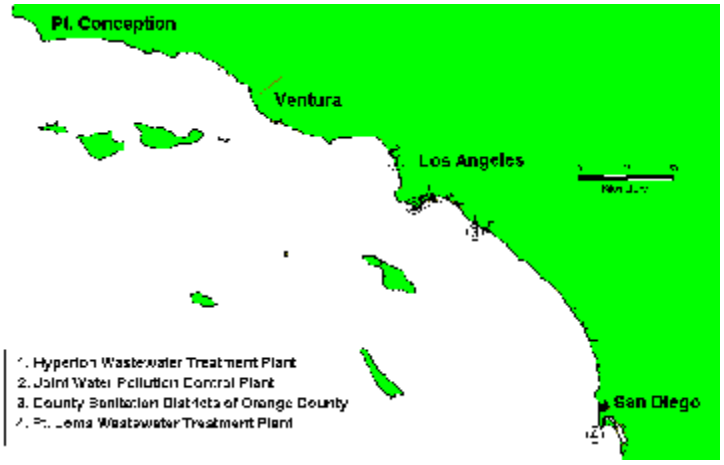
EPA is developing a regulation on ground water that specifies the appropriate use of disinfection and addresses other components of ground water systems to ensure public health protection. Various studies seem to indicate that the number of ground water sources with evidence of fecal contamination is significant. EPA is analyzing the data to determine if they represent public wells nationally. The proposed rule also encourages the use of alternative approaches, including best management practices and source control.

EPA, "National Water Quality Inventory"

Waste Water

Characteristics Of Effluents From Large Municipal Wastewater Treatment Facilities

Effluents from the Hyperion Treatment Plant (HTP) of the City of Los Angeles, the Joint Water Pollution Control Plant (JWPCP) of County Sanitation Districts of Los Angeles County (CSDLAC), Wastewater Treatment Plants 1 and 2 of County Sanitation Districts of Orange County (CSDOC), and Point Loma Wastewater Treatment Plant (PLWTP) of the City of San Diego comprise 90% of municipal wastewater discharged directly to the Southern California Bight. These agencies have routinely measured the characteristics of their effluents for at least two decades. Each year during this period, the Southern California Coastal Water Research Project (SCCWRP) has summarized these measurements and reported on discharge and constituent trends. In this report, we summarize the concentrations of effluent constituents and estimate the mass emissions for these four agencies for 1993; we also discuss trends in the mass emissions of contaminants from 1971 to 1993.



Inherent Danger to Waste Water Systems

"CALIFORNIA WASTEWATER TREATMENT OPERATOR ADMITS TO WATER TAMPERING

FOR RELEASE: FRIDAY, APRIL 9, 1999

CALIFORNIA WASTEWATER TREATMENT OPERATOR ADMITS TO WATER TAMPERING

Bernardino Lopez, former wastewater treatment plant operator for the Niland Sanitary District, pleaded guilty on March 29 in U.S. District Court for the Southern District of California in San Diego, to violating the Clean Water Act (CWA). Lopez admitted that in August and September of 1998, he repeatedly added chlorine to wastewater samples that were to be tested for E. coli. bacteria. The samples were used to develop monthly reports to the Regional Water Quality Control Board. Adding chlorine to the samples concealed the fact that both treatment plants were discharging wastewater with E. coli. levels that exceeded the limits allowed in their CWA National Point Discharge Elimination System permits. Human exposure to wastewater containing excessive levels of E. coli. can cause skin and intestinal infections. Wastewater from both plants flows into the Salton Sea. When sentenced, Lopez faces a maximum penalty of two years imprisonment and/or a $10,000 fine. This case was investigated by the Imperial County Environmental Task Force, which includes EPA's Criminal Investigation Division, and was prosecuted by the U.S. Department of Justice."

Aviation Disasters

Aviation Disasters were rated a MODERATE PRIORITY RISK by the City of Commerce Hazard Mitigation Planning Team.

Planes from LAX are suspended over City of Commerce when circling to land. Air traffic accidents could result in high casualties. *Discussion*: The airport declined to give take-off and landing patterns to the City of Commerce.

A major air crash that occurs in a heavily populated residential area can result in considerable loss of life and property. The impact of a disabled aircraft as it strikes the ground creates the likely potential for multiple explosions, resulting in intense fires have the potential to cause injuries, fatalities and the destruction of property at and adjacent to the impact point. The day and time when the crash occurs may have a profound affect on the number of dead and injured. Emergency medical care, food and temporary shelter may be required for injured or displaced persons. Damage assessment and disaster relief efforts associated with an air crash incident will require support from other local governments, private organizations and from the state and federal governments.

It can be expected that few, if any, airline passengers will survive a major air crash. The intense fires, until controlled, will limit search and rescue operations. Law enforcement will be needed to contain the affected area and for any crowd control, including the media. Investigators from the National Transportation and Safety Board (NTSB) and the Federal Aviation Administration (FAA) will have jurisdiction over the crash area (or the Federal Bureau of Investigation [FBI] if it is criminal in nature), assisted by the Los Angeles County Coroner's Office. The clean-up operation may consist of the removal of large debris, clearing of roadways, demolishing unsafe structures and towing of demolished vehicles.

A Coordinated response team, comprised of mental health professionals, should take a proactive approach toward identifying and addressing mental health needs from any traumatic disaster.

It is impossible to totally prepare, either physically or psychologically, for the aftermath of a major air crash. It can be anticipated that the mental health needs of survivors and the surrounding residents will greatly increase due to the trauma associated with such catastrophe.

The City of Commerce is located in the southeast portion of Los Angeles County. The City is comprised of residential, commercial and industrial areas. The City contains major freeway systems such as the Interstate 605 on the east and Interstate 5 on the south. The skies above Commerce are heavily occupied by aircraft originating and departing from a number of airports located in Southern California. The airports nearest to Commerce which handle the greatest amount of air traffic are as follows:

- Los Angeles International Airport (LAX)
- Long Beach Airport
- John Wayne Airport
- Ontario Airport
- Burbank Airport

Aircraft flying over Commerce are located in the Los Angeles Terminal Control Area (TCA). The TCA is airspace restricted to large, commercial airliners. Each TCA has an established maximum and minimum altitude in which a large aircraft must travel. Smaller aircraft desiring to transit the TCA may

do so by obtaining Air Traffic Control clearance. The aircraft may then proceed to transit when traffic conditions permit. Aircraft departing from other than LAZ, whose route of flight would penetrate the TCA, are required to give this information to Air Traffic Control on appropriate frequencies. Pilots operating small aircraft often rely on geographical landmarks, rather than charts, to indicate their locations. If pilot is unfamiliar with the geographical landmarks of the Southern California basin, he/she may misinterpret a particular landmark and inadvertently enter the restricted TCA airspace. This misunderstanding may result in mid-air collision.

Airline crashes are listed as a less significant hazard because individually they are less likely to result in a state or federal disaster declaration. However, State OES recognizes the severity of these incidents as they often lead to deaths and injuries.

Airline(s)/Flight	Location	Airline(s)/Flight	Location
South West 1455	Burbank	Swift Air Lines, Inc.	Marina Del Rey
Phoenix Air 35A	Fresno	Pacific Southwest Airlines	San Diego
USAIR 1493/Skywest 5569	Los Angeles	Continental Airlines	Los Angeles
Bell	Alamo	Jet Aviation, Ltd.	Palm Springs
North Star/Cessna	Oakland	Mercer Airlines	Van Nuys
Aero naves De Mexico/Piper	Cerritos	Golden West Airlines	Whittier
China Airlines	San Francisco	Sierra Pacific Airlines	Bishop
Western Helicopters	Valencia	Trans World Airlines	Los Angeles
McDonell Douglas Corp.	Edwards AFB	Spectrum Air, Inc.	Sacramento
Air California 336	Orange County	Trans World Airlines	San Francisco

Most Recent Accident

On March 5, 2000, about 1811 Pacific standard time (PST),[1] Southwest Airlines, Inc., flight 1455, a Boeing 737-300 (737), N668SW, overran the departure end of runway 8 after landing at Burbank-Glendale-Pasadena Airport (BUR), Burbank, California. The airplane touched down at approximately 182 knots, and about 20 seconds later, at approximately 32 knots, collided with a metal blast fence and an airport perimeter wall. The airplane came to rest on a city street near a gas station off of the airport property. Of the 142 persons on board, 2 passengers sustained serious injuries; 41 passengers and the captain sustained minor injuries; and 94 passengers, 3 flight attendants, and the first officer sustained no injuries. The airplane sustained extensive exterior damage and some internal damage to the passenger cabin. During the accident sequence, the forward service door (1R) escape slide inflated inside the airplane; the nose gear collapsed; and the forward dual flight attendant jump seat, which was occupied by two flight attendants, partially collapsed.

The National Transportation Safety Board determines that the probable cause of this accident was the flight crew's excessive airspeed and flight path angle during the approach and landing and its failure to abort the approach when stabilized approach criteria were not met. Contributing to the accident was the controller's positioning of the airplane in such a manner as to leave no safe options for the flight crew other than a go-around maneuver.

Major Airport Locations

Substations

Substations were rated as a MODERATE PRIORITY RISK by the City of Commerce Hazard Mitigation Planning Team.

Information Pending

Biological & Health Emergencies

Biological & Health Emergencies were rated as a MODERATE PRIORITY RISK by the City of Commerce Hazard Mitigation Planning Team.

Los Angeles County has experienced numerous disasters, varying in type and severity. Disasters often result in the need for health and human services as part of the immediate and long-term recovery period. Some disasters are localized with service needs focused in a single location; other disasters, such as earthquakes and civil unrest, result in geographically widespread health and human services needs.

It is essential following a disaster to identify locations where large numbers of people are gathered in open areas. These areas will require evaluation in order to assess health and human service needs. The recovery period may be shortened if health, mental health, and housing problems can be addressed quickly.

This plan is primarily directed to Los Angeles County Departments that will provide the initial team members. Other key human service providers, public and private, will be added to the teams to meet the growing needs of disaster victims.

Mission statements of the following Departments all relate to health and human services; they are annotated below:

Department of Health Services:

"...To protect, maintain, and improve the health of the community."

Community Health Services:

"... To provide population based public health services and public health clinics in order to assure healthy communities in Los Angeles County through the services of Public Health Nurses, Public Health Investigators, and others."

Environmental Health Services:

"... To protect health, prevent disease, and promote health for all persons in Los Angeles County through the management of potentially harmful chemical, physical, or biological agents in the environment."

Department of Mental Health:

The Department of Mental Health (DMH) will coordinate and provide mental health services to community disaster victims and disaster workers throughout the entire duration of the disaster and its recovery period. DMH will augment the Department of Health Services by providing disaster mental health services.

Department of Public Social Services:

The Department of Pubic Social Services (DPSS) is responsible, in partnership with the American Red Cross, to ensure that residents receive appropriate emergency shelter. DPSS is the County's liaison with Emergency Network Los Angeles/LA Voluntary Agencies Active in Disaster (ENLA/LAVOAD). In a disaster, DPSS will communicate community needs to this agency.

Department of Children and Family Services:

The Department of Children and Family Services (DCFS) is responsible for the safety and well-being of the children in its care, and the children otherwise known as "unaccompanied minors" who may be left unsupervised as a result of a disaster.

Department of Community and Senior Services:

The Department of Community and Senior Services (CSS) will manage and staff emergency shelters; contact high-risk IHSS clients; implement the Federal Repatriation Program; staff Disaster Services Centers using volunteers and contract agencies; provide public information through the Information and Referral network; and perform outreach and disaster assistance services through grants received from the California Departments of Aging and Social Services.

Disaster Assessment & Recovery Team (DART)

County human services departments have formed interdisciplinary **D**isaster **A**ssessment and **R**ecovery **T**eams (DARTs), which will activate following a disaster. Once activated, DARTs will go to parks, shelters, and other areas where large numbers of people are gathered. Activities will:

- Encourage people to move to established shelters or, if safe, return to their homes.
- Identify health and human services needs that will assist large groups of people to recover from the event;
- Maximize resource utilization.
- Eliminate resource duplication; and
- Respond immediately to meet health and human needs for larger groups of people.

Public Health Rapid Response Team (PHRRT)

The mission of the **P**ublic **H**ealth **R**apid **R**esponse **T**eams (PHRRT) will be to conduct rapid, coordinated epidemiologic investigations or health needs assessments while providing technical assistance to DART members and response partners in the mitigation of public health emergencies. The PHRRT units will be trained and equipped to respond to CBRNE (Chemical, Biological, Radiological, Nuclear, and Explosive) events, natural and manmade disasters, and other large-scale infectious disease outbreaks. PHRRT members will be equipped to respond 24 hours a day / 7 days a week to a variety of emergency settings countywide including field investigation sites, impact zones, recovery shelters, field treatment centers, and/or medical facilities. Team functions will include:

- Rapid collection, analysis, and dissemination of epidemiologic data to provide decision makers with critical information in the midst of a public health emergency

- Post-disaster surveillance or monitoring, via active or passive mechanisms, of critical health-related data sources and zones of impact

- Technical or operational assistance to emergency response personnel under the Incident Command Structure of the Standardized Emergency Management System including Disaster Assessment and Recovery Team personnel.

- Identification of at-risk populations for the effective deployment and delivery of public health resources (needs assessments, contact tracing, etc.)

- Provide critical public health information to those affected and interface with other local responders on the potential health risks of a disaster.

- Assist with the implementation and evaluation of disaster mitigation strategies that will set the stage for additional comprehensive public health interventions

- Evaluation and analysis of post-disaster impact, resource utilization, and community health through rapid needs assessments and impact surveys

PHRRT Team Structure & Response

The PHRRT will consist of a field-deployable 40-person team of pre-designated, highly trained public health personnel. Based on the nature of the incident, the following Public Health programs or units may act as the designated lead (or co-lead) units for the PHRRT during a public health emergency:

- Health Assessment and Epidemiology (including Injury Program, Toxics Epidemiology)

- Acute Communicable Disease Control (including Immunization Program)

- Disease Control Programs (Veterinary Program, TB, etc.)

- Environmental Health (including Environmental Hygiene, Radiation Management)

- Public Health Nursing Programs

- Public Health Investigations

Composition of Team

In order to provide an effective, multi-disciplinary response workforce, the PHRRT unit will include the following classifications of Los Angeles County public health personnel:

- Epidemiologists / Epidemiology Analysts (8 Field-Based, 5 Central)

- Environmental Health Specialists (6, includes Sanitarians, Hygienists, Rad. Technicians)

- Public Health Laboratory Technicians (2)

- Public Health Veterinarians (2)

- Program or SPA Medical Directors (4)

- Public Health Nurses or Program Specialists (8)

- Public Health Investigators (8)
- Communications Specialist (2)
- Media Liaisons (2)
- Agency Liaisons (EOC, DOC, TEW)

The composition and structure of the PHRRT will allow for partial or scaled mobilization and deployment of personnel to adjust to the projected needs of any public health emergency, including smallpox. The designated lead Public Health program(s) and PHRRT Commander will be charged with determining the level of deployment and number of PHRRT personnel needed to adequately assess and respond to the public health impact of an event. To ensure coordination and cooperation with other relevant response entities in the county such as the Emergency Medical Services Agency, Department of Mental Health, and the Los Angeles County Terrorism Early Warning Group network of agencies, the composition and structure of the PHRRT teams will serve to complement or augment the specialized capacity of these entities. For example, PHRRT personnel will cross-train with DART personnel to understand individual roles and the necessary level of interaction required to respond effectively. Conversely, personnel such as criminal investigators, medical examiners, and Health Haz-mat personnel may be tasked to the PHRRT to assist with public health base and field operations.

Additional personnel tasked to the PHRRT will include information systems technicians, transport personnel and other clerical staff who will be pre-identified to ensure availability of services to support effective central and field-based operations. These individuals will be pre-identified by the Chief of Operations for Public Health who is tasked with operational support for all public health resources during a public health emergency. Any subsequent additions and support personnel from the Federal or State level will be integrated into ongoing PHRRT response activities through the designated lead unit(s) and provide expanded support when needed.

Health Hazards

West Nile Virus

4 Report to the People October 2004

Fight the Bite!

Avoid Mosquito Bites to Avoid Infection

Apply Insect Repellent Containing DEET (Look for: *N,N-diethyl-meta-toluamide*) to exposed skin when you go outdoors. Even a short time sitting outdoors can be long enough to get a mosquito bite. For details on when and how to apply repellent, see CDC's Insect Repellent Use and Safety page: http://www.cdc.gov/ncidod/dvbid/westnile/qa/insect_repellent.htm .

Clothing Can Help Reduce Mosquito Bites. When possible, wear long-sleeves, long pants and socks when outdoors. Mosquitoes may bite through thin clothing, so spraying clothes with repellent containing permethrin or DEET will give extra protection. Don't apply repellants containing permethrin directly to skin. Do not spray repellent containing DEET on the skin under your clothing.

Be Aware of Peak Mosquito Hours. The hours from dusk to dawn are peak mosquito biting times. Consider avoiding outdoor activities during these times -- or take extra care to use repellent and protective clothing during evening and early morning.

Mosquito-Proof Your Home

Drain Standing Water: Mosquitoes lay their eggs in standing water. Limit the number of places around your home for mosquitoes to breed by getting rid of items that hold water. Need examples? Learn more on the Prevention of West Nile Virus question and answer page: http://www.cdc.gov/ncidod/dvbid/westnile/qa/prevention.htm

Install or Repair Screens. Some mosquitoes like to come indoors. Keep them outside by having well-fitting screens on both windows and doors. Offer to help neighbors whose screens might be in bad shape.

Help Your Community

Clean Up. Mosquito breeding sites can be everywhere. Neighborhood clean up days can be organized by civic or youth organizations to pick up containers from vacant lots, parks and to encourage people to keep thier yards free of standing water. Mosquitoes don't care about fences, so breeding sites anywhere in the neighborhood are important.

Report Dead Birds to Local Authorities. Dead birds may be a sign that West Nile virus is circulating between birds and the mosquitoes in an area. Over 110 species of birds are known to have been infected with West Nile virus, though not all infected birds will die.

By reporting dead birds to state and local health departments, the public plays an important role in monitoring West Nile virus. Because state and local agencies have different policies for collecting and testing birds check the Links to State and Local Government Sites page to find information about reporting dead birds in your area: http://www.cdc.gov/ncidod/dvbid/westnile/city_states.htm . This page contains more information about reporting dead birds and dealing with bird carcasses: http://www.cdc.gov/ncidod/dvbid/westnile/qa/wnv_birds.htm

Human illness from West Nile virus is rare, even in areas where the virus has been reported. The chance that any one person is going to become ill from a mosquito bite is low.

Three Ways to Reduce West Nile Virus

1. Avoid Mosquito Bites
2. Mosquito-Proof Your Home
3. Help Your Community

Find out more about local prevention efforts. Find state and local West Nile virus information and contacts on the Links to State and Local Government Sites page.

WNV – Reference Information

Although the initial threat of WNV has been reduced, knowing who to call can make all the difference. We can not keep West Nile Virus out of California, but working together, we can reduce the risks even further.

Medical Emergency: Call 911

Non-Emergency Medical Questions:
Contact your Primary Care Physician

General Information (Multilingual):
LA County WNV Hotline
(800) 975-4448
(recorded message)
http://lapublichealth.org/acd/index.htm

To Report Dead Birds:
West Nile Dead Bird Hotline
www.westnile.ca.gov
(877) WNV-BIRD (968-2473)

WNV in Horses:
Contact your local Veterinarian

Centers for Disease Control
http://www.cdc.gov/ncidod/dvbid/westnile/index.htm

Mosquito Problems or General Questions:
Greater Los Angeles County Vector Control District
www.glacvcd.org.....(562944-9656

Humans

As of August 17, 2004 , a total of 189 WNV infections have been reported from the following local health jurisdictions: San Bernardino (76), Los Angeles (59), Riverside (40), Orange (6), Imperial (1), Kern (2), Fresno (2), Tulare (1), Ventura (1) and Yolo (1) counties. Thirteen of these WNV infections were initially detected in asymptomatic individuals through screening done at blood banks- one of these individuals later became symptomatic. Of the 177 WNV cases with symptoms, 80 are classified as West Nile fever cases, 74 are classified as West Nile neuroinvasive disease, and 23 are of unknown status. The median age for all cases where data was available = 50 years (range: 9 – 91 years). Median age for West Nile fever cases = 46 years (range: 9 – 82 years). Median age for West Nile neuroinvasive disease cases = 59 years (range: 15 – 91 years). 115/177 (65%) of the cases are male. There have been five fatalities to date in California in Orange (1), San Bernardino (2) and Los Angeles (2) counties.

Equines

The California Department of Food and Agriculture confirmed 30 WNV equine cases from the counties of Alpine(1), Butte (1), Fresno (1), Orange (1), Riverside (12), Sacramento (4), San Bernardino (2), San Diego (1), Tehama (1), and Ventura (1) at the end of August 2004. This represents the first equine cases in the counties of Alpine, Butte, Orange, San Diego, and Ventura and the first indication of WNV in Alpine County-. Forty-eight horses have been euthanized or have died after being infected with WNV.

Dead Birds

The following eleven new counties detected WNV in dead birds at the end of August 2004: Calaveras (1), Lake (1), Lassen (1), Mariposa (1), Plumas (1), San Luis Obispo (1), San Mateo (1), Sierra (1), Sutter (2), Yolo (1), and Yuba (3). An additional 183 WNV positive dead birds were reported last week from Alameda (1), Butte (48), Contra Costa (1), El Dorado (2), Fresno (9), Glenn (5), Kern (3), Los Angeles (37), Mendocino (1), Orange (20), Placer (1), Riverside (1), Sacramento (16), San Diego (1), San Joaquin (2), Santa Barbara (1), Shasta (4), Solano (1), Sonoma (7), Stanislaus (3), Tehama (18), and Tulare (1). In 2004, a total of 1,447 WNV positive dead birds have been detected in California.

Mosquito Pools and Sentinel Chickens:

A total of 109 mosquito pools tested positive for WNV last week from Los Angeles (43), Orange (30), San Bernardino (26), Kern (4), Shasta (3), Riverside (1), Sacramento (1), and San Luis Obispo (1) counties, thus bringing the yearly total to 523. This represents the first positive mosquito activity reported in San Luis Obispo County. Fourteen chickens from Imperial (4), Los Angeles (3), and San Bernardino (7) counties seroconverted to WNV at the end of August, 2004, bringing the yearly total to 214.

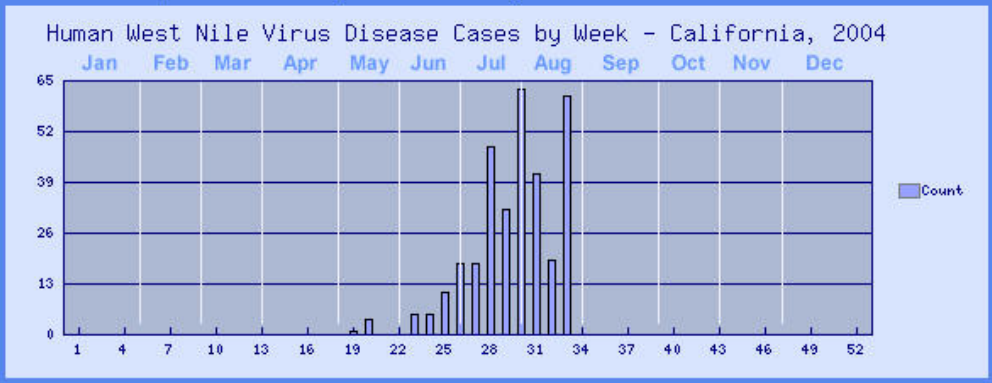
Summary of West Nile Virus Activity in California, 2004

(Los Angeles and neighboring counties)

	Summary of West Nile Virus Activity in California, 2004				
	Humans	Equines	Dead Birds	Mosquito Pools	Sentinel Chickens
Los Angeles	**124**	**4**	**763**	**240**	**37**
Orange	19	1	127	95	-
Riverside	63	59	130	94	121
San Bernardino	119	25	284	121	95
San Diego	1	1	10	-	-
Santa Barbara	-	-	3	-	-
Santa Clara	-	-	21	-	-
Ventura	1	1	9	-	-
State Totals	**343**	**158**	**1,922**	**685**	**313**

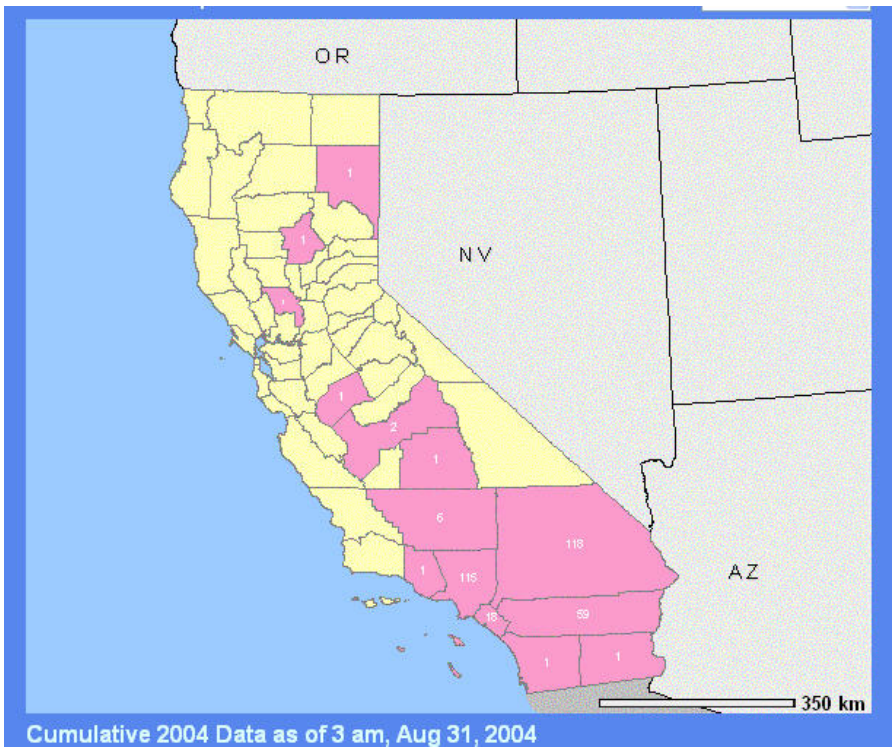
California West Nile Virus Surveillance Information Center

These data are provisional and may be revised or adjusted in the future.



Cumulative Human Disease Cases by County - California, 2004

Butte County	1
Fresno County	2
Imperial County	1
Kern County	6
Lassen County	1
Los Angeles County	115
Merced County	1
Orange County	18
Riverside County	59
San Bernardino County	118
San Diego County	1
Tulare County	1
Ventura County	1
Yolo County	1



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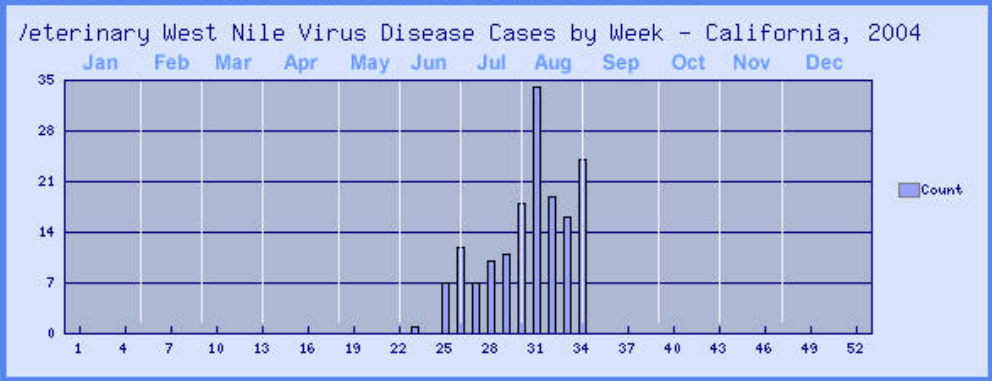
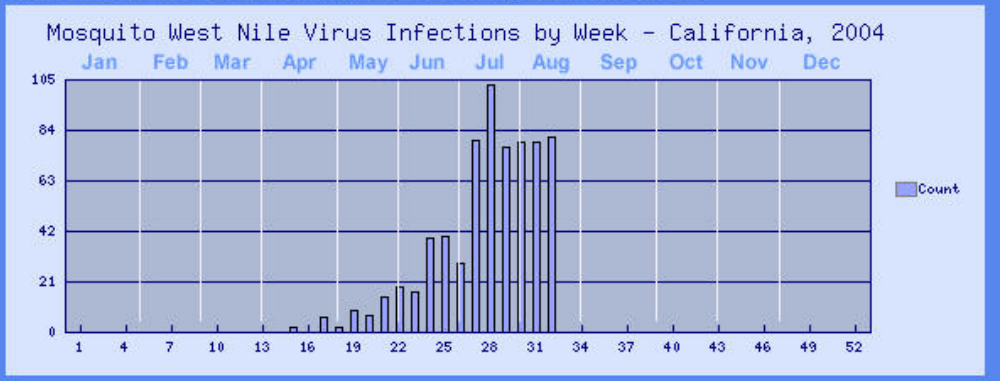


Cumulative Veterinary Disease Cases by County - California, 2004

Alpine County	2	Sacramento County	10
Butte County	8	San Bernardino County	26
Colusa County	2	San Diego County	1
Fresno County	8	Shasta County	4
Glenn County	5	Sutter County	2
Inyo County	1	Tehama County	14
Kern County	9	Tulare County	1
Los Angeles County	4	Ventura County	1
Orange County	1		
Placer County	1		
Riverside County	59		

Cumulative 2004 Data as of 3 am, Aug 31, 2004

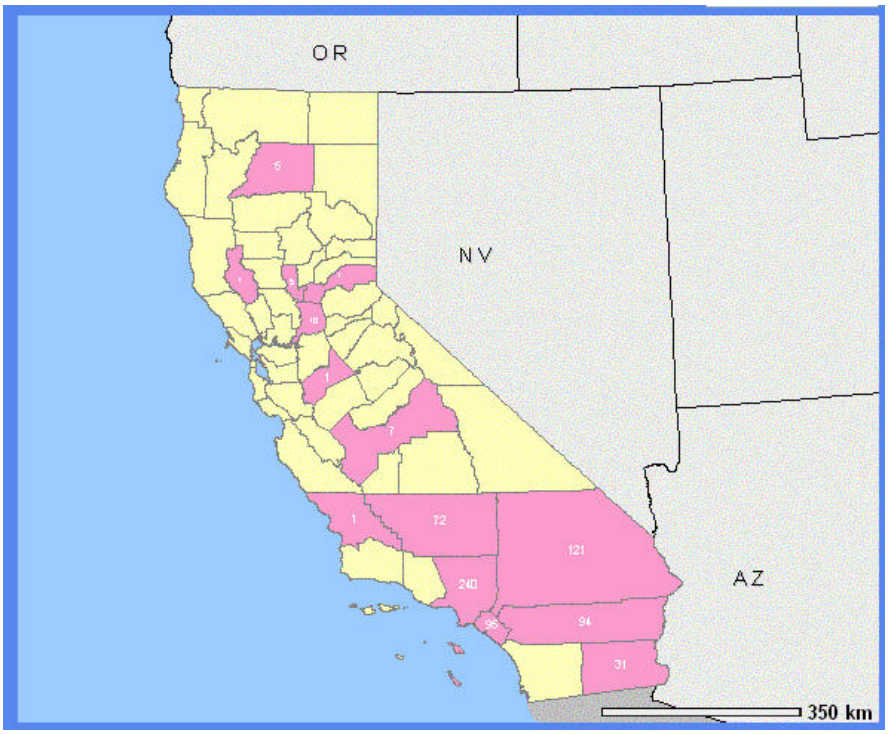
These data are provisional and may be revised or adjusted in the future.



Cumulative Mosquito Infections by County - California, 2004

Fresno County	7
Imperial County	31
Kern County	72
Lake County	1
Los Angeles County	240
Orange County	95
Placer County	1
Riverside County	94
Sacramento County	10
San Bernardino County	121
San Luis Obispo County	1

Shasta County	5
Stanislaus County	1
Sutter County	5



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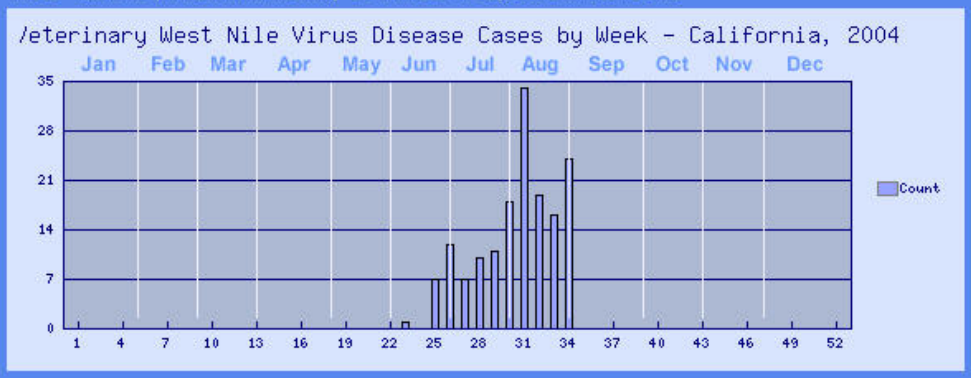


Cumulative Veterinary Disease Cases by County - California, 2004

Alpine County	2	Sacramento County	10
Butte County	8	San Bernardino County	26
Colusa County	2	San Diego County	1
Fresno County	8	Shasta County	4
Glenn County	5	Sutter County	2
Inyo County	1	Tehama County	14
Kern County	9	Tulare County	1
Los Angeles County	4	Ventura County	1
Orange County	1		
Placer County	1		
Riverside County	59		

Cumulative 2004 Data as of 3 am, Aug 31, 2004

West Nile Virus Facts

1. West Nile virus (WNV) is a mosquito-borne disease that is common in Africa , west Asia and the Middle East .

2. West Nile virus was first detected in the United States in New York in 1999. Since then, WNV has spread to 46 states, Canada , and Mexico .

3. In 2003, three locally acquired human WNV cases were detected in residents of Los Angeles , Imperial, and Riverside counties, and WNV activity was detected in dead birds, mosquitoes, sentinel chickens, and a horse in six southern California counties. West Nile virus has also been detected in 2004 in southern California .

4. Last year there were almost 10,000 human cases of WNV detected, including 262 deaths in the United States .

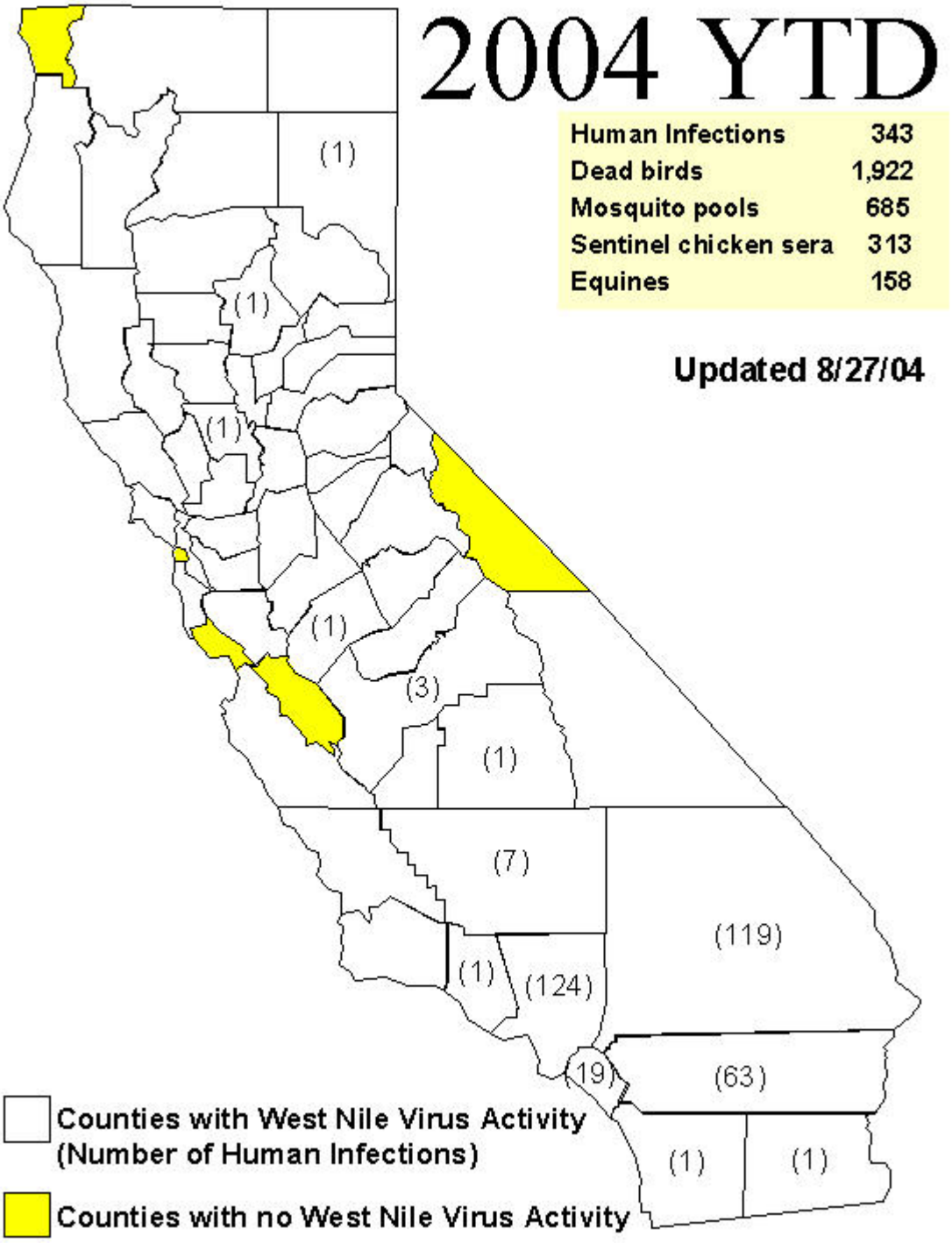
5. People usually get WNV from the bite of an infected mosquito. There is also evidence that WNV can be acquired via a blood transfusion or organ transplant from an infected donor.

6. Most people who are bitten by a mosquito with WNV will not get sick. People who do become ill may experience mild to moderate flu-like symptoms like fever, headache and body ache. It is estimated that less than 1% of the people who are infected with WNV become severely ill and require hospitalization. The elderly and immuno-compromised are particularly susceptible to illness caused by WNV.

7. Currently there is no specific treatment for WNV infection. Since it is a virus it does not respond to antibiotics. In severe cases hospitalization and supportive care is important.

8. California has a long history of conducting surveillance for mosquito-borne viruses and has taken active steps to ensure early detection of WNV. Due to ongoing collaboration between over 70 local mosquito and vector control agencies and state public agencies, California is well prepared to detect, monitor, and respond to WNV. These agencies use a variety of scientific techniques and products to control mosquitoes in their earliest stages and play a key role in reducing the risk of WNV. Also California has launched a statewide public education effort about personal protection measures and reporting dead birds.

9. The public is encouraged to assist in the efforts to detect and monitor WNV by calling the WNV hotline if they find a crow, raven, magpie, jay, sparrow, finch, or hawk that has been dead for about a day. Birds play an important role in maintaining and spreading this virus. Mosquitoes acquire the virus from infected birds, and then transmit the virus to people. Evidence of the virus in dead birds is often the first indication that WNV has been introduced into a new region.


2004 YTD
Human Infections 343
Dead birds 1,922
Mosquito pools 685
Sentinel chicken sera 313
Equines 158
Updated 8/27/04
(1)
(1)
(1)
(1)
(3)
(1)
(7)
(119)
(1)
(124)
(19)
(63)
(1)
(1)
Counties with West Nile Virus Activity
(Number of Human Infections)
Counties with no West Nile Virus Activity

Surveillance for Human Cases

Because the primary public health objective of surveillance systems for neurotropic arboviruses is prevention of human infections and disease, human case surveillance alone should not be used for the detection of arbovirus activity, except in jurisdictions where arbovirus activity is rare, or resources to support avian-based and/or mosquito-based arbovirus surveillance are unavailable.

GOALS OF SURVEILLANCE FOR HUMAN CASES: To 1) assess the local, state and national public health impact of WNV disease and monitor national trends; 2) demonstrate the need for public health intervention programs; 3) allocate resources; 4) identify risk factors for infection and determine high-risk populations; 5) identify geographic areas in need of targeted interventions; and 6) identify geographic areas in which it may be appropriate to conduct analytic studies of important public health issues.

Recent Experience

1. In the U.S. during 1999-2002, the peak human risk for WN viral infection occurred in August and September, although in 2002 human illness onset was reported as early as mid-May and as late as mid-December. In many regions, the peak minimum infection rates in mosquitoes and a rapid increase in the number of reported avian and equine WN viral infections occurred just prior to the period of maximal human risk.

2. In 1999-2002, the majority of reported, confirmed, or probable cases of human WN viral disease were among persons with meningo-encephalitis. Testing of patients with aseptic meningitis or unexplained febrile illnesses for evidence of WN viral infection may be beneficial, but can also overwhelm laboratory testing capacity and appears to be of relatively low yield for surveillance purposes since the majority of these cases will not be due to WNV infection.

3. Most patients with WN encephalitis or meningitis (WNME) are older adults, generally over 50 years old. In the U.S. in 1999-2001, the median age among the 142 reported WNME cases was 68 years. In 2002, among 2,942 reported cases of WN meningo-encephalitis, the median age was 59 years. Although 21% of reported cases were in persons younger than 40, only 4% of reported cases were in persons younger than 18.

4. When WN viral infections were first identified in the U.S., WN encephalitis was associated with a Guillain-Barrè-like syndrome with generalized muscle weakness. In 1999-2000, generalized muscle weakness was reported in 29% of WN encephalitis cases. In 2002, at least 2 new neurologic syndromes associated with WN viral infection were identified: acute flaccid paralysis ("WN poliomyelitis-like syndrome") and brachial plexopathy.

5. Using CDC-recommended test methods in public health laboratories, WNV-specific IgM antibody was detected in acute-phase (i.e., those collected 8 or less days after illness onset) serum or CSF specimens, or both, in the large majority of confirmed cases. In contrast, only a small minority of suspected cases were subsequently confirmed in which specific IgM antibody reactivity in acute-phase serum or CSF was in the equivocal or low-positive range.

6. Longitudinal studies of WNME cases have shown that WNV-specific IgM antibody can persist in serum for 12 months or longer.[43] Thus, the presence of WNV-specific IgM antibody in a single serum sample is not necessarily diagnostic of *acute* WN viral infection. For this reason, especially in areas where WNV is known to have circulated previously, suspected, acute WN viral disease cases should be confirmed by observing a fourfold or more change in titer of WNV-specific antibody in serum and the presence of WNV-specific IgM antibody in CSF, when available.

7. In 1999 in the U.S., the sensitivity of polymerase chain reaction (PCR) tests of CSF for the diagnosis of human WN encephalitis cases was only 57%; more recent statistics are currently unavailable. Thus, PCR for the diagnosis of WN viral infections of the human central nervous system (CNS) continues to be experimental and should not replace tests for the detection of WNV-specific antibody in CSF and serum, tests that are far more sensitive.

8. During 1999-2001, 7 cases of uncomplicated WN fever (WNF) were reported in the U.S., which represents 5% of the total number of WNV disease cases reported. In 2002, over 1,100 WNF cases were reported (30% of total). Contributing factors likely include the intensive media attention paid to the 2002 epidemic that may have led to increased consumer demand for WNV diagnostic testing by patients and physicians, and the greater availability of commercial testing. Nevertheless, during 1999-2002, WNF was probably significantly under-diagnosed in the U.S. It has been estimated that approximately 20 WNF cases occur for every WNME case.

9. For suspected WNV disease cases in immuno-compromised patients, WNV-specific antibody may not be present. Since longer viremias may be observed in these patients, testing serum and CSF samples for the presence of virus or viral RNA may be useful.

Vector Control

A surveillance program adequate to monitor WNV activity levels associated with human risk must be in place. Detection of epizootic transmission of enzootic arboviruses typically precedes detection of human cases by several days to 2 weeks or longer (e.g., as found in SLE epidemics). If adequate surveillance is in place, the lead time between detecting significant levels of epizootic transmission and occurrence of human cases can be increased, which will allow for more effective intervention practices. Early-season detection of enzootic or epizootic WNV activity appears to be correlated with increased risk of human cases later in the season. Control activity should be intensified in response to evidence of virus transmission, as deemed necessary by the local health departments.

Such programs should consist of public education emphasizing personal protection and residential source reduction; municipal larval control to prevent repopulation of the area with competent vectors; adult mosquito control to decrease the density of infected, adult mosquitoes in the area; and continued surveillance to monitor virus activity and efficacy of control measures.

As evidence of sustained or intensified virus transmission in an area increases, emergency response should be implemented. This is particularly important in areas where vector surveillance indicates that infection rates in *Culex* mosquitoes are increasing, or that potential accessory vectors (e.g., mammalophilic species) are infected with WNV. Delaying adulticide applications in such areas until human cases occur is illogical and negates the value and purpose of the surveillance system.

Adult Mosquito Control Recommendations

Ground-based (truck-mounted) application of adult mosquito control agents has several positive attributes. Where road access is adequate, such as in urban and suburban residential areas, good coverage may be achieved. In addition, ground-based application can be done throughout the night, thereby targeting night-active mosquito species. Such applications are prone to skips and patchy coverage in areas where road coverage is not adequate or in which the habitat contains significant barriers to spray dispersal and penetration.

Aerial application is capable of covering larger areas in shorter time periods than a ground-based application. This is a critical positive attribute when large residential areas must be treated quickly. In addition, aerial application is less prone to patchy coverage than ground-based application in areas where road coverage is not adequate. One limitation of aerial application is that many applicators will not fly at night, potentially reducing the effectiveness of the applications in Culex species control efforts.

Cost benefits of aerial application over ground application may not be realized unless relatively large areas are treated.

Several formulations of a variety of active ingredients are available for adulticide applications. Material choice for ground-based or aerially applied mosquito control in public health emergency situations is limited by EPA restrictions on the pesticide label and applicable state and local regulations.

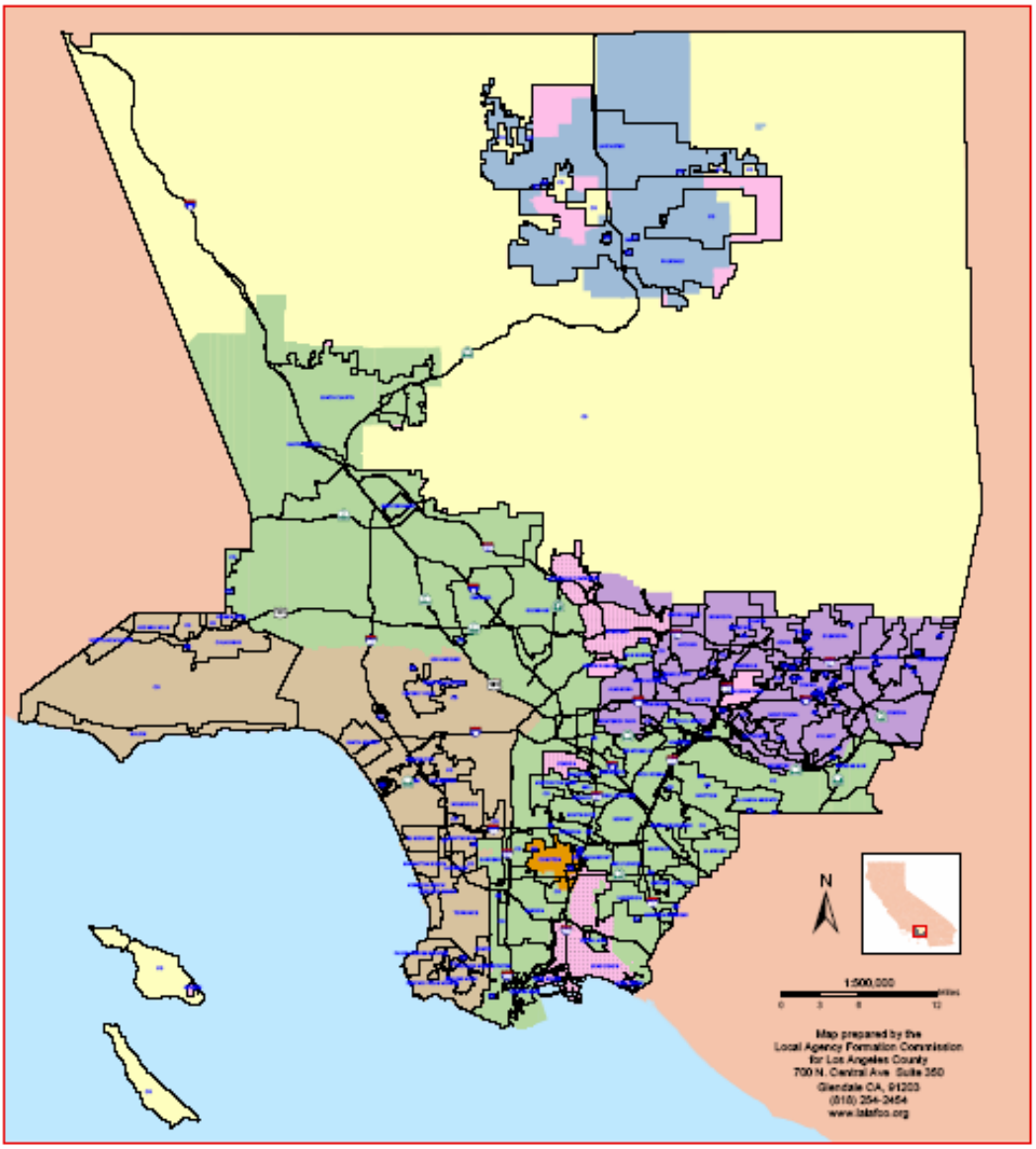
Multiple applications will likely be required to appreciably reduce Culex populations and interrupt arbovirus transmission. An emergency SLE virus response plan developed for New Orleans, Louisiana[63] indicates the need for repeated applications to control Cx.quinquefasciatus, and the need to repeatedly apply adulticides in high-risk areas (areas with human cases or positive surveillance events). Two to three adulticide applications spaced 3-4 days apart may be required to significantly reduce Cx. pipiens populations. Effective surveillance must be maintained to determine if and when re-treatment is required to maintain suppression of the vector populations.

Urban/suburban population centers with multiple positive surveillance events as described above should be treated first to most efficiently protect the largest number of people from exposure to WNV. Applications should be timed to coincide with the peak activity periods of the target species. For example, applications should be made at night to maximize control of night-active Culex species. Other species such as Oc. sollicitans or Ae. vexans are active shortly after sunset and are effectively controlled with appropriately timed applications. Day-active potential accessory vectors (e.g., Oc. japonicus, Oc. triseriatus,

Ae. albopictus) must be addressed separately and are most effectively controlled by residential source reduction efforts, though there is preliminary evidence that early morning ULV applications may be used to control these species.

Centers for Disease Control and Prevention, "Epidemic/Epizootic West Nile Virus in the United States: Guidelines for Surveillance, Prevention, and Control"; U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Infectious Diseases, Division of Vector-Borne Infectious Diseases, Fort Collins, Colorado, 3rd Revision, 2003

Mosquito and / or Vector Control Districts
Incorporated and Unincorporated Areas of Los Angeles County



Antelope Valley
Mosquito and Vector Control District
P.O. Box 1192
Lancaster, CA 93584
(661) 942-2917
www.avmosquito.org

Compton Creek
Mosquito Abatement District
1224 S. Santa Fe Ave.
Compton, CA 90221
(310) 639-7375

Greater Los Angeles County
Vector Control District
12545 Florence Ave.
Santa Fe Springs, CA 90670
(562) 944-9656
www.glacvcd.org

San Gabriel Valley
Mosquito & Vector Control District
1145 N. Azusa Canyon Rd.
West Covina, CA 91790
(626) 814-9466
www.sgvmosquito.org

Los Angles County West
Vector Control District
6750 Centinela Ave.
Culver City, CA 90230
(310) 915-7370
www.lawestvector.org

Non-District Mosquito
and / or Vector Control

City of Long Beach
Health and Human Services
2525 Grand Ave. Rm. 220
Long Beach, CA 90815
(562) 570-4132
www.longbeach.gov

City of Pasadena
Public Health Department
1845 N Fair Oaks Ave
Pasadena, CA 91103
(626) 744-6005
www.ci.pasadena.ca.us/publichealth/

City of LaCañada-Flintridge City Hall
1327 Foothill Blvd.
La Cañada Flintridge, CA 91011
(818) 790-6880
www.lacanadaflintridge/cityindex.htm

City of Vernon
4305 South Santa Fe Ave
Vernon, CA 90058
(323) 826-1420
www.cityofvernon.org/index1.htm

Los Angeles County
Public Health
Department of Health Services

Acute Communicable
Disease Control Program
313 N. Figueroa St.
Los Angeles, CA 90012
(213) 240-7941
www.lapublichealth.org/acd/index.htm

Environmental Health
Vector Management
5050 Commerce Dr.
Baldwin Park, CA 91706
(626) 430-5200
www.lapublichealth.org/eh/index.htm

Veterinary Public Health
3630 S. Western Ave., Suite 238
Los Angeles, CA 90062
(323) 730-3723
www.lapublichealth.org/vet/index.htm

State of California Department
of Health Services

Communicable Disease Control
Toll Free Telephone: 877-960-2473
E-mail: arbovirus@dhs.ca.gov
www.westnile.ca.gov

Cities not covered by
Mosquito and/or Vector
Control Districts

Unincorporated County
areas not covered by
Mosquito and/or Vector
Control Districts

This map was made possible by the Epidemiology and Laboratory Capacity (ELC) and Emerging Infections Program (EIP) Cooperative Agreement funds (Grant No. U50/CCU912801-07/3) from the Centers for Disease Control and Prevention (CDC) and dedicated professionals for the independent, city, county and state public services in Los Angeles County.

020104

	Summary of West Nile Virus Activity in California, 2004				
	Humans	Equines	Dead Birds	Mosquito Pools	Sentinel Chickens
Butte	-	-	2	-	-
Contra Costa	-	-	1	-	-
Fresno	1	1	2	2	-
Imperial	1	-	-	31	22
Kern	1	1	6	12	-
Kings	-	-	1	-	-
Los Angeles	15	1	603	99	18
Mendocino	-	-	1	-	-
Orange	1	-	59	32	-
Riverside	10	28	117	82	44
Sacramento	-	1	7	-	-
San Bernardino	35	12	284	82	43
San Diego	-	-			

Severe Acute Respiratory Syndrome (SARS)

Los Angeles County includes major port cities, and as such diseases anywhere in the world constitute a potential threat. Severe acute respiratory syndrome (SARS), a recently recognized, contagious febrile lower respiratory infection caused by a novel corona virus called SARS-CoV, is an example of a potential threat to a port city.

The worldwide outbreak of SARS that occurred between November 2002 and July 2003 most likely originated in China and then spread through travel. During this outbreak 22 potential SARS cases were investigated in Los Angeles. Seven were considered probable SARS but none of these cases had a specimen that was positive for SARS-CoV infection. The investigation and monitoring required for 22 potential cases was considerable.

It is possible that SARS may re-emerge; therefore, it is important that Los Angeles County be prepared to immediately identify cases and contain the disease.

The California Health and Safety Code (H&S), the California Code of Regulations (CCR) and the Los Angeles County Code (LACC) grant the Los Angeles County Health Officer authority to collect records and data with respect to communicable disease, initiate disease control measures, control property and manage persons (including isolation and quarantine).

SARS Case Count

During November 2002-July 2003, a total of 8,098 probable SARS cases were reported to the World Health Organization (WHO) from 29 countries. In the United States, only 8 cases had laboratory evidence of infection with SARS-CoV. Since July 2003, when SARS-CoV transmission was declared

contained, active global surveillance for SARS-CoV disease has detected no person-to-person transmission of SARS-CoV. CDC has therefore archived the case report summaries for the 2003 outbreak.

During the 2003 epidemic, CDC and the Council of State and Territorial Epidemiologists (CSTE) developed surveillance criteria to identify persons with SARS in the United States. The surveillance case definition changed throughout the epidemic, to reflect increased understanding of SARS-CoV disease.

In California, there were a total of 29 cases, 22 of which were suspect, 5 were probably SARS and 2 were confirmed.

SARS Surveillance

The key to controlling a SARS outbreak is prompt detection of cases and their contacts, followed by rapid implementation of control measures. Identification of SARS cases is the basic step in prevention efforts, whereas contact tracing provides a means to focus case-finding and containment efforts on persons who are at greatest risk of SARS-CoV disease. Two features of SARS-CoV disease pose challenges for case surveillance. First, the early signs and symptoms are not specific enough to reliably distinguish SARS-CoV disease from other common respiratory illnesses. Second, existing laboratory diagnostic tests are not adequately sensitive early in the course of illness. Therefore, risk of exposure (i.e., to another case of SARS-CoV disease or to a setting where SARS-CoV transmission is occurring) is key to considering the likelihood of a diagnosis of SARS-CoV disease.

Potential sources of SARS-CoV for future exposures include persistent infection in previously ill persons or reintroduction to humans from an animal reservoir. In the absence of SARS-CoV transmission worldwide, the most likely sites of recurrence are the original site of introduction of SARS-CoV from animals to humans and locations where person-to-person SARS-CoV transmission previously occurred. Laboratories that contain live SARS-CoV could be a source of further transmission if compromised laboratory techniques result in laboratory-acquired infections and report from the Department of Health, Taiwan Because persons with SARS-CoV disease tended to appear in clusters (e.g., in healthcare facilities, households, and a few special settings) during the 2003 outbreaks, early signals of the reappearance of the illness in U.S. communities could include unusual clusters of unexplained pneumonia.

In the presence of person-to-person SARS-CoV transmission anywhere in the world, patients with SARS-CoV disease or sites of SARS-CoV transmission become the most likely sources of exposure. Contact tracing, the identification of persons who had contact with a potential case of SARS-CoV disease or may have been exposed while present in locations (e.g., hospitals) with known SARS-CoV transmission, is essential for the implementation of appropriate measures to reduce further spread of the disease.

The overall goals of SARS surveillance are to:

- Maximize early detection of cases and clusters of respiratory infections that might signal the re-emergence of SARS-CoV disease while minimizing unnecessary laboratory testing, concerns about SARS-CoV, implementation of control measures, and social disruption.

- If person-to-person SARS-CoV transmission recurs, maintain prompt and complete identification and reporting of potential cases to facilitate outbreak control and management.

- Identify and monitor contacts of cases of SARS-CoV disease to enable early detection of illness in persons at greatest risk.

Lessons Learned

The following lessons from the global experience with SARS surveillance have been considered in developing this document:

- Astute healthcare providers will likely be the key to early detection and reporting of initial cases of SARS-CoV disease.

- The key to recognizing persons with SARS-CoV disease is identification of an epidemiologic link of exposure to another case of SARS-CoV disease or to a setting (e.g., hospital) where SARS-CoV transmission is occurring.

- Screening criteria for epidemiologic linkages need to reflect 1) the status of SARS-CoV transmission globally and the risk of exposure from international and domestic travel, and 2) the status of SARS activity in the community, at the work site, or in other settings where a patient with SARS-like illness may have been.

- In a setting of extensive SARS-CoV transmission, the possibility of SARS-CoV disease should be considered in all persons with a fever or lower respiratory illness, even if an epidemiologic link cannot be readily established.

- Healthcare facilities were disproportionately affected by SARS-CoV, and healthcare workers were among the first and most severely affected groups in every large outbreak reported.

- Contact tracing is resource intensive yet critical to containment efforts since it allows early recognition of illness in persons at greatest risk.

- Collection of appropriate and timely clinical specimens for laboratory testing is central to monitoring the status of SARS-CoV transmission at the local, state, and federal levels.

- Timely reporting of cases, updates on the clinical status and disposition of patients, real-time analysis of data, and timely dissemination of information are essential for outbreak-management decisions.

- Paper-based reporting systems are too slow and labor intensive to manage a large SARS outbreak. A rapid and efficient electronic reporting system that facilitates real-time analysis of clinical, epidemiologic, and laboratory information at the local level is essential.

- Frequent communication and data sharing among public health officials and healthcare providers are needed to update the status of potential and confirmed cases of SARS-CoV disease.

Mad Cow Disease (Creutzfeldt-Jakob disease (vCJD))

Background

New variant CJD (vCJD) is a rare, degenerative, fatal brain disorder in humans. Although experience with this new disease is limited, evidence to date indicates that there has never been a case of vCJD transmitted through direct contact of one person with another. However, a case of probable

transmission of vCJD through transfusion of blood components from an asymptomatic donor who subsequently developed the disease has been reported.

As of December 1, 2003, a total of 153 cases of vCJD had been reported in the world: 143 from the United Kingdom, six from France, and one each from Canada, Ireland, Italy, and the United States (note: the Canadian, Irish, and U.S. cases were reported in persons who resided in the United Kingdom during a key exposure period of the U.K. population to the BSE agent).

Almost all the 153 vCJD patients had multiple-year exposures in the United Kingdom between 1980 and 1996 during the occurrence of a large UK outbreak of bovine spongiform encephalopathy (BSE, commonly known as mad cow disease) among cattle.

There has never been a case of vCJD that did not have a history of exposure within a country where this cattle disease, BSE, was occurring.

It is believed that the persons who have developed vCJD became infected through their consumption of cattle products contaminated with the agent of BSE. There is no known treatment of vCJD and it is invariably fatal.

Since 1996, evidence has been increasing for a causal relationship between ongoing outbreaks in Europe of a disease in cattle, called bovine spongiform encephalopathy (BSE, or "mad cow disease"), and a disease in humans, called variant Creutzfeldt-Jakob disease (vCJD). Both disorders are invariably fatal brain diseases with unusually long incubation periods measured in years, and are caused by an unconventional transmissible agent.

On December 23, 2003, the U.S. Department of Agriculture (USDA) announced a presumptive diagnosis of bovine spongiform encephalopathy (BSE, or "mad cow" disease) in an adult Holstein cow from Washington State. The diagnosis was confirmed by an international reference laboratory in Weybridge, England, on December 25. Preliminary trace-back based on an ear-tag identification number suggests that the BSE-infected cow was imported into the United States from Canada in August 2001.

Description

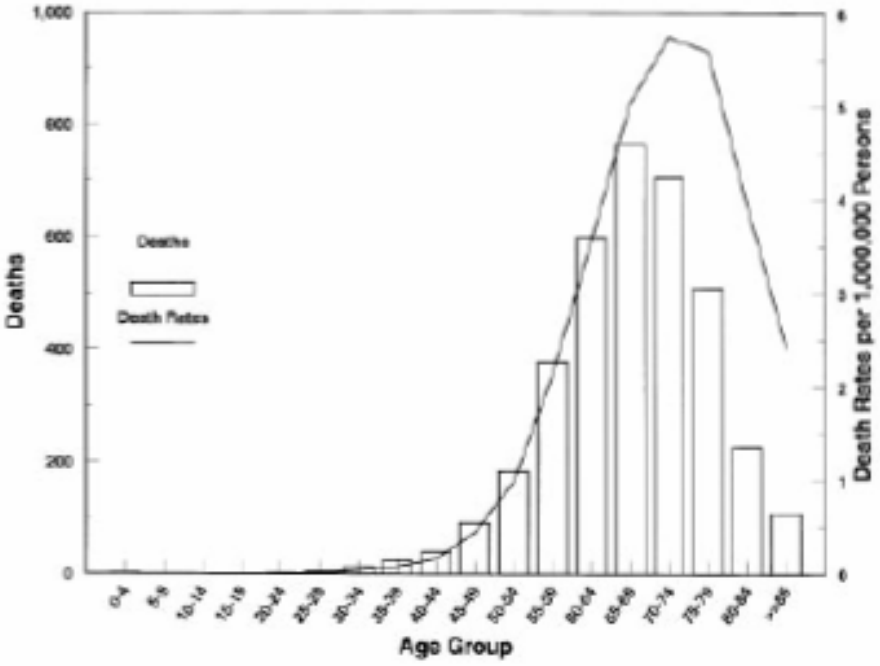
Since 1996, strong evidence has accumulated for a causal relationship between ongoing outbreaks in Europe of disease in cattle called bovine spongiform encephalopathy (BSE, or "mad cow disease") and a disease in humans originally called new variant Creutzfeldt-Jakob disease or more recently simply variant CJD (vCJD). Both disorders are invariably fatal brain diseases with unusually long incubation periods measured in years and are caused by an unconventional transmissible agent. Although there is very strong evidence that the agent responsible for the human disease is the same agent responsible for the BSE outbreaks in cattle, the specific foods that might be associated with the transmission of this agent from cattle to humans are unknown. However, bioassays have identified the presence of the BSE agent in the brain, spinal cord, retina, dorsal root ganglia (nervous tissue located near the backbone), distal ileum, and the bone marrow of cattle experimentally infected with this agent by the oral route.

In addition to cattle, sheep are susceptible to experimental infection with the BSE agent by the oral route. Thus, in countries where flocks of sheep and goats may have been exposed to the BSE agent through contaminated feed, a theoretical risk exists that these animals might have developed infections caused by the BSE agent and that these infections are being maintained in the flocks, even in the absence of continued exposure to contaminated feed (for example, through maternal transmission). Regardless, as of July 2002, cattle remain the only known food animal species with disease caused by the BSE agent.

U.S. Surveillance for CJD

The Centers for Disease Control and Prevention (CDC) monitors the trends and current incidence of CJD in the United States by analyzing death certificate information from U.S. multiple cause-of-death data, compiled by the National Center for Health Statistics, CDC. By 3- or 4-year periods from 1987 through 2001, the average annual death rates of CJD (not vCJD) have remained relatively constant, ranging from 0.95 cases per 1 million in 1999-2001 to 1.14 cases per 1 million in 1995-1998. In addition, deaths from non-iatrogenic CJD in persons aged <30 years in the United States remain extremely rare (<5 cases per 1 billion per year). In contrast, in the United Kingdom, over half of the patients who died with vCJD were in this young age group.

In addition, CDC collects, reviews and, when indicated, actively investigates reports by health care personnel or institutions of possible CJD or vCJD cases. Also, in 1996-97, CDC established, in collaboration with the American Association of Neuro-pathologists, the National Prion Disease Pathology Surveillance Center at Case Western Reserve University, which performs special diagnostic tests for prion diseases, including post-mortem tests for vCJD.



Creutzfeldt-Jakob disease deaths and death rates by age group. United States, 1979 through 1994.

California Creutzfeldt-Jakob Disease (CJD) Surveillance Project

The California Creutzfeldt-Jakob Disease Surveillance Project is funded by the federal Centers for Disease Control and Prevention (CDC) through the California Emerging Infections Program (EIP) to improve the public health capacity to detect cases of CJD. In 1996, the first cases of variant CJD occurring in unusually young persons and resulting from ingestion of bovine spongiform encephalopathy (BSE)-contaminated beef were identified in the United Kingdom. Since then, the CDC and the EIP have conducted enhanced surveillance and death certificate reviews. National surveillance has indicated that the incidence of CJD in the United States is about 1 case per million population per year (JAMA, Vol. 284, No. 18, November 8, 2000). Recently, one confirmed case of variant CJD was identified in a Florida resident and another in a Canadian resident, both of whom resided in the United Kingdom during the height of the BSE epidemic. In addition, the identification of

chronic wasting disease (CWD), a form of transmissible spongiform encephalopathy affecting deer and elk in the mid-western United States, has led to heightened awareness and surveillance efforts for any associated potential human public health risks.

CDC Dispatch, Vol. 2, No. 4—October-December 1996 Emerging Infectious Diseases

Influenza (Flu)

Epidemics of influenza typically occur during the winter months and have been responsible for an average of approximately 36,000 deaths/year in the United States during 1990–1999. Influenza viruses also can cause pandemics, during which rates of illness and death from influenza-related complications can increase dramatically worldwide. Influenza viruses cause disease among all age groups. Rates of infection are highest among children, but rates of serious illness and death are highest among persons aged ≥ 65 years and persons of any age who have medical conditions that place them at increased risk for complications from influenza.

Influenza vaccination is the primary method for preventing influenza and its severe complications. In this report from the Advisory Committee on Immunization Practices (ACIP), the primary target groups recommended for annual vaccination are 1) groups that are at increased risk for influenza-related complications (e.g., persons aged ≥ 65 years and persons of any age with certain chronic medical conditions); 2) the group aged 50–64 years because this group has an elevated prevalence of certain chronic medical conditions; and 3) persons who live with or care for persons at high risk (e.g., health-care workers and household contacts who have frequent contact with persons at high risk and who can transmit influenza to persons at high risk). Vaccination is associated with reductions in influenza-related respiratory illness and physician visits among all age groups, hospitalization and death among persons at high risk, otitis media among children, and work absenteeism among adults. Although influenza vaccination levels increased substantially during the 1990s, further improvements in vaccine coverage levels are needed, chiefly among persons aged <65 years who are at increased risk for influenza-related complications among all racial and ethnic groups and among blacks and Hispanics aged ≥ 65 years. ACIP recommends using strategies to improve vaccination levels, including using reminder/recall systems and standing orders programs. Although influenza vaccination remains the cornerstone for the control and treatment of influenza, information is also presented regarding antiviral medications, because these agents are an adjunct to vaccine.

Biology of Influenza

Influenza A and B are the two types of influenza viruses that cause epidemic human disease. Influenza A viruses are further categorized into subtypes on the basis of two surface antigens: hemagglutinin (H) and neuraminidase (N). Influenza B viruses are not categorized into subtypes. Since 1977, influenza A (H1N1) viruses, influenza A (H3N2) viruses, and influenza B viruses have been in global circulation. In 2001, influenza A (H1N2) viruses that probably emerged after genetic re-assortment between human A (H3N2) and A (H1N1) viruses began circulating widely. Both influenza A and B viruses are further separated into groups on the basis of antigenic characteristics. New influenza virus variants result from frequent antigenic change (i.e., antigenic drift) resulting from point mutations that occur during viral replication. Influenza B viruses undergo antigenic drift less rapidly than influenza A viruses.

A person's immunity to the surface antigens, including hemagglutinin, reduces the likelihood of infection and severity of disease if infection occurs. Antibody against one influenza virus type or subtype confers limited or no protection against another. Furthermore, antibody to one antigenic variant of influenza virus might not protect against a new antigenic variant of the same type or subtype. Frequent development of antigenic variants through antigenic drift is the virologic basis for seasonal epidemics and the reason for the usual incorporation of ≥ 1 new strains in each year's influenza vaccine.

Influenza Epidemic

The influenza (flu) epidemics that happen nearly every year are important events. Influenza is a respiratory illness that makes hundreds of thousands of people sick each year. The illness can cause

severe health problems for the elderly and younger people with diseases, such as diabetes, heart or lung disease, and illness that can weaken the immune system. Typical primary influenza illness lasts about a week and is characterized by abrupt onset of fever, muscle aches, sore throat, and nonproductive cough. In some persons, severe malaise and cough can persist for several days or weeks.

Influenza infection not only causes primary illness but also can lead to severe secondary medical complications, including influenza viral pneumonia, secondary bacterial pneumonia, worsening of underlying medical conditions, such as congestive heart failure, asthma, or diabetes, or other complications such as ear infections (i.e., otitis media) in children.

Elderly persons (i.e., those 65 years and over) and persons with certain underlying medical conditions, such as chronic heart or lung disease, are at increased risk for developing complications from influenza infection. These complications increase the risk for hospitalization or death.

One of the most important features about influenza viruses is that their structure changes slightly but frequently over time (a process known as “drift”), and that this process results in the appearance of different strains that circulate each year. The composition of the flu vaccine is changed each year to help protect people from the strains of influenza virus that are expected to be the most common ones circulating during the coming flu season.

The ability of the vaccine to protect against influenza during a particular season depends on several factors, but particularly 1) the match between influenza strains in the vaccine and strains circulating in the community, and 2) the ability of each person's immune system to mount a protective response as a result of the vaccination. Although the vaccine may not prevent everyone who takes it from getting sick, it does reduce the risk of severe illness, hospitalization, and death. That's why it is so important for anyone who wants to reduce his or her risk of getting severely ill from influenza to receive the vaccine each year.

Influenza Pandemic

By contrast to the more gradual process of drift, in some years, the influenza virus changes dramatically and unexpectedly through a process known as “shift.” Shift results in the appearance of a new influenza virus to which few (if any) people are immune. If this new virus spreads easily from person to person, it could quickly travel around the world and cause increased levels of serious illness and death, affecting millions of people. **This is called an influenza pandemic.**

Fortunately, pandemics don't occur very often. There has not been an influenza pandemic since 1968. In 1997, however, a flu virus, that had previously infected only birds, caused an outbreak of illness in humans. This virus, known as the “avian flu,” resulted in 18 illnesses and six deaths in Hong Kong but did not easily spread from person to person. Still, it provided a frightening reminder that the next pandemic could occur at any time. Governments around the world took notice. The U.S. government worked with State and local governments, and private-sector partners, to develop strategies and programs that would prepare our country for a pandemic.

Influenza Pandemic Start

There are three main types of influenza viruses: A, B, and C. Influenza C causes only mild disease and has not been associated with widespread outbreaks. Influenza types A and B, however, cause epidemics nearly every year. Influenza A viruses are divided into subtypes, based on differences in two surface proteins: hemagglutinin (H) and neuraminidase (N). Influenza B viruses are not divided into subtypes. During an influenza flu season, usually one or more influenza A subtype and B viruses circulate at the same time.

A pandemic is possible when an influenza A virus makes a dramatic change (i.e., "shift") and acquires a new H or H+N. This shift results in a new or "novel" virus to which the general population has no immunity. The appearance of a novel virus is the first step toward a pandemic. However, the novel influenza A virus also must spread easily from person to person (and cause serious disease) for a pandemic to occur. Influenza B viruses do not undergo shift and do not cause influenza pandemics.

The reservoir for Type A influenza viruses is wild birds, but influenza A viruses also infect animals such as pigs and horses, as well as people. The last two pandemic viruses were combinations of bird and human influenza viruses. Many persons believe that these new viruses emerged when an intermediate host, such as a pig, was infected by both human and bird influenza A viruses at the same time. A new virus was created. Events in Hong Kong in 1997, however, showed that this is not the only way that humans can become infected with a novel virus. Sometimes, an avian influenza virus can "jump the species barrier" and move directly from chickens to humans and cause disease.

Since, by definition, a novel virus is a virus that has never previously infected humans, or hasn't infected humans for a long time, it's likely that almost no one will have immunity, or antibody to protect them against the novel virus. Therefore, anyone exposed to the virus--young or old, healthy or weak--could become infected and get sick. If the novel virus is related to a virus that circulated long ago, older people might have some level of immunity. It is possible that the novel virus may be especially dangerous to some age groups that are not usually at risk of severe illness or death from annual influenza (such as healthy young adults). Such widespread vulnerability makes a pandemic possible and allows it to have potentially devastating impact.

Influenza Pandemic Impact

There's no simple answer to the question of how serious a pandemic might be. It all depends on how virulent (severe) the virus is, how rapidly it can spread from population to population, and the effectiveness of pandemic prevention and response efforts. The 1918 Spanish flu is an example of a worst-case scenario because the strain was highly contagious and quite deadly. This pandemic killed more Americans than all the wars of the 20th century. Since our world today is vastly more populated, and people travel the globe with ease, the spread of a next pandemic could be more rapid than that of previous pandemics.

The impact of a pandemic isn't measured only by how many people will die. If millions of people get sick at the same time, major social consequences will occur. If many doctors and nurses become ill, it will be difficult to care for the sick. If the majority of a local police force is infected, the safety of the community might be at risk. If air traffic controllers are all sick at once, air travel could grind to a halt, interrupting not only business and personal travel, but also the transport of life-saving vaccines or anti-viral drugs. Therefore, a vital part of pandemic planning is the development of strategies and tactics to address all these potential problems.

Avian Influenza (Bird Flu)

Influenza viruses that infect birds are called " avian influenza viruses." Only influenza A viruses infect birds. All known subtypes of influenza A virus can infect birds. However, there are substantial genetic differences between the subtypes that typically infect both people and birds. Within subtypes of avian influenza viruses there also are different strains (described in "Strains").

Avian influenza H5 and H7 viruses can be distinguished as "low pathogenic" and "high pathogenic" forms on the basis of genetic features of the virus and the severity of the illness they cause in poultry; influenza H9 virus has been identified only in a "low pathogenicity" form. Each of these three avian influenza viruses (H5, H7, and H9) can theoretically be partnered with any one of nine neuraminidase surface proteins; thus, there are potentially nine different forms of each subtype (e.g., H5N1, H5N2, H5N3, …H5N9).

Below is summary information about these three prominent subtypes of avian influenza virus:

Influenza A H5

- Potentially nine different subtypes
- Can be highly pathogenic or low pathogenic
- H5 infections have been documented among humans, sometimes causing severe illness and death

Influenza A H7

- Potentially nine different subtypes
- Can be highly pathogenic or low pathogenic
- H7 infection in humans is rare, but can occur among persons who have close contact with infected birds; symptoms may include conjunctivitis and/or upper respiratory symptoms

Influenza A H9

- Potentially nine different subtypes
- Documented only in low pathogenic form
- Three H9 infections in humans have been confirmed.

Spread of Avian Influenza Viruses among Birds

Avian influenza viruses circulate among birds worldwide. Certain birds, particularly water birds, act as hosts for influenza viruses by carrying the virus in their intestines and shedding it. Infected birds shed virus in saliva, nasal secretions, and feces. Susceptible birds can become infected with avian influenza virus when they have contact with contaminated nasal, respiratory, or fecal material from infected birds. Fecal-to-oral transmission is the most common mode of spread between birds.

Most often, the wild birds that are host to the virus do not get sick, but they can spread influenza to other birds. Infection with certain avian influenza A viruses (for example, some H5 and H7 strains) can cause widespread disease and death among some species of domesticated birds.

Avian Influenza Infection in Humans

Although avian influenza A viruses do not usually infect humans, several instances of human infections and outbreaks of avian influenza have been reported since 1997. Most cases of avian influenza infection in humans are thought to have resulted from contact with infected poultry or contaminated surfaces. However, there is still a lot to learn about how different subtypes and strains of avian influenza virus might affect humans. For example, it is not known how the distinction between low pathogenic and highly pathogenic strains might impact the health risk to humans. Of the documented cases of human infection with avian influenza viruses, illnesses caused by highly pathogenic viruses appear to be more severe.

Because of concerns about the potential for more widespread infection in the human population, public health authorities closely monitor outbreaks of human illness associated with avian influenza. To date, human infections with avian influenza viruses detected since 1997 have not resulted in sustained human-to-human transmission. However, because influenza viruses have the potential to change and gain the ability to spread easily between people, monitoring for human infection and person-to-person transmission is important.

To date, there have been no recorded cases of Avian Influenza in California. Documented cases in North America include: British Columbia, Canada; The Eastern United States; and Texas.

Small Pox

Smallpox virus is a high-priority "Category A" agent that poses a risk to Los Angeles County, California and national security because it can be easily disseminated and transmitted from person to person, results in high mortality rates and has the potential for major public health impact, might cause public panic and social disruption, and requires special action for public health preparedness.

The Los Angeles County Department of Health Services (LAC DHS) developed this Smallpox Preparedness, Response and Recovery Plan for the County to prepare for the possibility of an outbreak of smallpox in the County.

If an outbreak of smallpox were to occur, several factors could contribute to a more rapid spread of smallpox than was routinely seen before this disease was eradicated in 1977. These factors include: 1) virtually non-existent immunity to smallpox in the absence of naturally occurring disease and the discontinuation of routine vaccination in the United States in the early 1970's, 2) potentially delayed recognition of smallpox by health personnel who are unfamiliar with the disease, 3) increased mobility and crowding of the population, and 4) potential use of higher virulence "weaponized" viruses with decreased incubation periods. Because of these factors, a single case of smallpox would require an immediate and coordinated public health and medical response to contain the outbreak and prevent further infection of susceptible individuals.

Vaccination

The federal government has not yet provided definitive guidance on the extent of preparedness vaccination (smallpox vaccination of persons prior to a confirmed case of smallpox). It is anticipated that the guidance will be forthcoming in the near future. Such guidance, and release of sufficient quantities of smallpox vaccine, may be for: (1) specified first responders only, (2) a larger group of health care workers, law enforcement, and emergency responders, or (3) the entire population on a voluntary basis. Guidance may be provided in a phased manner for these, or other, groups over time.

The LAC DHS is prepared to implement the guidance received from the federal government on preparedness vaccination. Since this vaccination will take place prior to a smallpox emergency and

there will be no urgency to complete vaccination within a few days (as required in a smallpox emergency), existing facilities and staff are deemed sufficient to carry out preparedness vaccination of the first two groups. It may even be that federal personnel will be utilized for this preparedness vaccination of limited numbers of persons. LAC DHS has developed its own recommendations for preparedness smallpox vaccination prioritization.

Los Angeles County Smallpox Preparedness Plan

Monkey Pox

The Centers for Disease Control and Prevention (CDC) and state and local health departments continue to investigate cases of monkeypox among persons who had close contact with wild or exotic mammalian pets or persons with monkeypox. Results of serologic testing, polymerase-chain-reaction analysis, viral culture and gene sequencing performed at the CDC indicate that the causative agent is monkeypox virus, a member of the orthopoxvirus group of viruses. CDC is updating previous interim guidance concerning infection control precautions and exposure management in the health-care and community settings. The guidance will be further updated as additional information about the epidemiology of disease transmission is better understood.

Limited data on transmission of monkeypox virus are available from studies conducted in Africa. Person-to-person transmission is believed to occur primarily through direct contact and also by respiratory droplet spread. Transmission of monkeypox within hospitals has been described, albeit rarely. Extrapolating from smallpox for which airborne transmission has been clearly described, airborne transmission of monkeypox virus cannot be excluded, especially in patients presenting with cough.

To date in the United States there has been no evidence of person-to-person transmission of monkeypox. However, recovery of monkeypox virus from skin lesions and tonsillar tissue demonstrates the potential for contact and droplet transmission, and at least a theoretical risk for airborne transmission.

A recent modification of CDC.s infection control guidance is based on the accumulating experience in the United States that suggests a relatively low risk of person-to-person transmission. All health-care settings, i.e., hospitals, emergency departments, physician offices, have the capacity to care for monkeypox patients and protect health-care workers and other patients from exposure.

Centers for Disease Control and Prevention

Hoof & Mouth Disease

In the United States we usually call it "Hoof and Mouth Disease." In the U.K. they call it "Foot and Mouth Disease." But, wherever it appears, and whatever it's called, this highly contagious livestock disease means trouble. The outbreak of the disease in Great Britain quickly spread to the European continent, and British officials even considered eradicating that country's entire livestock population. The last major outbreak in the U.S. was in 1929.

Hoof and mouth disease is a viral infection that afflicts animals with cloven hooves such as cattle, pigs, and sheep. Onset of the disease is characterized by fever, which is followed by the development of blisters inside the mouth and on the feet. It is transmitted easily among animals through fluids such as blood, saliva, and milk. Fluid from broken blisters has especially high concentrations of the virus. The disease is not necessarily fatal, and symptoms can clear up after several weeks, but the disease

generally leaves animals underweight and sometimes disabled. Because of the highly infectious nature of the disease, and the condition in which it leaves animals even after they have recovered, farmers almost always destroy infected animals and burn their carcasses.

While not susceptible to the hoof and mouth, humans can carry and transmit the disease without even realizing it. This makes an already highly contagious disease even more difficult to contain. Governments can control the export and import of farm animals, and can destroy animals possibly exposed to the disease, but confining the human carriers of the virus is much more difficult.

This disease is explained further under "**Agricultural Loss**."

Hepatitis

Hepatitis is inflammation of the liver. Several different viruses cause viral hepatitis. They are named the hepatitis A, B, C, D, and E viruses.

All of these viruses cause acute, or short-term, viral hepatitis. The hepatitis B, C, and D viruses can also cause chronic hepatitis, in which the infection is prolonged, sometimes lifelong.

Other viruses may also cause hepatitis, but they have yet to be discovered and they are obviously rare causes of the disease.

Hepatitis Incidence/Epidemiology

Hepatitis A occurs sporadically and epidemically worldwide, with a tendency to cyclic recurrences.

Epidemics are uncommon in developing countries where adults are generally immune. Improved sanitation and hygiene conditions in different parts of the world leave large segments of the population susceptible to infection, and outbreaks may result whenever the virus is introduced.

Common-source epidemics, related to contaminated food or water, may evolve explosively, as did the largest mollusc-linked epidemic in Shanghai, in 1988, involving about 300 000 people.

Worldwide, HAV infections account for 1.4 million cases annually.

Strain	Disease Spread	People at Risk	Prevention	Treatment
Hepatitis A	Primarily through food or water contaminated by feces from an infected person. Rarely, it spreads through contact with infected blood	International travelers; people living in areas where hepatitis A outbreaks are common; people who live with or have sex with an infected person; during outbreaks, day care children and employees, men who have sex with men, and injection drug users	The hepatitis A vaccine, also, avoiding tap water when traveling internationally and practicing good hygiene and sanitation	Hepatitis A usually resolves on its own over several weeks
Hepatitis B	Through contact with infected blood, through sex with an infected person, and from mother to child during childbirth	People who have sex with an infected person, men who have sex with men, injection drug users, children of immigrants from disease-epidemic areas, infants born to infected mothers, people who live with an infected person, health care workers, hemodialysis patients, people who received a transfusion of blood or blood products before July 1992 or clotting factors made before 1987, and international travelers	Hepatitis B vaccine	For chronic hepatitis B: drug treatment with alpha interferon, peginterferon, lamivudine, or adefovir dipivoxil. Acute hepatitis B usually resolves on its own. Very severe cases can be treated with lamivudine
Hepatitis C	Primarily through contact with infected blood, less commonly, through sexual contact and childbirth	Injection drug users, people who have sex with an infected person, people who have multiple sex partners, health care workers, infants born to infected women, hemodyalysis patients, and people who received a transfusion of blood or blood products before July 1992 or clotting factors made before 1987	There is no vaccine for hepatitis C; the only way to prevent the disease is to reduce the risk of exposure to the virus. This means avoiding behaviors like sharing drug needles or sharing personal items like toothbrushes, razors, and nail clippers with an infected person	Chronic hepatitis C: drug treatment with perginterferon alone or combination treatment with peginterferon and the drug ribavirin. Acute hepatitis C: treatment is recommended if it does not resolve within 2 to 3 months
Hepatitis D	Through contact with infected blood. This disease occurs only in people who are already infected with hepatitis B	Anyone infected with hepatitis B: injection drug users who have hepatitis B have the highest risk. People who have hepatitis B are also at risk if they have sex with a person infected with hepatitis D or if they live with an infected person. Also at risk are people who received a transfusion of blood or blood products before July 1992 or clotting factors made before 1987	Immunization against hepatitis B for those not already infected; also. avoiding exposure to infected blood, contaminated needles, and an infected person's personal items.	Chronic hepatitis D: drug treatment with alpha interferon
Hepatitis E	Through food or water contaminated by feces from an infected person. This disease in uncommon in the United States	International travelers; people living in areas where hepatitis E outbreaks are common; and people who live or have sex with an infected person	There is no vaccine for hepatitis E; the only way to prevent the disease is to reduce the risk of exposure to the virus. This means avoiding tap water when traveling internationally and practicing good hygiene and sanitation	Hepatitis E usually resolves on its own over several weeks or months

Hepatitis Facts

- An estimated 40,000 people were infected with the hepatitis C virus (HCV) in 1998.
- There are an estimated 3.9 million people who are or have been infected with hepatitis C, 2.7 of whom are chronically infected; approximately 70% of people infected do not know they have the virus.
- 8,000 – 10,000 people die of hepatitis C each year. The Centers for Disease Control and Prevention (CDC) estimate that the number of annual deaths from hepatitis C will triple in the next 10 –20 years.
- Hepatitis B is responsible for 5,000 deaths annually, including 3,000 – 4,000 from cirrhosis and approximately 1,000 – 1,500 from primary liver cancer.
- One out of every 250 people is a carrier of hepatitis B and can pass it on to others, often unknowingly.
- There were approximately 80,000 estimated new infections of hepatitis B in the United States in 1999.
- Up to 90% of pregnant women who are carriers of the hepatitis b virus could transmit the virus to their children. Vaccinations of the newborns would prevent them from becoming carriers.
- Due to the screening of pregnant women for HBV and vaccinations of newborns with the hepatitis B vaccine, there has been a decline in that number of infected newborns.
- Hepatitis B is 100 times more infectious than HIV, the virus that causes AIDS. There are 500 million hepatitis B viral particles in one teaspoon of blood compared to 5-10 HIV particles.
- The estimated medical and work loss cost per year of hepatitis B is $700 million; the estimated medical and work loss cost per year of hepatitis C is $600 million.
- One out of every 20 people will be infected with hepatitis B in his/her lifetime.
- Approximately 5,000 liver transplants were performed in 2000. Because of the shortage of organs, it is estimated that nearly 1,700 prospective recipients died in 2001 while waiting for a liver for transplantation. There are currently over 18,000 people waiting for a liver transplant.
- Non-Hispanic African Americans have the highest infection rate for hepatitis C; Asian and Pacific Islanders have the highest rate for hepatitis B infection.

Other Diseases

Plague

Plague is transmitted to humans by fleas or by direct exposure to infected tissues or respiratory droplets; the disease is characterized by fever, chills, headache, malaise, prostration, and leukocytosis that manifests in one or more of the following principal clinical forms:

- Regional lymphadenitis (bubonic plague)
- Septicemia without an evident bubo (septicemic plague)
- Plague pneumonia, resulting from hematogenous spread in bubonic or septicemic cases (secondary pneumonic plague) or inhalation of infectious droplets (primary pneumonic plague)
- Pharyngitis and cervical lymphadenitis resulting from exposure to larger infectious droplets or ingestion of infected tissues (pharyngeal plague)

Brucellosis

Brucellosis is an infectious disease caused by the bacteria of the genus *Brucella*. These bacteria are primarily passed among animals, and they cause disease in many different vertebrates. Various *Brucella* species affect sheep, goats, cattle, deer, elk, pigs, dogs, and several other animals. Humans become infected by coming in contact with animals or animal products that are contaminated with these bacteria. In humans brucellosis can cause a range of symptoms that are similar to the flu and may include fever, sweats, headaches, back pains, and physical weakness. Sever infections of the central nervous systems or lining of the heart may occur. Brucellosis cab also cause long-lasting or chronic symptoms that include recurrent fevers, joint pain, and fatigue.

Brucellosis is not very common in the United States, where100 to 200 cases occur each year. But brucellosis can be very common in countries where animal disease control programs have not reduced the amount of disease among animals.

Botulism (Food-borne)

Ingestion of botulinum toxin results in an illness of variable severity. Common symptoms are diplopia, blurred vision, and bulbar weakness. Symmetric paralysis may progress rapidly.

Botulism (Wound)

An illness resulting from toxin produced by *Clostridium botulinum* that has infected a wound. Common symptoms are diplopia, blurred vision, and bulbar weakness. Symmetric paralysis may progress rapidly.

Data/Telecommunications Disruption

Data/Telecommunications Disruption was rated a MODERATE PRIORITY RISK by the City of Commerce Hazard Mitigation Planning Team.

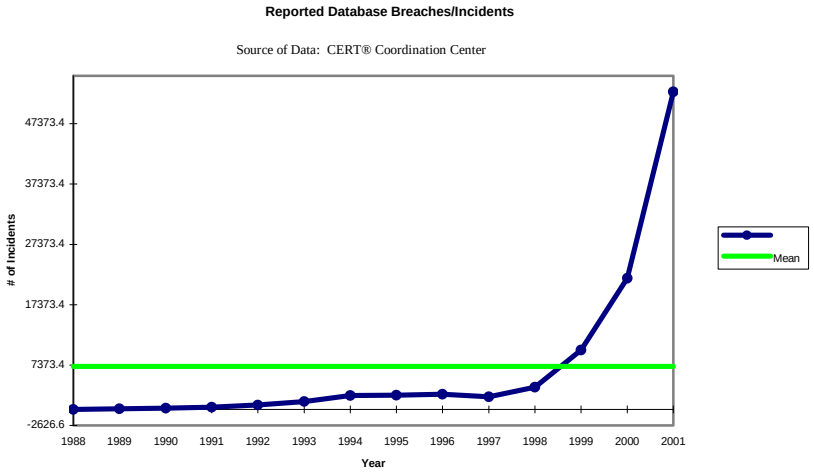
The City of Commerce depends upon information systems and communications networks to carry out nearly all aspects of day to day business. In this digital era, as we use automated information technology (IT) systems to process information for better support of our missions, risk management plays a critical role in protecting an our information assets, and therefore our missions, from IT-related risk.

An effective risk management process is an important component of a successful IT security program. The principal goal of an organization's risk management process should be to protect the *organization and its ability to perform their mission*, not just its IT assets. Therefore, the risk management process should not be treated primarily as a technical function carried out by the IT experts who operate and manage the IT system, but as an essential management function of the organization.

Computer Security Breaches

Computer breach incidents have risen sharply since the 1980s. These include viruses, worms, Trojan horses, break–ins, and other damaging breaches. Whereas only six incidents were reported in 1988, the number rose gradually during the late 1980s and 1990s, they made a sharp rise beginning in 1998, and have risen exponentially since. To date, there have been over 142, 500 computer breaches.

The 2002 Computer Security Institute (CSI) Computer Crime and Security Survey revealed that each year, over half of all databases have some kind of breach and that the average breach amounts to nearly $4 million in losses. This percentage is staggeringly high given that these are the security problems that companies are reporting. Organizations don't want to advertise the fact that their internal people have access to customer data, can steal that data, cover their tracks, give the data to anybody and stay undetected and employed while a crime is committed.



California recently enacted a law mandating the public disclosure of computer security breaches involving confidential information. The law covers not just state agencies but all private enterprises doing business in California. Starting July 1, 2003, any entity that fails to disclose that a breach has occurred could be liable for civil damages or face class action suits.

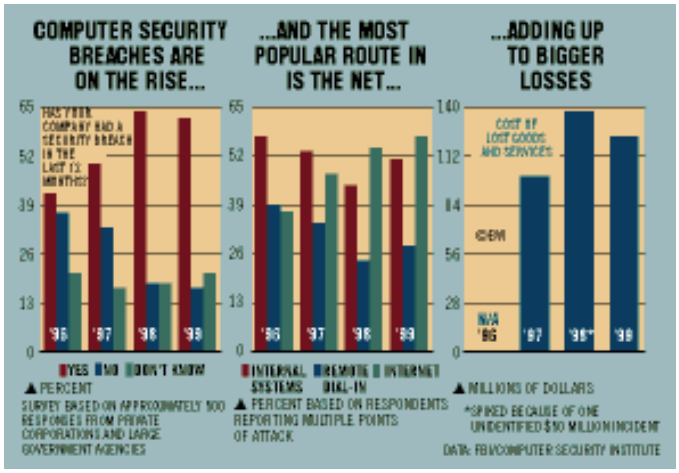
Cyber Crime

"…Cyber crime is becoming one of the Net's growth businesses. The recent spate of attacks that gummed up Web sites for hours--known as "denial of service"--is only one type. Today, criminals are doing everything from stealing intellectual property and committing fraud to unleashing viruses and committing acts of cyber terrorism in which political groups or unfriendly governments nab crucial information. Indeed, the tactic used to create mayhem in the past few days is actually one of the more innocuous ones. Cyber thieves have at their fingertips a dozen dangerous tools, from "scans" that ferret out weaknesses in Web site software programs to "sniffers" that snatch passwords. All told, the FBI estimates computer losses at up to $10 billion a year.

As grim as the security picture may appear today, it could actually get worse as broadband connections catch on. Then the Web will go from being the occasional dial-up service to being "always on," much as the phone is. That concept may be nirvana to e-tailers, but could pose a real danger to consumers if cyber crooks can come and go into their computer systems at will. Says Bruce Schneier, chief technical officer at Counterpane Internet Security Inc. in San Jose, Calif.: "They'll keep knocking on doors until they find computers that aren't protected."

Sadly, the biggest threat is from within. Law enforcement officials estimate that up to 60% of break-ins are from employees. Take the experience of William C. Boni, a digital detective for PricewaterhouseCoopers in Los Angeles. Last year, he was called in by an entertainment company that was suspicious about an employee. The employee, it turns out, was under some financial pressure and had installed a program called Back Orifice on three of the company's servers. The program, which is widely available on the Internet, allowed him to take over those machines, gaining passwords and all the company's financial data. The employee was terminated before any damage could be done.

The dirty little secret is that computer networks offer ready points of access for disgruntled employees, spies, thieves, sociopaths, and bored teens. Once they're in a corporate network, they can lift intellectual property, destroy data, sabotage operations, even subvert a particular deal or career. "Any business on the Internet is a target as far as I'm concerned," says Paul Field, a reformed hacker who is now a security consultant.



It's point and click, then stick 'em up. Interested in a little mayhem? Security experts estimate that there are 1,900 Web sites that offer the digital tools--for free--that will let people snoop, crash computers, hijack control of a machine, or retrieve a copy of every keystroke. Steve O'Brien, vice-president for information operation assessments at Info-Ops.com, an Annapolis (Md.)-based company that provides intrusion detection services and security solutions, says the number of ways to hack into computers is rising fast. He tracks potential threats both from hacker groups and from the proliferation of programs. Once a rare find, he now discovers at least three new nasty software programs or vulnerabilities every day. And those tools aren't just for the intellectually curious. "Anyone can get them off the Internet--just point and click away," says Robert N. Weaver, a Secret Service agent in charge of the New York Area Electronic Crimes Task Force.

Experts say the first step for companies is to secure their systems by searching for hacker programs that might be used in such attacks. They also suggest formal security policies that can be distributed to employees letting them know how often to change passwords or what to do in case of an attack. An added help: Constantly updating software with the latest versions and security patches. Down the road, techniques that can filter and trace malicious software sent over the Web may make it harder to knock businesses off the Net. Says Novell Inc. CEO Eric Schmidt: "Security is a race between the lock makers and the lock pickers." Regulators say that cybercrime thrives because people accord the Internet far more credibility than it deserves. "You can get a lot of good information from the Internet--95% of what you do there is bona fide," says G. Philip Rutledge, deputy chief counsel of the Pennsylvania Securities Commission. "Unfortunately, that creates openings for fraud."…"

Excerpts from "Business Week Online, Ira Sager in New York, with Steve Hamm and Neil Gross in New York, John Carey in Washington, D.C., and Robert D. Hof in San Mateo, Calif.

Top Ten Computer Security Breaches

Systems affected: All system and network devices

BIND weaknesses: The Berkeley Internet Name Domain (BIND) package is the most widely used implementation of Domain Name Service (DNS) by which we locate systems on the Internet by name, without having to know specific IP addresses. In a typical example of a BIND attack, intruders erase system logs, and install tools to gain administrative access. They then compile and install IRC utilities and network scanning tools, which are used to scan more than a dozen class-B networks in search of additional systems running vulnerable versions of BIND. In a matter of minutes, they can use the compromised system to attack hundreds of remote systems.

Systems affected: Multiple UNIX and Linux systems

Vulnerable CGI (Common Gateway Interface) programs and application extensions (e.g., ColdFusion) installed on Web servers: Most Web servers support CGI for data collection and verification. Intruders are known to have exploited vulnerable CGI programs to vandalize Web pages, steal credit card information, and set up back doors to enable future intrusions, even if the CGI programs are secured. As a general rule, sample programs should always be removed from production systems.

Systems affected: All Web servers

Remote procedure call (RPC) weaknesses: Remote procedure calls (RPC) allow programs on one computer to execute programs on a second computer. They are widely used to access network services such as shared files in NFS. There is compelling evidence that the vast majority of distributed denial of service attacks launched during

1999 and early 2000 were executed by systems that had been victimized because they had RPC vulnerabilities. The broadly successful attack on US military systems during the Solar Sunrise incident also exploited an RPC flaw found on hundreds of Department of Defense systems.

Systems affected: Multiple UNIX and Linux systems

RDS security hole in Microsoft Internet Information Server (IIS): Programming flaws in Microsoft's Internet Information Server (IIS) used to host websites deployed on Microsoft Windows NT and Windows 2000 are employed by malicious users to run remote commands with administrator privileges. Some participants who developed the "Top Ten" list believe that exploits of other IIS flaws, such as .HTR files, are at least as common as exploits of RDS.

Systems affected: Microsoft Windows NT systems using Internet Information Server

Sendmail: Sendmail is the program that handles most e-mail on the Internet. It's widespread use makes it a prime target. In one of the most common exploits, the attacker sends a crafted mail message to the machine running Sendmail, and Sendmail reads the message as instructions requiring the victim machine to send its password file to the attacker's machine (or to another victim) where the passwords can be cracked.

Systems affected: Multiple UNIX and Linux systems

Sadmind and mountd: Sadmind allows remote administration access to Solaris systems, providing graphical access to system administration functions. Mountd controls and arbitrates access to NFS mounts on UNIX hosts. Buffer overflows in these applications can be exploited, allowing attackers to gain control with root access.

Systems affected: Multiple UNIX and Linux systems; Sadmind: Solaris machines only

Global file sharing and inappropriate information sharing via NetBIOS and Windows NT ports: These services allow file sharing over networks. When improperly configured, they can expose critical system files or give full file system access to hostile parties.

Systems affected: UNIX, Windows and Macintosh systems.

User IDs, especially root/administrator with no passwords or weak passwords: Some systems come with "demo" or "guest" accounts with no passwords or with widely-known default passwords. Service workers often leave maintenance accounts with no passwords, while some database management systems install administration accounts with default passwords. In addition, busy system administrators often select system passwords that are easily guessable ("love," "money," "wizard" are common) or just use a blank password. Many attackers try default passwords and then try to guess passwords before resorting to more sophisticated methods.

Systems affected: All systems.

IMAP and POP buffer overflow vulnerabilities or incorrect configuration: IMAP and POP are popular remote access mail protocols, allowing users to access their e-mail accounts.

The "open access" nature of these services makes them especially vulnerable to exploitation because openings are frequently left in firewalls to allow for external e-mail access. Attackers who exploit flaws in IMAP or POP often gain instant root-level control.

Systems affected: Multiple UNIX and Linux systems

Default SNMP community strings set to 'public' and 'private': The Simple Network Management Protocol (SNMP) is widely used by network administrators to monitor and administer all types of network-connected devices, ranging from routers to printers to computers. SNMP uses an unencrypted "community string" as its only authentication mechanism. Lack of encryption is bad enough, but the default community string used by the vast majority of SNMP devices is "public", with a few clever network equipment vendors changing the string to "private". Attackers can use this vulnerability in SNMP to reconfigure or shut down devices remotely.

Express Computer Business Weekly

Information Technology Security Practices

Computer Security Policy

The term *computer security policy* has more than one meaning. Policy is senior management's directives to create a computer security program, establish its goals, and assign responsibilities. The term policy is also used to refer to the specific security rules for particular systems. Additionally, policy may refer to entirely different matters, such as the specific managerial decisions setting an organization's e-mail privacy policy or fax security policy.

Program Management

Managing computer security at multiple levels brings many benefits. Each level contributes to the overall computer security program with different types of expertise, authority, and resources. In general, executive managers (such as those at the headquarters level) better understand the organization as a whole and have more authority. On the other hand, front-line managers (at the computer facility and applications levels) are more familiar with the specific requirements, both technical and procedural, and problems of the systems and the users. The levels of computer security program management should be complementary; each can help the other be more effective. Many organizations have at least two levels of computer security management; the *central* level and the *system* level.

Risk Management

Risk is the possibility of something adverse happening. Risk management is the process of assessing risk, taking steps to reduce risk to an acceptable level and maintaining that level of risk. Risk management requires the analysis of risk, relative to potential benefits, consideration of alternatives, and, finally, implementation of what management determines to be the best course of action. Risk management consists of two primary and one underlying activity; risk assessment and risk mitigation are the primary activities and uncertainty analysis is the underlying one. An organization should consider the following when assessing risks.

Life Cycle Planning

Security, like other aspects of an IT system, is best managed if planned for *throughout* the IT system life cycle. There are many models for the IT system life cycle but most contain five basic phases: initiation, development/acquisition, implementation, operation, and disposal.

Personnel/User Issues

Many important issues in computer security involve users, designers, implementers, and managers. A broad range of security issues relate to how these individuals interact with computers and the access and authorities they need to do their job. No IT system can be secured without properly addressing these security issues.

Preparing for Contingencies and Disasters

Contingency planning directly supports an organization's goal of continued operations. Organizations should practice contingency planning because it makes good business sense. Contingency planning addresses how to keep an organization's critical functions operating in the event of disruptions, both large and small. This broad perspective on contingency planning is based on the distribution of computer support throughout an organization. The following six steps describe the basic functions an organization should employ when developing contingency plans.

Computer Security Incident Handling

A computer security incident can result from a computer virus, other malicious code, or a system intruder, either an insider or an outsider. The definition of a computer security incident is somewhat flexible and may vary by organization and computing environment. An incident handling capability may be viewed as a component of contingency planning, because it provides the ability to react quickly and efficiently to disruptions in normal processing. Incident handling can be considered that portion of contingency planning that responds to malicious technical threats.

Awareness and Training

An effective computer security awareness and training program requires proper planning, implementation, maintenance, and periodic evaluation.

Security Considerations in Computer Support and Operations

Computer support and operations refers to system administration and tasks external to the system that support its operation (e.g., maintaining documentation). Failure to consider security as part of the support and operations of IT systems is, for many organizations, a significant weakness. Computer security system literature includes many examples of how organizations undermined their often expensive security measures because of poor documentation, no control of maintenance accounts, or other shoddy practices.

Physical and Environmental Security

Physical and environmental security controls are implemented to protect the facility housing system resources, the system resources themselves, and the facilities used to support their operation. An organization's physical and environmental security program

should address the following seven topics. In doing so, it can help prevent interruptions in computer services, physical damage, unauthorized disclosure of information, loss of control over system integrity, and theft.

Identification and Authentication

Identification and Authentication is a critical building block of computer security since it is the basis for most types of access control and for establishing user accountability. Identification [6] and Authentication is a technical measure that prevents unauthorized people (or unauthorized processes) from entering an IT system. Access control usually requires that the system be able to identify and differentiate among users. For example, access control is often based on *least privilege*, which refers to the granting to users of only those accesses minimally required to perform their duties. User accountability requires the linking of activities on an IT system to specific individuals and, therefore, requires the system to identify users.

Logical Access Control

Access is the ability to do something with a computer resource (e.g., use, change, or view). Logical access controls are the system-based means by which the ability is explicitly enabled or restricted in some way. Logical access controls can prescribe not only who or what (e.g., in the case of a process) is to have access to a specific system resource but also the type of access that is permitted.

Audit Trails

Audit trails maintain a record of system activity by system or application processes and by user activity. In conjunction with appropriate tools and procedures, audit trails can provide a means to help accomplish *several* security-related objectives, including individual accountability, reconstruction of events, intrusion detection, and problem identification.

Cryptography

Cryptography is a branch of mathematics based on the transformation of data. It provides an important tool for protecting information and is used in many aspects of computer security. Cryptography is traditionally associated only with keeping data secret. However, modern cryptography can be used to provide many security services, such as electronic signatures and ensuring that data has not been modified. Several important issues should be considered when designing, implementing, and integrating cryptography in an IT system.

Special Events

Special Events were rated LOW PRIORITY RISKS by the City of Commerce Hazard Mitigation Planning Team.

Large crowds, gathered for special events, represent disaster hazards in the following ways:

- Viable targets for a terrorists
- Concentration of people in a relatively small, enclosed area during earthquakes
- Site for mass casualties in the event of an aviation disaster
- Challenge to egress in the event of a large fire elevating the risk of mass casualties
- Depending on the event, could be prone to civil disobedience or riots

City of Commerce Special Events:

City of Commerce – Department of Parks and Recreation
2004 Calendar of Events

Date	Event
January 24	City Birthday Dinner/Dance – 6:00 p.m., Stevens Steak House
January 28	City Hall Open House/Birthday Celebration, 6:00-8:30p.m., City Hall
February 8	Queen's Breakfast – 9:00 a.m., Wyndham Gardens Hotel
February 14	Valentine Swim Meet – 8:30 a.m., Aquatorium
February 21	Boxing Show – 1:00 p.m., Veterans Park
February 19	Parks & Recreation Commission Meeting – 6:00p.m., Aquatorium (Facility Visit)
February 28	Miss Commerce Pageant – 5:00p.m., Stevens Steak and Seafood House
March 6	Karate Invitational – 10:00a.m., - Veterans Memorial Park
March 17	Senior Citizens Commission Meeting – 3:00pm-Commerce Senior Center
March 17	Student Government Day – 8:00am, City Hall
March 25	Dance Recital – Rosewood Elementary – 6:00pm
April 5-9	Easter Program – All Parks
April 10	Easter Egg Hunt – 11:00am, PROMPTLY, All Parks
April 15	Parks & Recreation Commission Meeting – 6:00pm, Rosewood Park (Facility Visit)
April 17	Annual Baby Pageant – 10:00am, All Parks
April 18	Garden Show – Rosewood Park Community Center

Date	Event
May 1	Community Dodger Night (Game time 7:10)
May 2	Cinco de Mayo – Noon, Barstow Park
May 5	Mothers Day Craft Program – All Parks, 4:00-6:00pm
May 13-15	Commerce Golf Weekender – Primm, Nevada
May 26	Fathers Day Craft Program – All parks 4:00-6:00pm
June 5	Camp Commerce Registration – 8:00am, City Council Chambers
June 12	Swim Lesson Registration – 7:00 am, Aquatorium/Rosewood Park Halls
June 12	Pre-School Graduation – 5:00pm, Veterans Park
June 16	Senior Citizens Commission Meeting – 3:00pm, Commerce Senior Center
June 17	Parks & Recreation Comm. Meeting – 6:00pm, Bristow Park (Facility Visit)
June 19	Day Camp Registration – 8:00am City Council Chamber
June 28	Spray Pools open for the summer – All Parks
July 2/3	Independence Community Carnival
July 4	5K Run – 8:00am, Rosewood Park (Carnival)
July 4	Independence Day Celebration – 6:00pm, Bandini Park (Facility Visit)
August 13,-15	Las Vegas Excursion – Hilton Flamingo Hotel & Casino
August 19	Parks and Recreation Commission Meeting – 6:00pm, (Facility Visit)
September 5	E.L.A. 16th of September Parade – pick up at 11:00am
September 12	16th of September Celebration – noon, Bristow Park
September 15	Senior Citizens Commission Meeting – 3:00pm, Commerce Senior Center
September 18	Camp Commerce Registration (Fall/Winter/Spring) – 8:00aml, Council Chambers
October 9	Community Galaxy Night
October 25-31	Halloween Activities – All Parks
October 31	Halloween Costume Parade – 6:00pm, All Parks
November 11	Veterans Day Ceremony – 10:00am, Veterans Park
Nov 14 or 21	E.L..A. Christmas Parade – Pick up 10:00am, parade at noon, E.L.A.
Nov 18-25	Turkey Shoot Nov. 18,19,20,23,24 Marksmanship Range
November 20	Turkey Trot 5K Run, 8:00am, Rosewood Park
TBA	Aquatics Awards Night (tentative)
December 5	Adult Holiday Faire – Noon, Bandini Park
December 6	Tree Lighting Ceremony – 6:00 pm, City Hall
December 12	South Gate Christmas Parade – Time to be announced, South Gate
December 15	Senior Citizens Commission Meeting – 6:00 pm, Veterans Park (Facility Visit)
December 16	Children's Holiday Faire – 12:00 – 4:00 pm, Bandini Park
Dec 21–Jan 3	Christmas Program – All Parks

Sinkholes

Sinkholes were rated LOW PRIORITY RISKS by the City of Commerce Hazard Mitigation Planning Team.

Sinkholes

There are three types of sinkholes, each of which forms in a different way (and none of which have ever shown their presence in the City of Commerce). Collapse sinkholes are by far the most hazardous because of how suddenly they can form.

1. SOLUTION SINKHOLES

Solution sinkholes form where soluble bedrock (i.e., limestone, dolomite, marble, or rock salt) is exposed at the land surface and therefore subject to dissolution by surface water. Runoff collects in natural depressions (often where bedrock fractures intersect) and slowly dissolves a sinkhole.

2. SUBSIDENCE SINKHOLES

Subsidence sinkholes are similar to solution sinkholes, except the soluble bedrock is covered by a thin layer of unconsolidated material (e.g., soil and/or sediment). Surface water infiltration dissolves cavities where the bedrock is most intensely fractured, and the overlying sediments gradually move downward into the expanding cavity.

3. COLLAPSE SINKHOLES

Collapse sinkholes form when surface materials suddenly sink into a subsurface cavity or cave. Cavities form slowly over time as groundwater moves along fractures in soluble bedrock and enlarge them through dissolution. Collapse can occur in two different ways: (where caves are found)

When a cavity gets sufficiently large, the "roof" becomes too thin to support its own weight and the weight of any overlying rock or sediment, so it collapses into the cavity.

Sometimes cavities are able to support the weight of overlying materials (usually sediments) by virtue of being completely filled with groundwater. If the groundwater level is lowered, then the overburden will first erode and then collapse into the dewatered cavity.

Hydro-compaction

Hydro-compaction is the subsidence of shallow soils and sediments as a result of adding water to the land surface. Typically this occurs in dry regions where agriculture relies on extensive irrigation) is notable not for the magnitude of the subsidence that occurs but for the fact that much of the western United States has the type of geologic conditions which are susceptible to this phenomenon.

The sediments that are susceptible to hydro-compaction were loosely deposited in an arid or semi-arid environment by processes that left them with a very high porosity (> 45%). As these sediments dry out, their high-porosity structure is preserved by clay particles that act as "bridges" to cement the larger particles together. If water is added, the clay "cement" loses its strength, and the sediment subsides under its own weight.

Dam Failure

Dam Failure was rated a LOW PRIORITY RISK by the City of Commerce Hazard Mitigation Planning Team.

There are a total of 103 dams in Los Angeles County, owned by 23 agencies or organizations, ranging from the Federal government to Home Owner Associations. These dams hold billions of gallons of water in reservoirs. Releases of water from the major reservoirs are designed to protect Southern California from flood waters and to store domestic water. Seismic activity can compromise the dam structures, and the resultant flooding could cause catastrophic flooding. Following the 1971 Sylmar earthquake the Lower Van Norman Dam showed signs of structural compromise, and tens of thousands of persons had to be evacuated until the dam could be drained. The dam has never been refilled.

City of Commerce Emergency Operations Plan

General Situation

Dam inundation is defined as the flooding which occurs at the result of structural failure of a dam. Structural failure may be caused by seismic activity. Seismic activity may also cause inundation by the action of a seismically induced wave which overtops the dam without also causing dam failure. This action is referred to as a seiche. Landslides flowing into a reservoir are also a source of potential dam failure or overtopping.

Special Situation

The four major dams which could have significant impact on the City of Commerce in the event of a dam failure are the Whittier Narrows, Hansen and Sepulveda Dams and the Garvey Reservoir. None of these dams is located in the City.

Failure of these dams during a catastrophic event, such as a severe earthquake, is considered a very unlikely event. Due to the method of construction of these dams, they have performed well in earthquakes; and failure is not expected to occur. However, for purposes of emergency preparedness, are expected to be inundated, should failure occur, are shown in Attachments 1-4 Dam Inundation Maps. Additional information is contained in the specific Dam Inundation Contingency Plans prepared for each of the dams.

Whittier Narrows Dam

Description and Location: Whittier Narrows Dam is owned and operated by the Los Angeles District, Corps of Engineers. It is located in Los Angeles County on the San Gabriel and Rio Hondo Rivers approximately three miles south of the City of El Monte, 3 miles northwest of the City of Whittier, and approximately 7.5 miles downstream of the Santa Fe flood control channel. It is normally empty except during or immediately after periods of significant runoff.

Areas of Inundation: Should a breach in the dam occur, the water released would flow in a southerly direction toward the City of Long Beach. A very small southeast section of the City of Commerce lies within the dam's inundation path. Commerce is located approximately 4 ½ miles downstream of the Whittier Narrows Dam. In the even of a dam failure, the flood wave would reach the southeast part of

Commerce approximately one hour later at a depth of five feet. The inundated area affected by a breach of the Whittier Narrows Dam is comprised of commercial, industrial and residential.

Hansen Dam

Description and Location: Hansen Dam is owned and operated by the Los Angeles District, Corps of Engineers. It is located in Los Angeles County on the northern edge of the San Fernando Valley on Tujunga Wash just below the confluence of Big and Little Tujunga Creeks, about 4 miles west of the town of Sunland. Hansen Dam operates as a "dry" dam with all gates open one foot.

Areas of Inundation: Should a breach in the dam occur, the downstream current of water would flow in a southerly direction, into the Los Angeles River Channel. The City of Commercial, excluding areas east of the Long Beach Freeway and south of Washington Blvd., lies within the dam's inundation path. Commerce is located approximately 25 miles downstream of the Hansen Dam. In the event of a dam failure, the flood wave would reach Commerce approximately 16 ½ hours later at a depth of 1 ½ feet. The flood wave would continue to move through Commerce, inundating the northwest section of the City. The inundated area affected by a breach of the Hansen Dam is comprised of commercial, industrial, one school and residential.

Sepulveda Dam

Description and Location: Sepulveda Dam is owned and operated by the Los Angeles District, Corps of Engineers. It is located on the Los Angeles River within Los Angeles, just northwest of the junction of the Ventura Freeway (U.S. Highway 101) and the San Diego Freeway (interstate Highway 405) about 2 miles northwest of the City of Van Nuys. Sepulveda Dam normally operates as a "dry" dam. During flood periods, it is operated in coordination with other projects protecting the upper Los Angeles River.

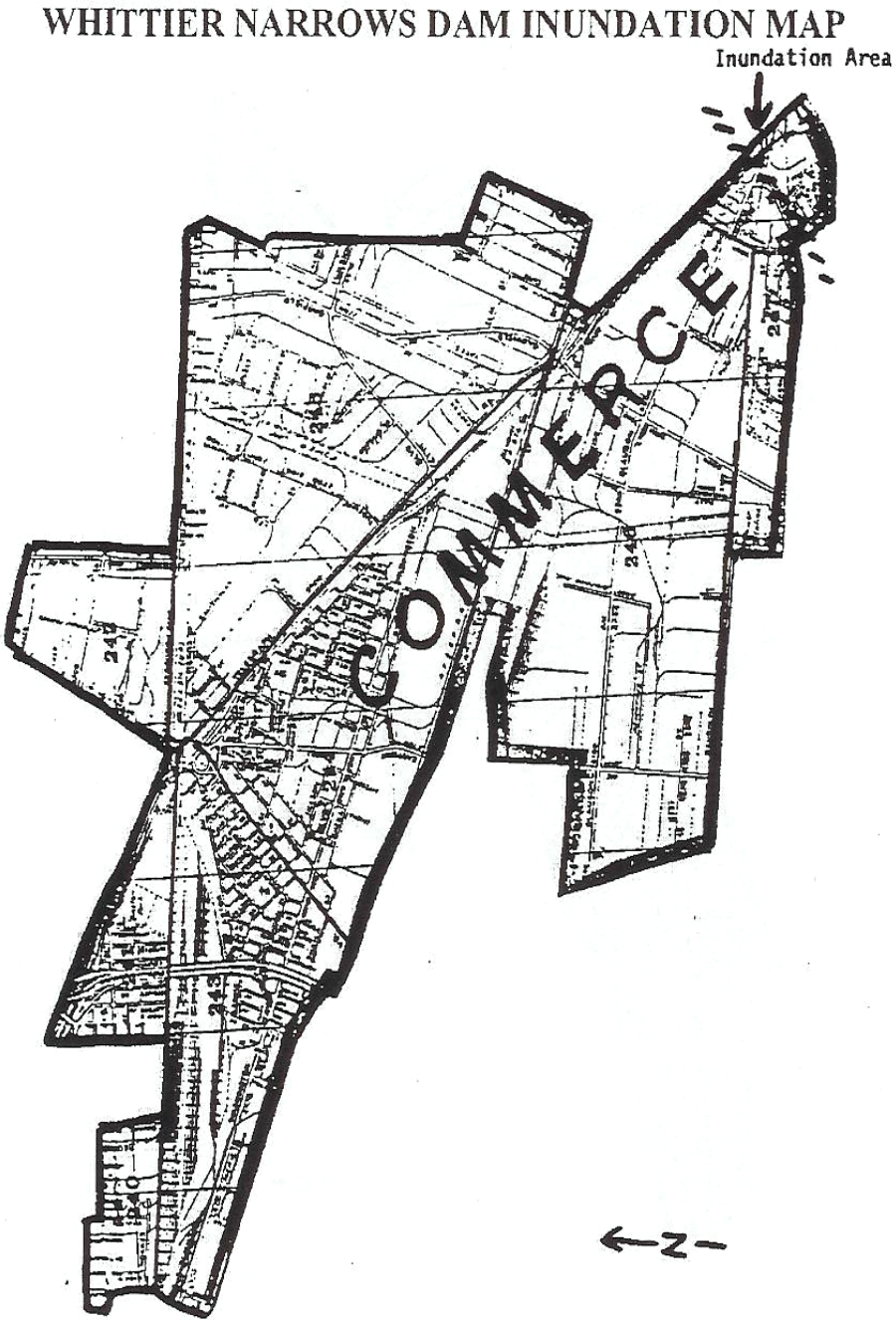
Areas of Inundation: Should a breach in the dam occur, the downstream current of water would flow in an easterly-southeasterly direction, into the Los Angeles River Channel. The City of Commerce, excluding areas north and southeast, lies within the dam's inundation path. Commerce is located approximately 26 miles downstream of the Sepulveda Dam. In the event of a dam failure, the flood wave would reach Commerce approximately ten hours later at a depth of about two feet. The flood wave would continue to move through Commerce, inundating the lower southwest section of the City. The inundated area affected by a breach of the Sepulveda Dam is comprised of commercial and industrial.

Garvey Reservoir

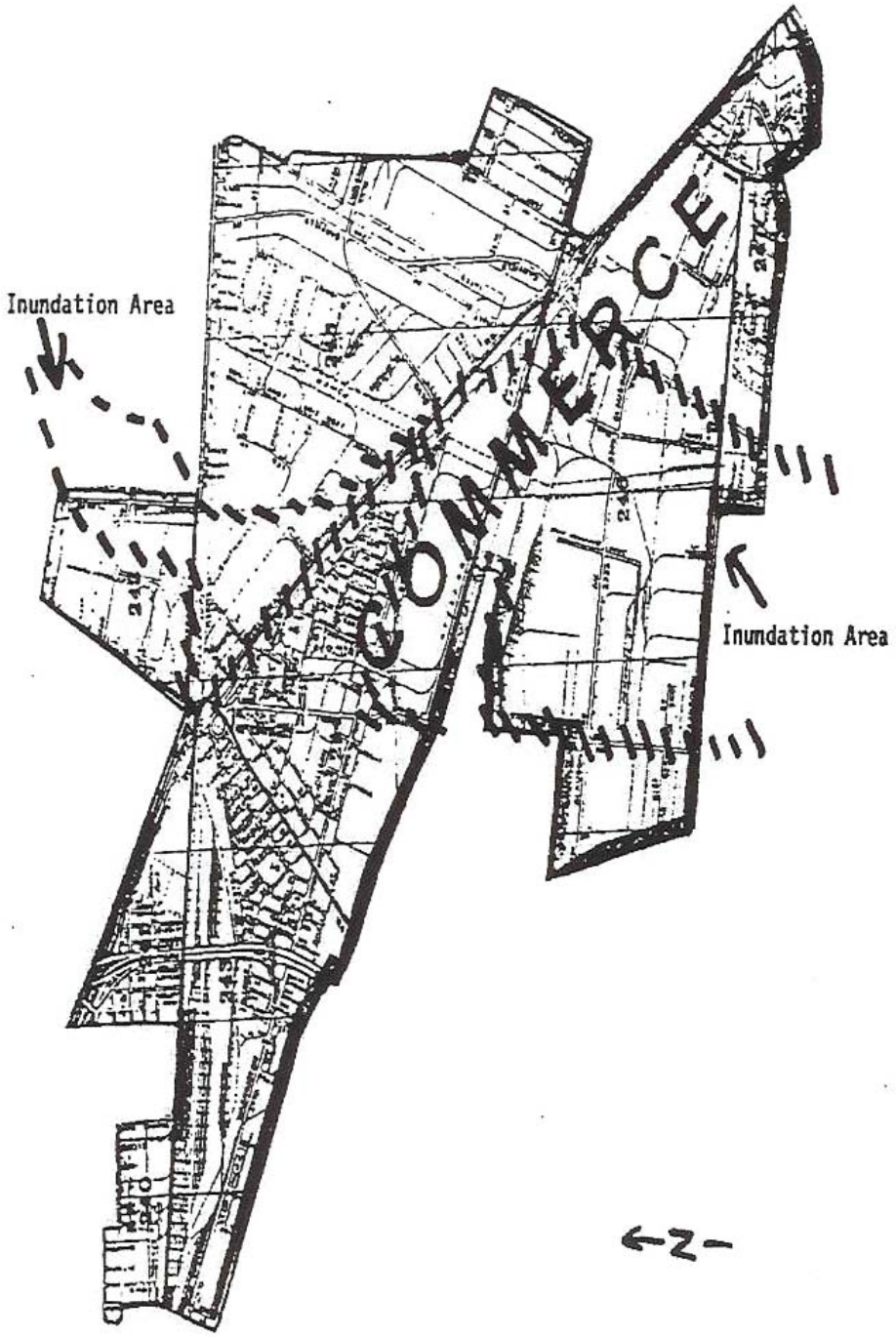
Description and Location: Garvey Reservoir was constructed and owned by the Metropolitan Water District of Southern California. It is located approximately two mile southeast of the intersection of Garfield Avenue and Graves Avenue in the City of Monterey Park.

Areas of Inundation: Should a breach in the reservoir occur, the water release could flow in two directions. The first flow would proceed in a northerly direction alongside Alhambra Avenue on the west and Orange Avenue on the east to Garvey Avenue, and east through natural land contours into the Whittier Narrows Dam. The second flow would proceed in a southerly direction through the natural land contours between Fulton Avenue on the west and Orange Avenue on the east. This flow would proceed to the Pomona Freeway to Findlay Avenue on the west and Garfield Avenue on the east. This flow would still proceed south to the City of Commerce through an area between Findlay Avenue on the west and Garfield Avenue on the east. Once in the City of Commerce, the flow spreads out alongside Ferguson Drive west to Telegraph Road and Tubeway Avenue on the east. Again, this flow passes through a natural contour and again spreads west to Eastern Avenue and east to Garfield Avenue.

The flow stays within these boundaries and flows south until it reaches the Rio Hondo River. The middle section of Commerce lies within the reservoir's inundation path. In the event of a reservoir failure, the flood wave would reach Commerce approximately 20 minutes. The flood wave would continue to move through Commerce, inundating the north middle section of the City first and continuing south to the lower middle portion. It should be understood that the City would not be simultaneously inundated. The inundated area affected by a breach of the Garvey Reservoir is comprised of commercial, industrial and residential.



GARVEY RESERVOIR INUNDATION MAP



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Section 5 – Hazard Mitigation Strategies

Mitigation Goals and Objectives

The information in the hazard vulnerability analysis and loss estimation information was used as a basis for developing mitigation goals and objectives. Mitigation goals are defined as general guidelines explaining what the City of Commerce wants to achieve in terms of hazard and loss prevention. Goal statements are typically long-range, policy-oriented statements representing city-wide visions. Objectives are statements that detail how the City's goals will be achieved, and typically define strategies or implementation steps to attain identified goals. Other important inputs to the development of city-level goals and objectives include performing reviews of existing local plans, policy documents, and regulations for consistency and complementary goals, as well as soliciting input from the public.

Identification and Prioritization of Mitigation Actions

Mitigation actions that address the goals and objectives developed in the previous step were identified, evaluated, and prioritized. These actions form the core of the mitigation plan. The City of Commerce conducted a capabilities assessment, reviewing existing local plans, policies, and regulations for any other capabilities relevant to hazard mitigation planning. An analysis of its capability to carry out these implementation measures with an eye toward hazard and loss prevention was conducted. The capabilities assessment required an inventory of the city's legal, administrative, fiscal and technical capacities to support hazard mitigation planning.

After completion of the capabilities assessment, the city evaluated and prioritized its proposed mitigations. The City considered the social, technical, administrative, political, legal, economic, and environmental opportunities and constraints of implementing a particular mitigation action. This step resulted in a list of acceptable and realistic actions that address the hazards identified in each jurisdiction.

A full suite of goals, objectives and action items for the City is presented in this Plan. The City then identified and prioritized actions with the highest short to medium term priorities. An implementation, schedule, funding source and coordinating individual or agency is identified for each prioritized action item.

The City of Commerce is supportive of the following hazard mitigation strategies. The City shall make every effort, given appropriate funding, to implement these strategies as conditions warrant.

Strategy Matrix

Strategy #	Earthquake	Explosions	Transportation Loss	Economic Disruption	Transportation Accident	Hazardous Materials	WMD/Terrorism	Utility Loss	Water/Waste Water	Aviation Disasters	Severe Weather	Drought	Floods	Substation Failure	Biological/Health	Data/Telecom
AH1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AH2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AH3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AH4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AH5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AH6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AH7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AH8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AH9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AH10	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AH11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AH12	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AH13	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AH14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AH15	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AH16	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AH17	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AH18	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AH19	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
EQ1	X															
EQ2	X															
EQ3	X															
EX1		X			X											
EX2		X			X		X									
UL1								X								
UL2								X								
DT1																X
DT2																X
DT3																X
FL1											X		X			

All Hazards (AH)

Strategy AH-1

Program/Project	Determine if existing inter-tie are sufficient to ensure water systems can function during disasters.
Cost	$25,000
Timeline	12-24 months
Department	Water Authority Budget
Financing	General Funds, Grants
Goal Addressed	
Priority	1
Related Hazard	All Hazards

Strategy AH-2

Program/Project	Purchase equipment for a specialized field response team for utilization during disasters.
Cost	2 Trucks $500,000
Timeline	24 months
Department	Community Services
Financing	Capital Improvement, Grants
Goal Addressed	First responder emergency.
Priority	1
Related Hazard	All Hazards

Strategy AH-3

Program/Project	Joint training with the EOC and Police Department.
Cost	$3,000
Timeline	Ongoing – Two drills per year.
Department	Community Services
Financing	EOC Budget
Goal Addressed	Public Safety
Priority	1
Related Hazard	All Hazards

Strategy AH-4

Program/Project	Hire an assistant for the Emergency Preparedness Program at an annual cost.
Cost	$47,616
Timeline	2 years
Department	Community Services
Financing	Grants
Goal Addressed	Enhance the Emergency Preparedness Program
Priority	1
Related Hazard	All Hazards

Strategy AH-5

Program/Project	22 member search and rescue team. Increase team size to 25 members and monthly training at annual cost.
Cost	$755,789.25
Timeline	1 year
Department	Community Services
Financing	Grants
Goal Addressed	Enhance the Emergency Preparedness Program.
Priority	1
Related Hazard	All Hazards

Strategy AH-6

Program/Project	25 Member Emergency Floor Coordinator Team. Increase training on a monthly basis at an annual cost.
Cost	$2500
Timeline	2 years
Department	Community Services
Financing	Grants
Goal Addressed	Enhance the Emergency Preparedness Program
Priority	1
Related Hazard	All Hazards

Strategy AH-7

Program/Project	15 member COMCAT Volunteer Program Increase to 30 members at an annual cost for training and uniforms.
Cost	$10,000
Timeline	2 years
Department	Community Services
Financing	Grants
Goal Addressed	Enhance the Emergency Preparedness Program.
Priority	1
Related Hazard	All Hazards

Strategy AH-8

Program/Project	EOC 26 member A Team EOC 23 member B Team
Cost	$5,000
Timeline	Quarterly Training
Department	Community Services
Financing	Grant
Goal Addressed	Enhance the Emergency Preparedness Program
Priority	1
Related Hazard	All Hazards

Strategy AH-9

Program/Project	Public Education: Campaign to inform, educate, prepare and train the public.
Cost	Annual Cost: $25,000 Total Coast: 1,205,432.50
Timeline	2 years
Department	City of Commerce, Community Services Department
Financing	General Funds, Grants
Goal Addressed	Short Term goal: To address any deficiencies in training, preparation, and education. Having well-trained and proficient emergency personnel and the resources needed to accomplish the goal. Getting the general public interested in emergency preparedness and a vigorous campaign to recruit and promote volunteerism. Long-term goal: To provide assistant to the general public during and after a disaster. To mitigate and shorten the adverse psychological affects of a disaster. To vigorously continue to campaign and provide education and emergency preparation for the general public.
Priority	1
Related Hazard	All Hazards: To have proficient and trained emergency preparedness resources capable of addressing any emergency or disaster that may befall the City of Commerce.

Strategy AH-10

Program/Project	Employee first response training
Cost	15 people/training session $1200 per person for 4 hours
Timeline	Biannual
Department	Community Service
Financing	General Funds
Goal Addressed	Employee SIMS training.
Priority	1
Related Hazard	All Hazards

Strategy AH-11

Program/Project	Purchase additional barricades, traffic cones, and other traffic devices.
Cost	$5,000
Timeline	Annual
Department	Public Service
Financing	Capital Improvement Budget
Goal Addressed	Update equipment and evacuation routes.
Priority	2
Related Hazard	All Hazards

Strategy AH-12

Program/Project	Identify funding opportunities, e.g. State and Federal grants, for implementation of mitigation activities.
Cost	Staff Time
Timeline	12 months
Department	Community Development, Purchasing Services Agent, Community Service
Financing	General Fund
Goal Addressed	Mitigate Projects
Priority	2
Related Hazard	All Hazards

Strategy AH-13

Program/Project	Establish an ongoing City of Commerce Mitigation Planning Team and work to include other affected agencies (County Flood Control).
Cost	Staff Time
Timeline	Ongoing
Department	Community Service
Financing	General Funds
Goal Addressed	Keep the DMA 2000 Plan updated and develop ongoing strategies.
Priority	2
Related Hazard	All Hazards

Strategy AH-14

Program/Project	Integrate an ongoing City of Commerce Multi-Jurisdictional Local Hazard Mitigation Plan into existing regulatory documents and programs.
Cost	Staff Time
Timeline	Ongoing
Department	Community Service
Financing	General Funds
Goal Addressed	Keep the DMA 2000 Plan updated and develop ongoing strategies
Priority	2
Related Hazard	All Hazards

Strategy AH-15

Program/Project	Investigate the City of Commerce Multi-Jurisdictional Hazard Mitigation Plan into existing regulatory documents and programs.
Cost	Staff Time
Timeline	Ongoing
Department	Community Service
Financing	General Funds
Goal Addressed	Keep the DMA 2000 Plan updated and develop ongoing strategies
Priority	2
Related Hazard	All Hazards

Strategy AH-16

Program/Project	Establish emergency purchase orders to allow for faster response to emergencies.
Cost	Staff Time
Timeline	Ongoing
Department	Finance Department
Financing	General Plans
Goal Addressed	Emergency
Priority	2
Related Hazard	All Hazards

Strategy AH-17

Program/Project	Freeway Closure Plan
Cost	$10,000
Timeline	6 months
Department	Sheriff's Department
Financing	Sheriff's Department
Goal Addressed	Evacuation Routes
Priority	2
Related Hazard	All Hazards

Strategy AH-18

Program/Project	Study feasibility of stationing backup power equipment, e.g. generators, at all critical facilities (not including water system facilities) identified by the city of Commerce Hazard Mitigation Planning Team.
Cost	$10,000
Timeline	Historic
Department	Community Development, Public Service
Financing	General Fund, Capital Improvement
Goal Addressed	Backup power for the City's facilities.
Priority	Pending
Related Hazard	All Hazards

Strategy AH-19

Program/Project	ComCats: Backup assessment and awareness volunteer group.
Cost	ComCat Car: $15,000
Timeline	Ongoing since the 1980's
Department	Public Safety
Financing	Community Services
Goal Addressed	Support group for all hazards, public awareness and public safety.
Related Hazard	All Hazards

[redacted]

Earthquake (EQ)

Strategy EQ-1

Program/Project	Earthquake Insurance
Cost	Annual
Timeline	Ongoing/Annual Premium
Department	Finance
Financing	Finance Department
Goal Addressed	
Priority	Pending
Related Hazard	Earthquake

Strategy EQ-2

Program/Project	Retrofit concrete tilt-up buildings.
Cost	$300,000 to start
Timeline	12-24 months
Department	Community Development
Financing	Grant to fund
Goal Addressed	To retrofit and pay for staffing to implement Chapter 95.
Priority	Pending
Related Hazard	Earthquake

Strategy EQ-3

Program/Project	Backup Strategy if funds don't come through to retrofit concrete tilt-up buildings.
Cost	$300,000
Timeline	12-24 months
Department	Community Development to have the money appropriated.
Financing	General Fund, Grants, Redevelopment Funds
Goal Addressed	To retrofit and pay for staffing to implement Chapter 95.
Priority	Pending
Related Hazard	Earthquake

Cost Analyses 2004

The following figures reflect the actual cost related expenditures that would be incurred during a catastrophic disaster. These figures are reflective of a 24-hour period. The cost reflects only Commerce emergency resources.

EOC Activation

EOC 26 member straight time	$ 830.28 per hour x 12 hours =	$ 9963.36
At time and a half		$4981.68
		$ 14945.04
EOC 23 member B Team:	$ 764.41 per hour x 12 hours =	$ 9172.95
At time and a half		$ 4586.48
		$ 13759.43
22 member Search & Rescue:	$ 372.31 per hour x 24 hours =	$ 8935.44
At time and a half		$ 4467.72
		$ 13403.16
13 member Public Safety Div.	$ 358.55 per hour x 24 hours =	$ 8605.20
At time and a half		$ 4302.60
		$ 12907.80
12 member Public Services:	$ 325.50 per hour x 24 hours =	$ 7812.00
At time and a half		$ 3906.00
		$ 11718.00
150 member support staff	$ 262.14 per hour x 24 hours =	$ 72,000.00
At time and a half		$ 36000.00
		$ 108,000.00

Housing estimated at $ 150.00 double occupancy x 14 rooms =	$ 2100.00
Cost reflects personnel that are needed at scene 24 hours.	
Food & beverage estimated at $ 30.00 a day each person x 25=	$ 7500.00
Equipment rental:	
75 Portal Toilets for field use estimated at $ 35.00 a day rental x $ 75.00 =	$ 2625.00
8 tractors estimated at $ 175.00 a day rental x 8 =	$ 1400.00
8 Debris removal trucks at $ 125.00 a day rental x 8 =	$ 1000.00

Miscellaneous equipment and tools estimated at	$ 10,000.00
4 shelters at regional parks, cost of managing evacuees estimated at	$ 20,000.00
Other miscellaneous cost accrued during a 24-hour period	$ 50,000.00
	Total $ 269,358.43

Proposed Concrete Tilt-Up Program

Executive Summary

A windshield survey of buildings in the City of Commerce identified 411 tilt-up buildings likely to fall within the scope of Chapter 95 of the City of Commerce Building Code, Earthquake Hazard Reduction for Existing Concrete Tilt-up Buildings. This Chapter of the Code was developed based on damage observed after numerous earthquakes, including the Northridge earthquake, and is intended to reduce the risk from this type of building during earthquakes. Active enforcement of the mandatory retrofit program involves a number of steps and specific tasks as outlined in this report.

The addition of one building inspector and one permit technician to existing County staff within the City will be needed for a period of three and one-half years to enforce this program. An increase in plan check staff time will be needed and provided by central office plan check staff. Supervision and technical support for the program will be provided at no additional cost to the City. Additional staff time may be needed if formal enforcement actions such as appeals hearings are needed after the three and one-half year period mentioned above.

A financial analysis for the program is provided on page 16 of the report. Due to the amount of time needed to prepare and deliver correspondence and respond to questions, a plan check and permit fee multiplier of 2.8 is needed to for the City to recover anticipated expenses. We do not recommend reducing City building fees for this program.

Financial Analysis of the Proposed Tilt-Up Retrofit Program

Based on an estimated valuation of $20,000 per project, and 90 percent of the 411 identified buildings needing plan check and permits, the anticipated revenue based on standard County fees is:

0.9 * 411 (211.60 + 20.00)/3.5 = $53,530 per year

The anticipated revenue if the standard City fees are used it:

0.9 * 411 [(221.60 + 264.90) * 3 + 20.00)/3.5 = $156,362 per year

The retrofit program will need an additional building inspector and permit technician assigned to the City, and support from central office plan check staff. The expense for

additional staff is expected to increase billing to the City by $187,396 per year over the three and one-half year length of the program. Based on these estimates, a fee multiplier of 3.5 is needed to recover anticipated expenses under the program.

This estimate does not include staff time for work beyond the three and one-half year length of the program which may be needed for enforcement actions. The estimate also does not include the cost of supplies, postage, and recording fees.

Explosions (EX)

Strategy EX-1

Program/Project	GIS software program to survey all hazardous material locations, create a map and identify sites.
Cost	$4,000
Timeline	6 months
Department	Community Development
Financing	General Fund
Goal Addressed	Identify hazardous material sites for first responder.
Priority	1
Related Hazard	Explosions, Transportation Accidents

Strategy EX-2

Program/Project	Purchase search and rescue equipment (Refer to Search and Rescue Emergency Equipment List)
Cost	$336,527.33
Timeline	1 year
Department	Community Service
Financing	Grant
Goal Addressed	First responder evacuation and upgrade for the Emergency Preparedness Program.
Priority	Pending
Related Hazard	Explosions, WMD/Terrorism, Transportation

Utility Loss (UL)

Strategy UL-1

Program/Project	Purchase backup/emergency power equipment for use at critical water system facility.
Cost	$200,000 each
Timeline	24 months
Department	Community/Public Services
Financing	Capital Improvement, Grants
Goal Addressed	Protect the water system for fire and drinking water.
Priority	1
Related Hazard	Utility Loss

Strategy UL-2

Program/Project	Purchase hand pumps for use at fuel tank locations (4).
Cost	$5,000
Timeline	24 months
Department	Community Service
Financing	Grants, Capital Improvement
Goal Addressed	First responder vehicle transportation usage.
Priority	1
Related Hazard	Utility Loss

Data/Telecommunications Loss (DT)

Strategy DT-1

Program/Project	Community Alert Network, (CAN) Continue to upgrade the CAN system and to provide a 9-1-1 database. To maintain and query the system on a monthly basis. Annual cost to provide an updated Homebound list and liaison officer for the Homebound.
Cost	$2000
Timeline	1 year
Department	Community Services
Financing	Budget Item/Emergency Preparedness Division
Goal Addressed	Enhance the Emergency Preparedness Program
Priority	1
Related Hazard	Data/Telecommunications

Strategy DT-2

Program/Project	Mobile Command Unit Upgrade existing communications system and maintenance up.
Cost	$15,000
Timeline	2 years
Department	Community Services
Financing	Grant
Goal Addressed	Enhance the Emergency Preparedness Program
Priority	1
Related Hazard	Data/Telecommunications

Strategy DT-3

Program/Project	5 member HAM Radio Operator Team. Increase membership to 15 at an annual cost for training and uniforms.
Cost	$3000
Timeline	2 years
Department	Community Services
Financing	Grants
Goal Addressed	Enhance the Emergency Preparedness Program
Priority	2
Related Hazard	Data/Telecommunications

Flood (FL)

Strategy FL-1

Program/Project	Purchase water pumps, sandbags and other emergency response items.
Cost	$5,000
Timeline	12-24 months
Department	Public Service
Financing	Grants
Goal Addressed	
Priority	2
Related Hazard	Flood, Severe Weather

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Section 6 – Future Actions & Goals

Summary

The City of Commerce is supportive of the following actions and goals. The City shall make every effort, given appropriate funding, to implement these actions and goals as conditions warrant.

Specific Goals & Actions

Listed below are the City of Commerce hazard mitigation goals and related potential actions. For each goal, one or more action items have been identified that provide strategies to attain the goal. Where appropriate, the City has identified a range of specific actions to achieve the long-term objective and goal.

The goals and objectives were developed by considering the risk assessment findings, localized hazard identification and loss/exposure estimates, and an analysis of the City's current capabilities assessment. These preliminary goals, objectives and actions were developed to represent a vision of long-term hazard reduction or enhancement of capabilities.

In addition, City of Commerce representatives met with the consultant staff and Departments to specifically discuss these hazard-related goals, objectives and actions as they related to the overall Plan. Representatives of numerous City of Commerce departments were involved in hazard mitigation planning. The departments are identified specifically in the minutes of the meetings.

The City of Commerce Hazard Mitigation Planning Team used the City's General Plan, Emergency Operations Plan, and the Los Angeles County DMA 2000 planning process as a baseline for preparing this Plan. They will continue to network with neighboring jurisdictions and incorporate any future legal planning mechanism into the annual update. The documents and plans will be presented to the Planning Team for consideration and possible integration. Additionally, when the City's General Plan, Emergency Operations Plan, and Departmental Plans are being reviewed and updated, they will incorporate the DMA 2000 Plan components into the Plans when appropriate. The Chairman of the Hazard Mitigation Plan will be responsible for keeping the departments updated on the mitigation strategy development.

The City of Commerce has developed the following Specific and Long Term Goals for their Hazard Mitigation Plan Program.

Development of Specific Goals

Goal 1. Promote Disaster-resistant future development.

Goal 2. Increase public understanding and support for effective hazard mitigation.

Goal 3. Build local support and commitment to become less vulnerable to hazards.

Goal 4. Enhance hazard mitigation coordination and communication with federal, state, local

Goal 5. Reduce the possibility of damage and losses to existing assets, particularly people, critical facilities/infrastructure, and City of Commerce-owned facilities from the following high risks:

- Earthquake
- Explosion
- Transportation Loss
- Economic Disruption
- Transportation Accident
- Hazardous Materials/Pipeline Incidents
- WMD/Terrorism
- Utility Loss
- Water/Wastewater Disruption

Prioritization and Implementation of Action Items

Once the specific list of City of Commerce's goals listed above was developed, the proposed mitigation actions were prioritized by the Planning Executive Committee. This step resulted in a list of acceptable and realistic specific actions that address the hazards identified in the City of Commerce.

The Disaster Mitigation Act of 2000 (at 44 CFR Parts 201 and 206) requires the development of an action plan that not only includes prioritized actions but one that includes information on how the prioritized actions will be implemented. Implementation consists of identifying who is responsible for which action, what kind of funding mechanisms and other resources are available or will be pursued, and when the action will be completed.

The top 5 prioritized mitigation actions as well as an implementation strategy for each are:

Action Item #1: Coordinate the development of a Multi-Hazard DMA 2000 plan.

> **Coordinating Individual/Organization**: City of Commerce will work together with members of the Planning Team.
>
> **Potential Funding Source**: FEMA Grants/ General Funds for City of Commerce.
>
> **Implementation Timeline**: 1 Year

Action Item #2: Publicize and encourage the adoption of appropriate hazard mitigation actions.

> **Coordinating Individual/Organization**: City of Commerce
>
> **Potential Funding Source**: General Fund/Federal or State grants.
>
> **Implementation Timeline**: 1 - 3 years

Action Item #3: Update Building Codes to reflect current earthquake standards.

> **Coordinating Individual/Organization**: Public Works and Building and Codes Department
>
> **Potential Funding Source**: General Fund/Federal or State Grants.
>
> **Implementation Timeline**: 2 - 5 years

Action Item #4: Review and compare existing flood control standards, zoning and building requirements.

Coordinating Individual/Organization: Department of Public Works

Potential Funding Source: General Fund/Federal or State Grants

Implementation Timeline: 1 - 3 years

Action Item #5: Encourage the public to prepare and maintain a 3-day preparedness kit for home and work.

Coordinating Individual/Organization: Media & Public Relations/IT

Potential Funding Source: General Fund/Federal or State grants

Implementation Timeline: 1 - 3 years

Long Term Objectives and Actions

The City of Commerce developed the following broad list of objectives and actions to assist in the implementation of each of their long-term goals. The City of Commerce developed objectives to assist in achieving their hazard mitigation goals. For each of these objectives, specific actions were developed that would assist in their implementation.

Objective 1.: Facilitate the development or updating of general plans and zoning ordinances to limit development in hazard areas.

Action 1 Update General Plan every 10 years.

Action 2 Attract and retain qualified, professional, and experienced staff.

Action 3 Identify high hazard areas.

Action 4 Review hazard mitigation strategies on an annual basis

Objective 1.B: Facilitate the adoption of building codes that protect existing assets and restrict new development in hazard areas.

Action 1 Review Codes every 3 years.

Action 2 Establish emergency review procedures for codes.

Action 3 Assist private and the public in building code compliance

Objective 2: Facilitate consistent enforcement of general plans, zoning ordinances, and building codes.

Objective 3: Limit future development in hazardous areas

Action 1 Development should be in harmony with existing topography.

Action 2 Development patterns should respect environmental characteristics.

Action 3 Development should be limited in areas of known geologic hazards.

Action 4 Development in floodplains shall be limited to protect lives and property.

Objective 4: Address identified data limitations regarding the lack of information about new development and build-out potential in hazard areas

Objective5: Increase public understanding, support and demand for hazard mitigation for new developments.

Action 1 Gain public acceptance for avoidance policies in high hazard areas.

Future Goals and Objectives

Future Goals and objectives will be reviewed and implemented if consistent with future budgetary consideration.

Goal 1: Increase public understanding and support for effective hazard mitigation.

Objective 1: Educate the public to increase awareness of hazards and opportunities for mitigation actions.

Action 1 Publicize and encourage the adoption of appropriate hazard mitigation actions.

Action 2 Provide information to the public on the City of Commerce's website.

.**Action 3** Gain public acceptance for avoidance policies in high hazard areas.

Action 4 Campaign to inform, educate, prepare and train the public.

Goal 2: Enhance hazard mitigation coordination and communication with federal, state, county and local regional jurisdictions

Objective 1 Encourage other organizations to incorporate hazard mitigation activities.

Action 1 Leverage resources and expertise that will further hazard mitigation efforts.

Action 2 Update the City of Commerce's Multi-hazard Mitigation Plan on a regular basis

Action 3 Establish and maintain lasting partnerships through existing City of Commerce organizational relationships.

Action 4 Maintain coordination, communication, and cooperation with the State in administering recovery programs.

Action 5 Continue to exchange resources and work with local and regional partners.

Goal 3: Reduce the possibility of damage and losses to existing assets, including people, critical facilities/infrastructure, and public facilities due to earthquakes.

Objective 1: Develop a comprehensive approach to reducing the possibility of damage and losses due to earthquakes.

Action 1 Implement Chapter 95; Retrofit concrete tilt-up buildings

Action 2 Maintain Building Codes to reflect current earthquake standards.

Action 2 Encourage and participate in community awareness meetings.

Action 3 Distribute printed publications to the communities concerning hazards.

Action 4 Maintain Earthquake Insurance

Objective 2: Protect existing assets with the highest relative vulnerability to the effects of earthquakes.

Action 1 Identify hazard-prone structures as feasible

Action 2 Encourage and continue the study ground motion, landslide, and liquefaction.

Objective3: Coordinate with and support existing efforts to mitigate earthquake hazards

Action 1 Identify projects for pre-disaster mitigation funding.

Action 2 Design and implement an ongoing public seismic risk assessment program.

Action 3 Collaborate with Federal, State, universities and local agencies' mapping efforts.

Objective 4: Address identified data limitations regarding the lack of information about the relative vulnerability of assets from earthquakes.

Action 1 Assess City of Commerce's utility infrastructure with regard to earthquake risk, including public and private utilities.

Action 2 Encourage the public to prepare and maintain a 3-day preparedness kit for home and work for all hazards

Goal 4: Reduce the possibility of damage and losses to existing assets, including people, critical facilities/infrastructure, and public facilities due to floods.

Objective 1: Develop a comprehensive approach to reducing the possibility of damage and losses due to floods.

Action 1 Review and compare existing flood control standards, zoning and building requirements.

Action 2 Identify and update flood-prone areas

Action 3 Adopt policies that discourage growth in flood-prone areas.

Objective 2: Protect existing assets with the highest relative vulnerability to the effects of floods within the 100-year floodplain.

Action 1 Assure adequate funding where feasible to restore damaged facilities to 100-year flood design.

Action 2 Update storm water systems plans and improve storm water facilities in high-risk areas.

Action 3 Ensure adequate evacuation time in case of major hazard event.

Objective 3: Coordinate with and support existing efforts to mitigate floods (e.g., US Army Corps of Engineers, US Bureau of Reclamation, California Department of Water Resources).

Action 1 Develop a flood control strategy that ensures coordination with Federal, State, county and local agencies.

Action 2 Improve hazard warning and response planning.

Action 3 Seek pre-disaster mitigation funding.

Objective 4: Address identified data limitations regarding the lack of information about the relative vulnerability of assets from flooding.

Action 1 Maintain, develop and implement hazard awareness program.

Capabilities Assessment

The City of Commerce identified current capabilities available for implementing hazard mitigation activities. The Capability Assessment portion of the hazard mitigation plan identifies administrative, technical, legal and fiscal capabilities. This includes a summary of departments and their responsibilities associated to hazard mitigation planning as well as codes, ordinances, and plans already in place associated to hazard mitigation planning. The second part of the assessment provides fiscal capabilities that may be applicable to providing financial resources to implement identified mitigation action items.

Existing Institutions, Plans, Policies and Ordinances

The following is (1) a summary of existing positions their responsibilities related to hazard mitigation planning and implementation; and (2) a list of existing planning documents and regulations related to mitigation efforts within the Operational Area. The administrative and technical capabilities of each jurisdiction, as shown in the table below, provides an identification of the staff, personnel, and department resources available to implement the actions identified in the mitigation section of the Plan. Specific resources reviewed include those involving technical personnel such as planners/engineers with knowledge of land development and land management practices, engineers trained in construction practices related to building and infrastructure, planners and engineers with an understanding of natural or human-caused hazards, floodplain managers, surveyors, personnel with GIS skills and scientists familiar with hazards in the community.

Administrative & Technical Capacity

Position	Y/N	Department/Agency
Planner(s) or engineer(s) with knowledge of land development and land management practices	Y	Community Development

Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Community Development
Planners or Engineer(s) with an understanding of natural and/or human-caused hazards	Y	Community Development
Floodplain manager	Y	Los Angeles County Public Works
Surveyors	Y	Los Angeles County Public Works
Staff with education or expertise to assess the community's vulnerability to hazards	Y	Community Development/Engineers
Personnel skilled in GIS and/or HAZUS	Y	Community Development
Scientists familiar with the hazards of the community	N	
Emergency manager	Y	Community Development
Grant writers	Y	Community Development/Administration

Regulatory Tools

The legal and regulatory capabilities of each jurisdiction are shown in the table below, which presents the existing ordinances and codes that affect the physical or built environment of each jurisdiction. Examples of legal and/or regulatory capabilities can include: a City's building codes, zoning ordinances, subdivision ordnances, special purpose ordinances, growth management ordinances, site plan review, general plans, capital improvement plans, economic development plans, emergency response plans, and real estate disclosure plans.

Regulatory Tools (ordinances, codes, plans)	Y/N	Comments
Building code	Y	
Zoning ordinance	Y	
Subdivision ordinance or regulations	Y	
Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances, wildfire ordinances, hazard setback requirements)	Y	
Growth management ordinances (also called "smart growth" or anti-sprawl programs)	N	
Site plan review requirements	Y	
General or comprehensive plan	Y	
A capital improvements plan	Y	
An economic development plan	N	
An emergency response plan	Y	
A post-disaster recovery plan	Y	
A post-disaster recovery plan	Y	
Real estate disclosure requirements	N	State
Habitat Management Plan	N	
Master Drainage, Sewer, Water, & Reclaimed Water	Y	
Redevelopment Master Plan	Y	

Fiscal Resources

The table below shows specific financial and budgetary tools available to the jurisdictions such as community development block grants; capital improvements project funding; authority to levy taxes for specific purposes; fees for water, sewer, gas, or electric services; impact fees for homebuyers or developers for new development; ability to incur debt through general obligations bonds; and withholding spending in hazard-prone areas.

Financial Resources	Y/N	Comments
Community Development Block Grants	Y	County
Capital improvements project funding	Y	
Authority to levy taxes for specific purposes	Y	*Voters Approval
Fees for water, sewer, gas, or electric service	N	
Impact fees for homebuyers or developers for new developments/homes	N	
Incur debt through general obligation bonds	Y	
Incur debt through special tax and revenue bonds	Y	
Incur debt through private activity bonds	Y	
Withhold spending in hazard-prone areas	Y	

* Subject to grant from State
** Subject to voter approval

Section 7 – Plan Maintenance

Monitoring, Evaluating & Updating

This section of the Plan describes the formal process that will ensure that the Plan remains an active and relevant document. The plan maintenance process includes a schedule for monitoring and evaluating the Plan annually and producing a plan revision every five years.

This section describes how the City of Commerce will integrate public participation throughout the plan maintenance process. Finally, this section includes an explanation of how jurisdictions intend to make considerations for the mitigation strategies outlined in this Plan into existing planning mechanisms.

The City of Commerce will be responsible for monitoring the plan annually for updates to jurisdictional goals, objectives, and action items. If needed, these participants will coordinate through the City of Commerce's Hazard Mitigation Steering Committee to integrate these updates into the Plan. The Chairman of the City of Commerce Hazard Mitigation Planning Team will be responsible for monitoring the overall Plan for updates on an annual basis. The Chairman will reconvene the Steering Committee as needed to make these updates.

The Plan will be evaluated by The City of Commerce and by each participating jurisdiction at least every two years to determine the effectiveness of programs, and to reflect changes in land development or programs that may affect mitigation priorities. The Plan will also be re-evaluated by City of Commerce leads or their select jurisdictional representative based upon the initial Plan criteria used to draft goals, objectives, and action items for this Plan. Action items will be reviewed to determine their relevance to changing situations in the City of Commerce, Los Angeles County Operational Area, as well as changes in State or Federal regulations and policy. The City of Commerce will conduct an assessment of each portion of the Plan to determine if this information should be updated or modified, given any new available data.

The City of Commerce's lead team members will be the responsible group for updates to the Plan. All City of Commerce participants will be responsible to provide the Steering Committee Chairperson with jurisdictional-level updates to the Plan when/if necessary as described above. These updates will be reported to the Chairman by phone, email or written reports. Every five years the updated plan will be submitted to the State of California and FEMA for review.

The City of Commerce will have the opportunity to implement recommended action items through existing programs and procedures that are deemed appropriate. Upon adoption of the Plan, the multi-jurisdictional participants can use the Plan as a baseline of information on the natural hazards that impact the region.

Continued Public Involvement

The City of Commerce is dedicated to involving the public directly in review and updates of the Plan.

A representative from selected departments/agencies will be responsible for monitoring, evaluating, and updating the Plan as described above. During all phases of plan maintenance the public will have the opportunity to provide feedback.

A copy of the Plan will be publicized and available for review on the City of Commerce website. In addition, copies of the plan will be catalogued and kept at all of the appropriate participants in the City. The existence and location of these copies will also be posted on the Paramount website. The site will contain contact information for City of Commerce to which people can direct their comments and concerns.

All public feedback will be forwarded to the appropriate Hazard Mitigation Planning Team for review and incorporation (if deemed appropriate).

A press release requesting public comments will also be issued after each evaluation or when deemed necessary by the City of Commerce. The press release will direct people to the website or appropriate local agency location where the public can review proposed updated versions of the Plan. This will provide the public an outlet for which they can express their concerns, opinions, or ideas about any updates/changes that are proposed to the Plan. The Hazard Mitigation Planning Team members will assure the resources are available to publicize the press releases and maintain public involvement through public access channels, web pages, and newspapers as deemed appropriate.