Los Angeles County Office of Education

All-Hazard Mitigation Plan

An official publication

Los Angeles County Office of Education

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Los Angeles County Board of Education

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Section 1 – Introduction

Executive Summary

To summarize, this document contains:

- The Los Angeles County Office of Education (LACOE) Hazard Vulnerability Analysis;
- Prioritization of Los Angeles County Office of Education Hazards for mitigation activities;
- Hazard Mitigation Strategy Goals and Objectives;
- Office-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 Los Angeles County Office of Education Hazard Mitigation Steering Committee, its sub-committees and the general public
- Input based on participation of Los Angeles County Office of Education Hazard Mitigation Planning Steering Committee members in other jurisdictional hazard mitigation planning efforts.
- 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 Los Angeles County Office of Education Hazard Mitigation Planning Steering Committee to assist in the further development, prioritization and implementation of the recommended Hazard Mitigation strategies.

This document also provides a framework for identification and coordination of Hazard Mitigation strategies developed by Los Angeles County Office of Education with other 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.

Purpose of the Plan

The purpose of this plan is to integrate Hazard Mitigation strategies into the day-to-day activities and programs of Los Angeles County Office of Education.

This plan identifies and evaluates specific strategies to be considered by Los Angeles County Office of Education and its agencies. It offers an Office-wide support document as well as a planning support tool for those strategies developed by the Office of Education's internal organizations.

The strategies presented are deemed appropriate and effective by recommendation of the Los Angeles County Office of Education Hazard Mitigation Planning Steering Committee and the Office of Education's administration and departments.

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 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 Los Angeles County Hazard Vulnerability Analysis (HVA) that considers natural, technological, and human-caused risks to which the Office of Education and its affiliated organizations are vulnerable. The plan describes strategies that the Office of Education 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 Superintendent of Los Angeles County Office of Education and funded in order to be implemented as official Hazard Mitigation Strategies.

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.

LACOE Vision

"LACOE is a premier provider of integrated, educational programs and services, from birth to adulthood, in a richly diverse and multicultural global environment."

LACOE uses a variety of service delivery systems to eliminate the educational barriers associated with poverty and racial divisiveness in education, enabling students to exceed state and national standards. These services include universal, quality, early childhood education, effective data driven programs for all students, and state of the art technical assistance.

LACOE organizes its infrastructure to provide leadership in creating unique, nationally recognized models in education, including models for innovative staff development and training. LACOE earns the public's confidence by: making the school the hub of the community, making the most efficient use of financial resources, bridging the "digital divide" in technology access and content, and developing collaborative partnerships for students, parents, and community. LACOE embraces a culture of diversity that promotes an inclusive, prosperous learning and workplace environment.

LACOE Strategic Plan Goals

Goal 1: Accountability

LACOE will implement a rigorous accountability system in which all staff shall be held responsible for meeting set objectives with measurable outcomes.

Goal 2: Identity

LACOE will actively promote its identity and its services.

Goal 3: Relevant, Aligned, and Appropriate Educational Programs

LACOE will provide challenging and relevant educational programs aligned to state content standards that focus on measurable academic achievement, and are appropriate to the student population.

Goal 4: Child Development and Student Achievement

LACOE will ensure alignment of budgetary allocations, staff hiring and training, parental involvement, and uses of technology in order to support the overall goals of child development and high student achievement

Goal 5: Leadership Development and Performance Excellence

LACOE will implement a leadership development and performance excellence program that emphasizes responsible professional and ethical behaviors, accountability, continuous learning, and quality customer service.

Goal 6: Qualified, Diverse and Committed

LACOE will ensure that it is the employer of choice for a highly qualified, diverse work force with a strong commitment to public education and public service

Goal 7: Increased Achievement

LACOE will promote increased achievement for all students, with an emphasis on assisting low-performing schools by providing support services and programs to underserved children, youth, families, districts, schools, and communities.

Goal 8: School Readiness

LACOE will expand and promote school readiness efforts to prepare young children to enter school with the fundamental cognitive and social skills.

Goal 9: Student Citizenship and Character Development

LACOE will promote and support student citizenship and character development.

Goal 10: Timely, Efficient, and Effective

LACOE will deliver timely, efficient, and effective business services to external and internal clients.

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 California Governor's Office of Emergency Services (OES) 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)

LACOE Identified Mitigation Constraints

The committee identified a list of issues that exist in Los Angeles County that can be considered constraints to mitigation planning implementation: (perspective of the participating advisory committee members)

1. Legal
2. Economic Constraints
3. Budget Constraints
4. Land Ownership Constraints
5. State and Federal Influences
6. Enormity of population and area served
7. Sensitivity of information needed to complete the Plan.
8. Building and Code restrictions
9. Cultural demands and barriers
10. Interpretation of law

Plan Adoption

Process & Timeline

Task	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Hazard Identification, Analysis and Risk Assessment								
Project Initiation Meeting and ongoing meetings on 3 week schedule								
Hazard Identification & Prioritization Process								
Hazard Events Profile								
Office of Education Asset Inventory/Overlay risk and inventory								
Risk Assessment/Loss Estimation								
Public Input – Gathered as available throughout project								
Capability Assessment								
Plans, Policies, and Programs documentation review								
Assessment of Previous Mitigation Activities								
Identification and Evaluations of Resources								
Assessment of Feasible Hazard Mitigation Measures and Needs								
Develop Goals and Objectives								
Develop, Evaluate and Prioritize Feasible Mitigation Strategies								
Development Plan and Implementation Strategy								
Production of Final Plan								
Adoption of plan by Planning Committee and Board of Education								
Submit for Government Approval (State OES/FEMA)								
Ongoing Activities								
Plan Draft Evaluations								
Regional Coordination with Cities and County Mitigation Committees								

Plan Updates and Incorporate changes into plan Required every 5 years, recommended Annually

Blue Line Represents Ongoing Activities

Red Line Represents Short Term Activities

Section 2 – Hazard Mitigation Planning Process

Hazard Mitigation Planning Participation

Steering Committee Members

Roger Chang	Regionalized Business Services Coordinator
Keith Crafton*	Administrative Services Officer-Co-Chairman
Kavin Dotson	Administrator, Education Programs
Charles C. Holmes	Transportation and Planning Officer
Frank Kwan	Director of Communications
Bill McIntire*	Assistant Director, Operations and Admin Services-Chairman
Patricia Meyer	Director, Business Operations
Laurie Milhiser	Risk Management Officer
Pete Russo	Assistant Director, Technology Services
Gerald Yarbrough	Business Advisory Services Manager
Bill Ybarra	Senior Project Director
Adjunct Contributors	
Theresa Hayes	Dimensions, Consultant
Jan Rogala	Dimensions, Consultant
Rich Rogala	Dimensions, Consultant

Hazard Mitigation Planning Committee By-laws

1. The LOS ANGELES COUNTY OFFICE OF EDUCATION Hazard Mitigation Steering Committee was organized in April 2004, as reflected by the minutes of that meeting.

2. Members of the Los Angeles County Office of Education Hazard Mitigation Steering Committee shall elect a chair/co-chair.

3. Members of the LOS ANGELES COUNTY OFFICE OF EDUCATION Steering Committee agree to meet monthly to identify hazard priorities and review, identify and implement LOS ANGELES COUNTY OFFICE OF EDUCATION hazard mitigation strategy recommendations.

4. The LOS ANGELES COUNTY OFFICE OF EDUCATION Hazard Mitigation Steering Committee agrees to make and pass policy recommendations by a vote of a simple majority of those members present at the scheduled meeting.

5. Any single Hazard Mitigation Steering Committee member may request, at a scheduled meeting of the LOS ANGELES COUNTY OFFICE OF EDUCATION Hazard Mitigation Steering Committee as a whole, an adoption of, or amendment to the plan or process.

6. The Steering Committee may form subcommittees to review and develop those feasible hazard mitigation strategy recommendations identified that will be reviewed by the Hazard Mitigation Steering Committee as a whole.

7. The sub-committees will identify and bring forward hazard mitigation strategies from existing recommendations contained in plans and documents, and from the input of service areas, appropriate jurisdictions, private citizens and organizations.

8. The LOS ANGELES COUNTY OFFICE OF EDUCATION Steering Committee will identify constraints to mitigation strategies that affect LOS ANGELES COUNTY OFFICE OF EDUCATION's ability, authority and responsibility to implement those strategies.

9. Public Input will be implemented in the following manner: *To be decided*

Hazard Mitigation Planning Tasks

1. Coordinate hazard mitigation planning tasks and activities with the LOS ANGELES COUNTY OFFICE OF EDUCATION staff and departments to develop a all-hazards disaster mitigation plan and support the LOS ANGELES COUNTY OFFICE OF EDUCATION Director of Business Operations oversight of the planning process.

2. Assist in carrying out the goals and objectives of the LOS ANGELES COUNTY OFFICE OF EDUCATION 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/and/or operated by LOS ANGELES COUNTY OFFICE OF EDUCATION and in proximity to LOS ANGELES COUNTY OFFICE OF EDUCATION facilities; 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 the LOS ANGELES COUNTY OFFICE OF EDUCATION.

6. Review mitigation planning drafts, recommendations and updates resulting in the prioritization of strategies and an implementation strategy.

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

8. Coordinate the Hazard Mitigation plan with all phases of LOS ANGELES COUNTY OFFICE OF EDUCATION's Comprehensive Emergency Management and Safety Plans.

9. Provide for the implementation of Steering Committee decisions.

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

11. Establish Hazard Mitigation Steering Committee 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 and timelines
- Identify lead divisions/departments for implementation of strategies
- Provide for the update of the Disaster Mitigation Plan on a regularly scheduled basis
- Evaluate and carry out mitigation activities
- Assist in implementation of funding identification and procurement

Hazard Mitigation Planning Goals

1. Support the priorities of the LOS ANGELES COUNTY OFFICE OF EDUCATION; its mission statement, mandate, strategic plans, employees, students, citizens and the business community.
2. Support future LOS ANGELES COUNTY OFFICE OF EDUCATION facility development consistent with seismic, floodplain and risk management guidance as developed by appropriate agencies and organizations.
3. Provide for an adequate public awareness program for natural and technological hazards present in the service area and in facilities of the LOS ANGELES COUNTY OFFICE OF EDUCATION.
4. Encourage scientific study and the development of data to support mitigation strategies for those hazards that are a threat to the LOS ANGELES COUNTY OFFICE OF EDUCATION.
5. Promote the recognition of the real value of hazard mitigation to public facilities, public safety and welfare of all citizens served by the LOS ANGELES COUNTY OFFICE OF EDUCATION.
6. Support the mitigation efforts of local governments, school districts, private citizens, non-profit organizations and private businesses throughout the LOS ANGELES COUNTY OFFICE OF EDUCATION service area.

Hazard Mitigation Planning Objectives

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

2. Implement mitigation actions to reduce loss of lives and property.

3. Identify mitigation strategies that will allow the LOS ANGELES COUNTY OFFICE OF EDUCATION to perform its primary mission and achieve its goals.

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

5. Identify lead LOS ANGELES COUNTY OFFICE OF EDUCATION Divisions/ Departments that have an interest in mitigation of specific hazards.

6. Develop a standard mitigation program utilizing authorities, policies and programs of the LOS ANGELES COUNTY OFFICE OF EDUCATION Divisions and/or Departments.

7. Organize, train and maintain an effective and ongoing LOS ANGELES COUNTY OFFICE OF EDUCATION Hazard Mitigation Steering Committee that will facilitate implementation of the LOS ANGELES COUNTY OFFICE OF EDUCATION Mitigation Plan.

8. Review and update other LOS ANGELES COUNTY OFFICE OF EDUCATION programs as appropriate to identify current and future mitigation goals and objectives in compliance with appropriate city, county, state and Federal requirements.

9. Gain support of the LOS ANGELES COUNTY OFFICE OF EDUCATION's administration for the LOS ANGELES COUNTY OFFICE OF EDUCATION Multi-Hazard Mitigation Program implementation.

10. Achieve the overall goal of developing a comprehensive mitigation program with Federal, state, county and city organizations and other appropriate jurisdictions.

11. Support identified hazard mitigation strategies that may exist in other LOS ANGELES COUNTY OFFICE OF EDUCATION plans.

Hazard Mitigation Steering Committee Meeting Minutes

Los Angeles County Office of Education
Hazard Mitigation Planning Steering Committee Meeting
12830 Clark Ave
Downey, California 92629
April 5, 2004

Meeting Called to Order

First meeting of the Los Angeles County of Education Steering Committee called to order at 1:35PM in the Office of Education Conference Room #156.

Members Present

Roger Chang	Regionalized Business Services Coordinator Chang_Roger@lacoe.edu	562.940-1645
Bill McIntire	Assistant Director, Operations and Admin Services McIntire.William@laco.edu	562.803-8203
Keith Crafton	Administrative Service Officer Crafton_Keith@lacoe.edu	562.922-6220
Laurie Milhiser	Risk Management Officer Milhiser.laurie@lacoe.edu	562.803-8298
Patricia Meyer	Director, Business Operation Meyer_patti@lacoe.edu	562.803-8291
Charles C. Holman	Transportation Planning Officer Holmes_charles@lacoe.edu	562.803-8538
Kavin Dotson	Administrator, Education Programs Dotson_kavin@lacoe.edu	562.803-8323
Rich Rogala	Dimensions, Consultant losangeles@dimensionsui.com	707.374-6529
Theresa Hayes	Dimensions, Consultant Theresa@dimensionsui.com	626.286-8305

DMA 2000 Plan Overview

Rich Rogala (Consultant) gave a 60 minute overview of the Hazard Mitigation Planning Process.

New Business

The committee elected to call itself Los Angeles County Office of Education Hazard Mitigation Steering Committee. Bill McIntire was elected chair and Keith Crafton co-chair. The committee agreed to meet every first Monday of the month at 1:00PM.

Official recognition of the Committee will be attained by requesting a Letter of Delegation from the Superintendent

Public input will be obtained through existing public outreach programs.

The Los Angeles County Office of Education (LACOE) is not anticipating any growth or development in the future due to budgetary constraints. The Office of Education occupies 306 facilities, but only owns 6 buildings.

Rich 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 Office of Educations Hazard Analysis. Matrices are to be completed and turned into the chair and/or co-chair who will forward them to the consultant for compiling. The committee agreed on a multi-hazard mitigation plan.

Charles Holmes will assist the consultant with GIS information to help in mapping risks for the LACO Office of Education.

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Rich 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.

The Los Angeles County Office of Education is in the business of promoting excellence by providing comprehensive educational services to all communities-LACOE Mission Statement.

Los Angeles County boundaries define LACO Office of Education's service areas. The LACO Office of Education provided the information in a Fact sheet to the consultant.

The committee has elected to review plans which are in draft form at this time that may provide pertinent information for the hazard mitigation plan. Keith will give handout copies of the Operation and Emergency Plan to the consultant. Laurie can provide a spreadsheet of assets and values. An Acquisitions Excel Spreadsheet has been provided to Rich from Bill. The spreadsheets will be reviewed by the committee at the next meeting to identify critical facilities.

The committee agreed on assigning a communication sub committees to gather ideas for public outreach input.

The committee agreed on gathering existing mitigation data. The information will be brought to the committee for review.

Items to be put on May 3, 2004 agenda:

- Determine critical facilities from asset spreadsheets and lists.
- Mitigation strategies

Proposed and adopted Hazard Mitigation Committee By Laws. They are:

1. The LOS ANGELES COUNTY OFFICE OF EDUCATION Hazard Mitigation Steering Committee was organized in April 2004, as reflected by the minutes of that meeting.

2. Members of the Los Angeles County Office of Education Hazard Mitigation Steering Committee shall elect a chair/co-chair.

3. Members of the LOS ANGELES COUNTY OFFICE OF EDUCATION Steering Committee agree to meet monthly to identify hazard priorities and review, identify and implement LOS ANGELES COUNTY OFFICE OF EDUCATION hazard mitigation strategy recommendations.

4. The LOS ANGELES COUNTY OFFICE OF EDUCATION Hazard Mitigation Steering Committee agrees to make and pass policy recommendations by a vote of a simple majority of those members present at the scheduled meeting.

5. Any single Hazard Mitigation Steering Committee member may request, at a scheduled meeting of the LOS ANGELES COUNTY OFFICE OF EDUCATION Hazard Mitigation Steering Committee as a whole, an adoption of, or amendment to the plan or process.

6. The Steering Committee may form subcommittees to review and develop those feasible hazard mitigation strategy recommendations identified that will be reviewed by the Hazard Mitigation Steering Committee as a whole.

7. The sub-committees will identify and bring forward hazard mitigation strategies from existing recommendations contained in plans and documents, and from the input of service areas, appropriate jurisdictions, private citizens and organizations.

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April 5, 2004

8. The LOS ANGELES COUNTY OFFICE OF EDUCATION Steering Committee will identify constraints to mitigation strategies that affect LOS ANGELES COUNTY OFFICE OF EDUCATION's ability, authority and responsibility to implement those strategies.

9. Public Input will be implemented in the following manner: *To be decided*

Proposed and adopted Hazard Mitigation Committee Tasks. They are:

1. Coordinate hazard mitigation planning tasks and activities with the LOS ANGELES COUNTY OFFICE OF EDUCATION staff and departments to develop an all-hazards disaster mitigation plan and support the LOS ANGELES COUNTY OFFICE OF EDUCATION Director of Business Operations oversight of the planning process.

2. Assist in carrying out the goals and objectives of the LOS ANGELES COUNTY OFFICE OF EDUCATION 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/and/or operated by LOS ANGELES COUNTY OFFICE OF EDUCATION and in proximity to LOS ANGELES COUNTY OFFICE OF EDUCATION facilities, and develops a risk exposure analysis for those facilities.

5. Select highest priority and most-desired mitigation recommendations and develop those recommendations for further action by the LOS ANGELES COUNTY OFFICE OF EDUCATION.

6. Review mitigation planning drafts, recommendations and updates resulting in the prioritization of strategies and an implementation strategy.

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

8. Coordinate the Hazard Mitigation plan with all phases of LOS ANGELES COUNTY OFFICE OF EDUCATION's Comprehensive Emergency Management and Safety Plans.

9. Provide for the implementation of Steering Committee decisions.

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

11. Establish Hazard Mitigation Steering Committee 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

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Los Angeles County Office of Education
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- Identify implementation resources and timelines
- Identify lead divisions/departments for implementation of strategies
- Provide for the update of the Disaster Mitigation Plan on a regularly scheduled basis
- Evaluate and carry out mitigation activities
- Assist in implementation of funding identification and procurement

Proposed and adopted Hazard Mitigation Committee Goals. They are:

- Support the priorities of the LOS ANGELES COUNTY OFFICE OF EDUCATION; its mission statement, mandate, employees, students, citizens and the business community.
- Support future LOS ANGELES COUNTY OFFICE OF EDUCATION facility development consistent with seismic, floodplain and risk management guidance as developed by appropriate agencies and organizations.
- Provide for an adequate public awareness program for natural and technological hazards present in the service area and in facilities of the LOS ANGELES COUNTY OFFICE OF EDUCATION.
- Encourage scientific study and the development of data to support mitigation strategies for those hazards that are a threat to the LOS ANGELES COUNTY OFFICE OF EDUCATION.
- Promote the recognition of the real value of hazard mitigation to public facilities, public safety and welfare of all citizens served by the LOS ANGELES COUNTY OFFICE OF EDUCATION.
- Support the mitigation efforts of local governments, private citizens, non-profit organizations and private businesses throughout the LOS ANGELES COUNTY OFFICE OF EDUCATION service area.

Proposed and adopted Hazard Mitigation Committee Objectives. They are

- Identify mitigation actions to reduce loss of lives and property.
- Implement mitigation actions to reduce loss of lives and property.
- Identify mitigation strategies that will allow the LOS ANGELES COUNTY OFFICE OF EDUCATION to perform its primary mission and achieve its goals.
- Identify mitigation opportunities for short- and long-range planning considerations.

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- Identify lead LOS ANGELES COUNTY OFFICE OF EDUCATION Divisions/ Departments that have an interest in mitigation of specific hazards.
- Develop a standard mitigation program utilizing authorities, policies and programs of each LOS ANGELES COUNTY OFFICE OF EDUCATION Division and/or Department.
- Organize, train and maintain an effective and ongoing LOS ANGELES COUNTY OFFICE OF EDUCATION Hazard Mitigation Steering Committee that will facilitate implementation of the LOS ANGELES COUNTY OFFICE OF EDUCATION Mitigation Plan.
- Review and update other LOS ANGELES COUNTY OFFICE OF EDUCATION programs as appropriate to identify current and future mitigation goals and objectives in compliance with appropriate city, county, state and Federal requirements.
- Gain support of the LOS ANGELES COUNTY OFFICE OF EDUCATION Administration for the LOS ANGELES COUNTY OFFICE OF EDUCATION Multi-Hazard Mitigation Program implementation.
- Achieve the overall goal of developing a comprehensive mitigation program with Federal, state, county and city organizations and other appropriate jurisdictions.
- Support identified hazard mitigation strategies that may exist in other LOS ANGELES COUNTY OFFICE OF EDUCATION plans.

Other Business

None

Adjourned at 3:45PM

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Los Angeles County Office of Education
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12830 Clark Ave
Downey, California 92629
May 3, 2004

Second meeting of the Los Angeles County of Education Steering Committee called to order at 1:15PM in the Office of Education Conference Room #156.

Members Present

Bill Ybarra	Senior Project Director	x6391	ybarra_bill@lacoe.edu
Gerald Yarbrough	Bus Advisory Services	x6166	yarbrough_gerald@lacoe.edu
Roger Chang	BAS Coordinator	x1645	chang_roger@lacoe.edu
Keith Crafton	Admin Services Officer	922-6220	crafton_keith@lacoe.edu
Bill McIntire	Asst Dir Bus Ops	803-8293	mcintire_william@lacoe.edu
Frank Kwan	Dir, Communications	562-922-6360	kwan_frnak@lacoe.edu
Kavin Dotson	Admin, Ed Programs	562-803-8323	dotson_kavin@lacoe.edu
Janice Rogala	Dimensions	707-374-6529	JanRogala@aol.com
Rich Rogala	Dimensions	707-374-6529	rich@dimensionsui.com
Laurie Milhiser	Risk Mgt Officer	562-803-8298	milhiser_laurie@lacoe.edu

Minutes From Last Meeting

Corrections to the Minutes
Holman = Holmes
McIntire's e-mail = lacoe. Underscore instead of dot in e-mails
Adopted with changes noted

Old Business

The membership decided that the definition of service area is all of LA County – (the pamphlet on LACOE information contains mission statement and descriptions of services.)

Budget book has specific descriptions of all divisions

Critical Services - Need to identify the impacts of losing or temporarily curtailing services to help determine critical services.

1. Cutting checks and processing vendor requests for all school districts in the county. (Definitely a critical service)

2. Educational services provided. Committee will look at mandated services first to determine which are critical.

3. Mandated services are outlined in the budget. AB1200 and payroll are critical mandated services. LACOE pays out $1 billion a month in payroll alone. Business Services and Educational Services are the two major divisions of LACOE.

(School calendars are based on a minimum number of hours per year. If schools are shut down for any reason, the minimum is still met by tacking on at the end of the traditional year or they can request a waiver from the state. In emergencies, generally the state will waiver and compensate the expenses incurred.)

Impacts for loss of services (to the customer of LACOE)
Not receiving money
Not receiving education
Not having their kids watched.

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Critical Facilities

Owned and several leased (over 360 facilities). Future task for meeting is to go through the list of facilities and determine collectively which ones are critical.

The listing available only shows initial built as value and not replacement value. We are working with insurance companies and looking for a formula that might be used to help calculate replacement value. It's necessary to be close in order to reflect an accurate cost/benefit analysis in the plan.

Mitigation Strategy Discussion

On the educational side, there are mechanisms generally in place to compensate and handle the impact of emergencies, because there is experience from the past. There are already mitigating strategies in place. Consultant requested to know what the strategies are in order to describe them in the Plan. The consultant received the site safety plan template … which, in itself, is a mitigation strategy. Also the consultant has received the emergency response plan which is a mitigation strategy.

It was brought up that the committee doesn't have to justify why they believe a service or facility is critical.

A 'Responding To Emergencies Administrative Guide' using the SEMS publication is forthcoming and has information in it that looks at programs and procedures that can be classified as mitigation strategies.

Jan (Consultant) informed the committee that there are pre- and post-disaster mitigation funds available and that the state favors schools in awarding grants. Also, consultant will receive a copy of the general plan that is a public document that outlines the services, customers and other things that will help clarify the service descriptions into the plan. Also a list of training and drills that would indicate a proactive mitigation program (fire drills, SEMS training, disaster drills, transportation disaster drills, safe school training). After-action reports and drill results indicate corrective actions and there are documents that actually show the corrective action being taken.

Consultant requests a summary of this activity over the last 12 months. Keith will take for action.

Another mitigation strategy – develop a call-in and call-out programs for late busses and for employees. This program is already being looked at.

Hazard Mitigation Matrix Results

This matrix allows the committee to Indicate a starting place in rating hazards.

The following are the results of the Hazard Mitigation Matrix:

High Risk

Earthquake
(Civil Unrest)
Utility Disruption/Loss
Severe Weather (wind)

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Data/Telecommunications Losses
Biological/Health
Flood

Moderate Risk

Transportation Accident
Hazardous Materials/Pipelines
Economic Disruption
Water/Wastewater Disruption

Low Risk

Explosion
Special Events
Dam Failure
Sink Holes

Committee elected to add civil unrest as a high risk to the matrix. Scoring on matrix was categorized as 80 and above considered high, 70-79 moderate and 69 and below is low. CDE shows demographic tracking on its website. CBED is the portion of the site that contains that. Kavin will e-mail crime statistical data to consultant.

Jan explained the economic disruption category and gave examples of what might constitute an economic disaster.

Consultant will now identify scientific data that may substantiate or change the ratings listed on the results form.

New Business

Requirements. Laurie is going to forward a copy of a report that shows the number of employees at any given facility. Still need to address the student count. Perhaps she can refer to ADA reports to help with this.

Mitigation strategies need to be identified in the realm of day-to-day activities.

Public input questionnaire – can make current website interactive so that a questionnaire can be either filled out on line or downloaded and mailed. Typically LACOE does not communicate with parents. Ed schools that do have PTA organizations that might be a questionnaire target. LACOE can internally distribute to about 13 sites. School site councils would be a good mechanism to solicit information. For school districts, LACOE does not send a questionnaire, but composes a letter explaining what the HM Planning Project is and solicits input from them. PTSA, School Site Council, Superintendents, Head Start Council, LACO Charter Schools, Art High and poly facilities are all candidates for input.

Since charter schools are such a small portion of what LACOE deals with, the committee decided that the issue will not be considered while doing the HM Plan.

Consultant requested a listing of future projects and what is being done in mitigation for those projects.

Meeting adjourned at 1447

3

Los Angeles County Office of Education
Hazard Mitigation Planning Steering Committee Meeting
12830 Clark Ave
Downey, California 92629
June 7, 2004

CALLED TO ORDER

1310 called to order

Minutes from last meeting (5/3). Addition of Chuck Holmes to list of attendees.
Addition of Patricia Meyer's e-mail
Correct Frank Kwan's e-mail

Minutes approved with amendments

Those in attendance:

Keith Crafton	crafton_keith@lacoe.edu
Patricia Meyer	meyer_patti@lacoe.edu
Charles Holmes	holmes_chuck@lacoe.edu
Gerald Yarbrough	yarbrough_gerald@lacoe.edu
William McIntire	mcintire_william@lacoe.edu
Laurie Milhiser	milhiser_laurie@lacoe.edu
Frank Kwan	kwan_frank@lacoe.edu
Kavin Dotson	dotson_kavin@lacoe.edu
Janice Rogala	JanRogala@aol.com
Rich Rogala	rich@dimensionsui.com

OLD BUSINESS

Critical facilities:

The definition is based on large schools, administrative sites, student records locations and IPoly HS. Identified sites are as listed and submitted by Bill McIntire.

Replacement cost calculation formula was agreed to as $258 per square foot. Jan reiterated that in Disaster Recovery, the money received is based on actual recovery cost. The figure will not act as a ceiling on recovery funds, but it will affect the cost/benefit analysis for the plan. Risk management says that the insurance company knows that the cost listed is based on construction costs. In the plan, we want to say that the replacement cost reflected is based on the averages used by the County and LAUSD.

The most important critical facility is the Ed Center at 9300 Imperial Way.

Critical services: (minimum services that can be provided in a disaster situation)

With exception of 5 districts, LACOE handles payroll for all other school districts in the county.

Transportation for special needs students. If transportation were affected, LACOE would have to house those students until transportation could be arranged.

Communications (voice) for radio system. The system is being repaired currently and will soon be affected by a testing program. All communications improvement is a viable mitigation strategy. A great number of students are in such high critical medical need that they may have up to 4 aids/nurses etc. and transportation for these students is very critical. The consultant asked for more detail to be incorporated in the plan that shows how critical this need is.

LACOE has a responsibility to county government to maintain communications with the 80 school districts (voice, data). Generally, in a disaster, the school districts provide related information to LACOE who in turn passes information to the County EOC. LACOE is the distribution point from County government to school

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districts. The County relies on LACOE to be the emergency public information system to school districts. LACOE also is a means of providing warning information distribution to local district superintendents. A determination is that LACOE is an emergency public information facilitation avenue to and from local school districts.

School districts look for the authority to continue or close schools in an emergency and LACOE sometimes is placed in that situation. The County Superintendent reviews the situation and decides whether to close schools or not. This shows that part of that communication responsibility goes back to the public. LACOE is not the final authority on school closure, that belongs to the individual school boards… but generally districts look to the County Office of Education for recommendations.

Emergency power is another critical service that may be considered as a mitigation strategy because many of the students are critically dependent on power for life support. Most of the special education students with LACOE are those with the most severely medical and mental afflictions. Also there are wards of the juvenile court system in the special education system. Because the schools have safety plans, they meet the minimum requirements, however (mitigation piece) a sustained situation would likely be beyond the school's capabilities to provide for these students.

Student population is in excess of 20,000. There are 3,000 special education students. In addition to the 20,000, LACOE has the largest pre-school head start program in the country. There are approximately 1000 of those students under LACOE's direct services. The age group is from 0 – 5 years old. Many babies and even infants are in the program.

Another strategy is developing a business continuity plan for information systems recovery and protection from the affects of a disaster. There is currently a project to transition all systems, including the payroll system, to the IBM Main Frame system. Besides payroll, LACOE information systems serve as executive auditor comptroller (cash conduit) for ALL school districts. If that system were to go down there would be a great deal of confusion as to whose cash was whose.

Another critical service is the ability to distribute day-to-day funds to all school districts. Payroll is issued every day of the week. The critical time element for loss of this service is 24 hours for a major inconvenience. For a major economic impact, the time element is 72 hours. Immediate organizational impact would occur within 24 hours. Severe County-wide economic impact would occur in 72 hours.

Re-visitation Of Hazard Risks

Consultant reiterated that these can be adjusted at any time.

Demographic information is available, by county, on the CBEDS web site. The consultant said that will be where we need to go to find data we need to confirm demographic shifts that may have a bearing on civil unrest.

Employee HR report is also available. Laurie will summarize and e-mail the data to the consultant.

Student population – the data we need would be the greatest number of students registered. The plan requires a ball park figure representing the greatest number of students enrolled. We need sub-categories (type). Kavin will look at P1 ADA (first quarter of the year) for the figures required. Any site strategies affecting a single building will require a more accurate number.

NEW BUSINESS

Mitigaiton Strategies

2

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Transportation communications improvement
Data Center Upgrade
Electrical Power (Emergency)
EMIS Workshops for school districts
Structural Review of Critical Facilities (Seismic Requirements). Damage range would be $500K
Earthquake preparedness for contents of buildings (tie downs, mounting, etc.)
Security of critical facilities, namely the Ed Center

Public Input Questionnaire discussion.

Jan asked the committee whether this mechanism would work to obtain public input. Frank suggested that these be distributed with employee newsletters, to district superintendents and parent organizations (5 PTA presidents). Bill McIntire asked about the generic nature of the questionnaire. Jan suggested that we make the questionnaire relate more to the facilities and services of LACOE. Also Rich suggested that the committee look at the generic "Dear Colleague" letter as another tool to use. The committee agreed to have the consultant rework the questionnaire and e-mail it back for further input. Jan asked that each member of the committee construct a question that they would like to see on a client questionnaire, e-mail it and then they will be compiled for the next session. Frank will research the viability of putting a questionnaire on the website.

MEETING ADJOURNED AT 3:10 PM

3

Los Angeles County Office of Education
Hazard Mitigation Planning Steering Committee Meeting
12830 Clark Ave
Downey, California 92629
July 12, 2004

CALLED TO ORDER

1:10 PM meeting called to order

Minutes from last meeting (6-7). Corrections: Transportation to Radio (page 1), Transportation to All (page 1), 81 to 80 (page 1), 3500 to 3000 (page 2).

Minutes approved with above corrections.

Those in attendance:

Keith Crafton	crafton_keith@lacoe.edu
Patricia Meyer	meyer_patti@lacoe.edu
Charles Holmes	holmes_chuck@lacoe.edu
Gerald Yarbrough	yarbrough_gerald@lacoe.edu
William McIntire	mcintire_william@lacoe.edu
Frank Kwan	kwan_frank@lacoe.edu
Roger Chang	chang_roger@lacoe.edu
Theresa Hayes	Theresa@dimensionsui.com
Rich Rogala	rich@dimensionsui.com

Old Business

Human Relations Demographics Summation – Laurie was unable to attend meeting. There are four facilities with over 100 employees. The Committee will provide a summary of the remaining facilities.

Document: Worker's Compensation Occupancy Profile Matrix.

- Education Center-Clark 12830 Clark Ave, Downey, CA
- Education Center East 9525 Imperial Hwy, Downey, CA
- Education Center 9300 Imperial Hwy, Downey, CA
- Head Start South –Leased 17315 Studebaker, Cerritos, CA

The Head Start Program is the largest in the Nation and the Preschool Program is the largest in the State of California.

Student Registration data as related to demographics is referred to in an email correspondence between Kavin Dotson and Jennifer Palomaki.

LACOE Radio Communications Systems:

900 MHz Emergency Radio System

- Trunked System
- LACOE has 70 radios
- The Districts (15) have 233 radios
- The system's purpose is to be used by LACOE and participating districts during emergencies or disasters as a backup to telephone or cellular phones.
- LACOE is currently upgrading some of the equipment at an estimated cost of $30,000

800 MHz Transportation Communication System

1

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- Conventional system – transmits from five mountain sites
- 470 radios owned by contractors but operating on LACOE-owned frequency
- Provides communication between school buses, transportation vendor dispatch offices and county transportation staff.

The committee agreed a GPS system could reduce radio congestion in the bus radio communication system. The GPS system would enable the dispatch center to track the location of each bus. If a disaster did occur the location of buses/students would be imperative to an emergency recovery response. (New Information) – Very Expensive…

The hardware and software programs to implement a new radio system will be researched for tracking capabilities and cost.

The Office of Education has looked into a dial-in system which would provide a standard notification message for employees directing them on how to respond after a disaster. They are developing an acronym acceptable to all employees for the dial in number. The cost for the subscription is less than $500 a month and would include training. The timeline is Dec. 30, 2004~~5~~ and Administration Services would be responsible for the project.

Frank Kwan is developing an Emergency Response Handbook for employees. It will be a "What to do during a Disaster" type publication. Frank is responsible for the design, publication and distribution of the handbook. The timeline for completion is December 2004 to coordinate with the Safety Handouts.

Emergency power for the Special Education and Preschool/Head Start programs is important to the medical well-being of the special needs students. There are 50 Special Education sites and 12 other sites which provide service to students with special medical assistance. The committee suggested a school site survey to determine what type of support is needed in the way of equipment, such as portable generators.

The utility companies have a priority alert list of students on life support systems.

The committee has identified acceptable options for the EOC Communication System for the EOC Communication Options Matrix.

- Recorded Emergency Message Center
- Los Angeles County of Education email system
- EMIS
- Pagers

Other options that will be further investigated include; (1) an Emergency Alert System (2) 1-Wilshire site and its functionality (3) satellite phones.

Pete Russo, Information Technology, will be invited to the August 2, 2004 meeting for discussion regarding the centralized computer system for Payroll and Vendor payments and the need for disaster recovery and back-up procedures. The economic impact would be substantial if the system was down for longer than 72 hours. There was a completed project to upgrade the IBM system which is more robust for business continuity or locate a similar system which would be compatible to process information and accounts receivable. The payroll system will be moved to the IBM system by July 2005.

A structural review with clear and specific recommendations is needed to be able to prioritize facilities which need to be seismic retrofitted for earthquake mitigation.

2

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Roger Chang informed the committee of an article in the LA Times about the State's analysis of school buildings in need of seismic upgrades. This is a statistical paper review based on the time of the buildings construction and building materials used during that time. The actually school building were not inspected.

Hazard Mitigation Strategy Specifics:

The committee discussed and identified the below mitigation strategies:

- Current/Future: 800 communication system
  Project: Existing system-limited and conventional. Multiply repeater sites needed to eliminate transmission shadows.
  Cost: Constraint
  Department: Transportation & Planning
  Financing: Emergency Communication Budget (doesn't currently exist)

- Current: 900 system
  Project: Update some equipment
  Cost: Approximately $30,000.00
  Timeline: July 2003 to December 2004
  Department: Transportation
  Financing Grant & Business Operations Budget

- Current: Emergency Warning System-Employees
  Project: Dial in System with standard message or multiply access/MCI
  Cost: $3000 - $5000 annually
  Timeline: ID 800# Acronym by Dec. 30, 2004
  Department: Administrative Services

- Current: Employee Handbook
  Project: Emergency Employee Handbook
  Cost: Keith Estimate
  Timeline: December 2004
  Department: Communication
  Financing: Administrative Services
  Goal Addressed: Save lives and property
  Related Hazard: OSHA- HR/Safety Coordination

- Future: GPS Bus Tracking for 430 contracted busses
  Project: Upgrade or replace for Dispatch/Bus Center
  Cost: Constraint – ($500,000)
  Timeline: Extended
  Department: Transportation and Planning

- Current: Business Continuity/Information Technology
  Project: Tech Svcs Business Continuity and Disaster Recovery Program
  Cost: Constraint
  Timeline: Extended
  Department: Technology Services
  Revisit after recommendations and input from Pete Russo

- Current/Future: Emergency Power

3

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Project:	Emergency Power for Special Education/Head Start survey sites To see what is available for emergency power-Study. Number of sites required population definition Revisit for more information at the next meeting.

- Future: Seismic Retro-fit facilities
  Project: Analysis from structural engineers to review and make clear Specific recommendations to bring buildings up to current Structural requirements
  Cost: Constraint
  Timeline: 4-6 months
  Department: Facilities Planning Unit

- Future: Disaster Preparedness
  Project: Training Program- employees in three administration centers

- Future: Earthquake Preparedness Measures
  Project: Establish a program (recurrent)

- Future: Security
  Project: Internal Analysis to External Projects to protect or mitigate Vulnerabilities: Education Center, Data Center, transformers; Concrete Pylons or Barricades. Edison-transformer into under-ground vault.

The State of California Office of Emergency Services sent out a postcard inviting the public to comment on the Draft State Multi-Hazard Mitigation Plan. The public can comment on their website or call a specific phone number. The committee agreed to use the same process. The committee will distribute the postcard to the 80 school districts, 13 Community Colleges, 5 PTA Presidents, Charter Schools, Regional Centers, and Special Education/Headstart Programs. (Reference LACOE committee use of LACOE.edu website.)

New Business

Other Strategies could be earthquake preparedness such as securing furniture, hardware, file cabinets, computer, portable walls, and any item such could be considered a moving target. Need to check with Los County Office of Emergency Management concerning EOC training for 1500 employees.

- Facility safety
- Response
- Communication
- Security; Vulnerability to Terrorism

Adjourned at 3:30 PM

4

Los Angeles County Office of Education
Hazard Mitigation Planning Steering Committee Meeting
12830 Clark Ave
Downey, California 92629
October 6, 2004

CALLED TO ORDER

10:05 AM meeting called to order

Minutes from July 12, 2004 meeting. Corrections: LACOE Radio Communication Systems (page 2).

Minutes approved with above corrections.

Those in attendance:

Keith Crafton	crafton_keith@lacoe.edu
Patricia Meyer	meyer_patti@lacoe.edu
Charles Holmes	holmes_chuck@lacoe.edu
Gerald Yarbrough	yarbrough_gerald@lacoe.edu
William McIntire	mcintire_william@lacoe.edu
Frank Kwan	kwan_frank@lacoe.edu
Laurie Milhiser	milhiser_laurie@lacoe.edu

Old Business

Draft All-Hazard Mitigation Plan:

The committee completed the review of the first three (3) chapters of the draft All-Hazard Mitigation Plan. All changes have been incorporated and the MS Word file has been updated. The only additional changes are to add the approved July 12, 2004 meeting minutes and a copy of the minutes from today's meeting. It was agreed all this information would be e-mailed back to Rich Rogala at Dimensions for a final document merge prior to posting on the LACOE web site for public comment.

Frank Kwan has completed the draft post card which will be mailed out for public comment. A mailing list will be provided by William McIntire and will be finalized by Friday, October 8, 2004. Additionally, Mr. Kwan will be meeting with members from the Technology Services Web Development Team to finalize how the draft document will be presented on LACOE's web page. He expects to have detailed finalized by Friday, October 8, 2004. Once this is complete, the post cards will be printed and mailed to the participants on the mailing list. Currently, public comment time will be 30 days starting October 15, 2004 concluding November 15, 2004.

It was reported by Keith Crafton that Rich Rogala at Dimensions will have the updated draft to the remainder of the All-Hazard Mitigation Plan completed and delivered to LACOE by Tuesday, October 12, 2004. Once received, the remaining draft plan will be distributed to all committee members. All members will be required to return their comments back to Keith Crafton by COB, Monday, October 17, 2004. At that time, they will be sent back to Rich Rogala to be incorporated into the draft plan.

New Business

No new business

Adjourned at 10:35 AM

1

Hazard Mitigation Planning Public Participation

Public Input

Throughout the plan preparation process, public input was sought and considered in determining the risks each of the hazards pose and in the prioritization of the hazards. The final list of hazards in Section 4 of this plan was painstakingly formulated with due consideration of all public input.

Public Outreach Process

1. Los Angeles County Department of Education Hazard Mitigation Planning Steering Committee sponsored two Hazard Mitigation Planning Workshops where people from various school districts and other educational organizations were invited to learn about the hazard mitigation planning process and share ideas about hazard mitigation.

2. LACOE also published two bulletins for school districts and other affiliated organizations (charter schools, etc.) to inform them of the hazard mitigation planning process and offer the recipients opportunities to provide input.

3. LACOE conducted 2 briefings for the Chief Business Officials, (CBOs) during which the hazard mitigation planning process was described and how the committee would seek input from its clientele.

4. LACOE mailed a postcard announcement to …

Outreach to Client Organizations

In April, 2004, the Los Angeles County Office of Education Assistant Director of Business Services sent an informational bulletin to all Los Angeles County School and Community College District Business Administrators advising them of the requirement for developing a local hazard mitigation plan and of the convening of workshops designed to assist in developing those plans.

The workshops resulted in several smaller districts preparing and submitting their plans. The workshops also were used to acquire client input as well as disclose some information developed by the LA County Office of Education in their Local Hazard Mitigation Plan. Pertinent information received from workshops was helpful in developing LACOE's list of hazards and in their prioritization.

A copy of the bulletin is on the following pages:

Los Angeles County Office of Education

9300 Imperial Highway, Downey, California 90242-2890 • (562) 922-6111
Darline P. Robles, Ph.D., *superintendent*

INFORMATIONAL BULLETIN # 214

April 16, 2004

TO: Business Administrators
Los Angeles County School and Community College Districts

FROM: Daniel G. Villanueva, Assistant Director
Regionalized Business Services
Division of Business Advisory Services

SUBJECT: REQUIREMENT FOR LOCAL HAZARD MITIGATION PLAN

Public Law 106-390, known as the Disaster Mitigation Act of 2000 (DMA 2000), amended the Robert T. Stafford Disaster Relief and Emergency Services Act. DMA 2000 requires local governments (including school districts) to have a Local Hazard Mitigation Plan (LHMP). The LHMP **must be approved by the Federal Emergency Management Agency (FEMA) prior to November 1, 2004,** in order for any local government to remain eligible to receive either pre-disaster or post-disaster Federal hazard mitigation project funding after November 2004.

Rationale for Change

The impetus to amend the FEMA regulations is the Federal government's goal to better utilize disaster funds by focusing on pre-disaster planning. Historically, the largest portion of FEMA funds has gone to recurring natural disasters, e.g., earthquakes, hurricanes, floods, and wildfires. From 1989 to 1995, 73 percent of FEMA funding has gone to four states: Florida, Georgia, South Carolina, and California. The two counties with the most declared disasters are San Bernardino County and Los Angeles County. These regulatory changes emphasize pre-mitigation strategies to lessen the damage from disasters. The regulations specifically refer to natural disasters. However, FEMA recommends that local governments include technological and human-made disasters in their LHMP.

Ramifications of Noncompliance

According to the State Planning Manager of the Hazard Mitigation Planning Program, school districts that do not submit a LHMP, or do not receive approval of their LHMP, will be **ineligible to receive Federal hazard mitigation project funding after November 2004.** Over 55 school and community college districts located in Los Angeles County have received some type of FEMA assistance funding in the last 15 years. Noncompliance with DMA 2000 will only affect a school district's eligibility for mitigation funding. **It will not affect post-disaster emergency funding.**

Participation in Multi-Jurisdictional Process

School districts are required to participate in a local multi-jurisdictional (city, county, regional, etc.) planning group. Your school district's vulnerability analysis and recommended mitigation actions

(Over)

Requirement for Local Hazard Mitigation Plan
April 16, 2004
Page 2

should be incorporated into each participant's "local" plan. All the local plans should have overlapping areas. The only way for a school district to have an "approvable" plan is to ensure that all FEMA process requirements are met. Emphasis on participation in the multi-jurisdictional process will enhance the viability of approval of a school district's plan.

Future Workshop Assistance

In partnership with the Governor's Office of Emergency Services (OES), the Los Angeles County Office of Education (LACOE) conducted a LHMP development workshop on January 22, 2004. Guidebooks were distributed at this workshop with instructions on how to prepare the first half of the LHMP. A second workshop has been scheduled for May 13, 2004, to provide guidance on how to complete the second half of the LHMP. OES is required to review your LHMP draft and will make recommendations as needed. The State Hazard Mitigation Officer will send the plan to the appropriate FEMA Regional Office for final review and approval.

LACOE will also issue a series of bulletins informing school districts about program requirements and other information sources over the next several months. **To date, LACOE has been unable to determine if community colleges must develop a separate LHMP for submittal or if they will be included in the State plan.** In either case, community college districts should familiarize themselves with the DMA 2000 LHMP requirements.

Suggested Actions

School districts are urged to:

- Contact their designated City Hazard Mitigation Officer to begin participation in the required multi-jurisdictional committee planning process;
- Appoint a school district chairperson to attend City LHMP meetings, delegate and monitor assignments, and create a subcommittee to develop and draft the LHMP;
- Develop a process plan to ensure that all mandated actions are addressed, including input from the public and multi-jurisdictional participation;
- Develop a schedule to ensure that your board has enough time to adopt and transmit your school district's LHMP without jeopardizing your eligibility for mitigation funding.

Questions regarding LHMP requirements should be directed to Frank Hauck, OES, at (916) 845-8162, or via e-mail at frank.hauck@oes.ca.gov. Questions regarding this bulletin should be directed to Roger Chang at (562) 940-1645. RSVPs for the workshop should be made to Maria Ching at (562) 940-1645, or via email to: ching_maria@lacoe.edu.

DGV/RC:mc

Approved:
Deborah L. Simons, Director
Division of Business Advisory Services

Informational Bulletin No. 214
BAS-136-2003-04

Section 3 – General Information & Statistics

General Information

The Los Angeles County Office of Education (LACOE) is the nation's largest regional education agency. Los Angeles County, the most populous county in the nation, has nearly 10 million residents, including about 1.7 million students in 80 school districts.

As a regional education agency, we function in some respects like a local school district, but our responsibilities reach across the entire 4,000 square miles of Los Angeles County.

Under the leadership of the County Superintendent of Schools and the County Board of Education, our goal is to help the county's public school students achieve the best possible education.

Services

Students – LACOE provides classroom instruction annually for thousands of children with disabilities, juvenile offenders and others who are at risk of dropping out of school or who have special educational needs.

Teachers – LACOE offers specialized training in technology and teaching reading, many professional development programs, and a staff of curriculum and instruction experts to help teachers stay abreast of new developments in their field.

Families – LACOE believes that parents are their children's first and most important teachers. LACOE helps strengthen students' families with a variety of parenting programs, literacy classes and job development services.

School districts – LACOE provides a wide range of vital business and educational support services, including staff development, technical assistance and payroll and pension accounting, which allow districts to direct more of their dollars to classroom teaching.

Countywide programs and partnerships – As a regional agency, LACOE is in a key position to coordinate important new initiatives among districts in such areas as educational technologies and basic reading skills.

Specialized Instruction

Alternative Education – Community-based programs for youth at risk: juvenile offenders, truants, dropouts and teen parents. Supportive learning environments help students get back on track with their education and their lives.

Juvenile Court and Community Schools – Fully accredited schools serving delinquent, abused and abandoned youth in residential facilities. Focus is on moving youth in the justice system toward literacy and academic achievement.

Special Education – Programs and services for students with disabilities. Offering support to school districts to ensure students get the best education possible.

Los Angeles County High School for the Arts – Award-winning public school offering academic instruction and pre-professional training in music, dance, theater and visual arts.

International Polytechnic High School – Innovative, university-based program with hands-on approach to learning. Benefits students who may not be as successful in more traditional classroom settings.

Regional Occupational Program – Helping thousands of students and young adults prepare for successful careers in the workforce.

Specialized Teaching

TEAMS Distance Learning – Providing professional development and student learning opportunities nationwide via Internet, multimedia and instructional TV.

Curriculum and Instructional Services (CIS) – Helping teachers stay up-to-date in new developments in their field and work more effectively.

Teacher Technology Center – Enabling teachers to develop state-of-the-art skills to teach more effectively.

LACOE's BTSA (Beginning Teacher Support and Assessment) and Pre-Intern programs – Offering newly and pre-credentialed teachers individualized guidance and support from experienced teachers.

Los Angeles County Teachers of the Year – Part of the nation's oldest and most prestigious teacher recognition competition, focusing public attention on excellence in education.

Family Services:

Early Advantage – LACOE's early childhood programs collaborate with county agencies and other organizations to provide school districts, parents and early child-care providers with practical programs and information to stimulate learning growth from birth through age 3.

LACOE Child Care Training Institute – Teaching childcare providers the knowledge and skills that support early learning.

Head Start Family Service Centers – Helping parents help their preschool kids. Offering parent literacy classes, substance-abuse education and employment-readiness training.

Parent Academy – A wide range of information, resources and trainings are available, in both English and Spanish.

Partnerships and Consultation

Business partnerships – Our alliances with the private sector strengthen students' basic skills and prepare them for the workforce.

"Think tank" for education – LACOE's curriculum and instruction experts help teachers teach more skillfully and school administrators lead more effectively.

After-School Enrichment Program – Enhancing achievement among low-income students in 95 county schools.

Safe Schools Center – Providing local leadership and support to county school districts, working to ensure that all schools remain safe and secure.

Services Provided to School Districts

LACOE's cost-saving business and educational programs and services enable school districts to make every dollar count and direct more of their resources into classroom instruction. Our perspective is countywide, so we can offer these unique services regionally and cost-effectively. If individual districts had to provide the same services, the result would be a wasteful duplicate spending of public education dollars.

Here are some ways districts take advantage of LACOE's money-saving services:

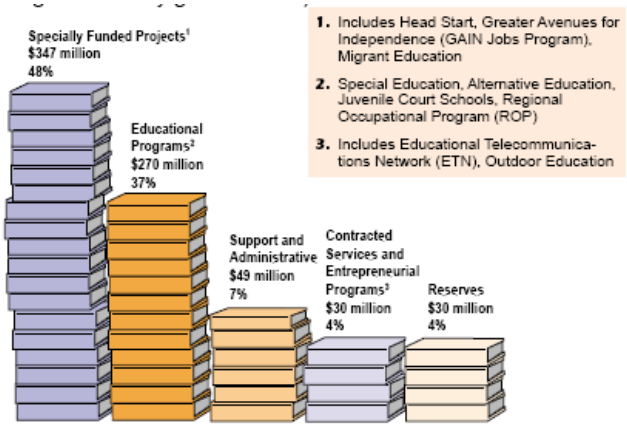
Essential business services – We provide payroll processing and retirement accounting for more than 150,000 teachers and school employees. Also, as mandated by the state, we monitor school district budgets for fiscal solvency.

Specialized classroom instruction – We teach tens of thousands of juvenile offenders and students with disabilities each year. This saves districts the expense of creating their own special programs for these students.

Educational support services – We offer expert assistance to districts through our specialized support units, including Attendance and Administrative Services, Migrant Education, Center for Health Education, Safe Schools Center and Division for School Improvement.

Budget

The Los Angeles County Office of Education administers an annual budget of approximately $726 million (2002-2003). Most of the money is used for classroom instruction and a variety of cost-saving educational programs and business services for school districts. (LACOE is fiscally independent from Los Angeles County government.)



Demographics of Service Area

Los Angeles County Population, January 1, 2004: **10,103,000**

Los Angeles County Area: **4,084 square miles**

Number of Cities: **88**

Largest District—Enrollment: **Los Angeles Unified, 747,009**

Smallest District—Enrollment: **Highes-Elizabeth Lakes Union School District - 418**

School Districts Served

Elementary 28

High school 5

Unified 47

Community college 13

Total Districts..... 93

Public Schools (K-12) (2002-2003)

Elementary schools (K-6 or K-8) 1,188

Middle schools (7-8 or 7-9)..... 246

High schools 187

Continuation schools 90

Other (including special education)..... 112

Total Number of Schools 1,823

Total Student Enrollment in Los Angeles County (2003-2004)

Kindergarten..... 123,756

Grade 1 134,965

Grade 2 136,522

Grade 3 138,550

Grade 4 139,354

Grade 5 137,540

Grade 6 132,430

Grade 7 136,610

Grade 8 135,482

Other elementary (ungraded) ..... …..... 24,047

Grade 9 151,478

Grade 10..... 131,486

Grade 11..... 111,649

Grade 12 94,377

Other secondary (ungraded) 14,267

Total Enrollment (K-12) 1,742,873

Total Enrollment, California, 2001-02: 6,298,769

English Learner Students (2003-2004)

Los Angeles County: ……583,335

Statewide……..…1,598,535

Los Angeles County Students speak **56** different languages.

Certified School Staff in Los Angeles County (2003-2004)

Teachers..... 81,674

Administrators 7,472

Pupil service personnel 7,111

Average Class Size in Los Angeles County (students per classroom)

County total..... 27.2

State total..... 26.2

• Excludes special education, independent study, continuation, and special classes.

School Technology Data

Number of computers 269,454

Number of students per computer..... 6.4

Number of classrooms w/Internet..... 47,106

Number of classrooms w/WAN[1] 40,313

Current Expense of Education per Pupil

(Based on Average Daily Attendance), 2000-01

Elementary districts $6,466

High school districts 7,721

Unified school districts..... 7,531

Governing Body & Administration

Board of Education

The Los Angeles County Board of Education is the legal entity charged with the responsibility of overseeing the operation of the Office of the Los Angeles County Superintendent of Schools.

It is the intent of the Board of Education to discharge the duties and meet the responsibilities delegated to it by the Constitution of the State of California, the California Education Code, and the rules and regulations of the State Board of Education.

Angie Papadakis
Board President

Thomas A. Saenz
Board Vice President

Joan P. Acosta
Board Member

Rudell S. Freer
Board Member

Leslie K. Gilbert-Lurie
Board Member

Mary Anne O'Neal
Board Member

Sophia Waugh
Board Member

Board of Education Specifics

The seven-member board is the appointed body that establishes policies for LACOE and governs the Los Angeles County High School for the Arts, the Los Angeles County International Polytechnic High School and other schools operated by LACOE, including the county's Juvenile Court Schools.

The board members are appointed by the Los Angeles County Board of Supervisors. Board members serve either two- or four-year terms.

Each of the 80 school districts and 13 community college districts in the county is autonomous. Each district's board of education manages its own budget and sets its own policies. In general, the only authority the Los Angeles County Board of Education has over local districts is in matters of inter-district attendance appeals and expulsion appeals.

Board Meetings

The Board of Education meets at:

9300 Imperial Highway
Education Center (EC) Board Room,
Downey, CA 90242-2890.

All meetings are open to the public except for designated closed sessions during which the Board, by law, is permitted to discuss specific confidential matters.

The Board meets at 3 p.m. every Tuesday, except the 5th Tuesdays of the month. Generally, with some exceptions, the 1st and 3rd Tuesdays of the month are regular business meetings, while study sessions are on the 2nd Tuesday and site visits on the 4th Tuesday.

Los Angeles County School Trustees Association (LACSTA)

The Los Angeles County School Trustees Association (LACSTA) is an organization of school boards founded in 1937. About 90 percent of the 94 school and community college districts in Los Angeles County, as well as the County Board of Education, are members of LACSTA.

LACSTA serves as a vital resource for school board members, providing them with training, informational support and opportunities to network with other school board members. Each year, LACSTA presents a number of interactive programs on issues in education. LACSTA also cooperates with the California School Boards Association and other organizations whose purpose is the betterment of education.

LACSTA is guided by these principles:

- Equal access and opportunity for all students in California
- High standards and quality education in California public schools
- Maximizing local control for school boards and local communities
- Ensuring financial support to provide quality education for all children

Administration

Superintendent of Schools

The Los Angeles County Office of Education us under the administrative control of the Los Angeles County Superintendent of Schools who is the Chief Executive Officer of and Secretary to the Board of Education. The Superintendent has general responsibility for the operation of the Office and has the authority, by regulation and otherwise, to delegate specific functions to appropriate staff members.

Darline P. Robles, Ph.D.	Superintendent
Robert Barner, Ph.D.	Asst. Superintendent - Educational Programs
Sharon Dezutti, Ed.D.	Asst. Superintendent, HRS
Shari Kim Gale	General Counsel, Legal Services
Linden Knighten	Interim Chief Technology Officer
Frank Kwan	Communications Director
Elizabeth D. Lem	Asst. Superintendent, Ed. Services
Kenneth Shelton	Asst. Superintendent, Business Services
Susan Doppieri	Senior Executive Assistant
Adriana Johnson	Senior Division Secretary
Marilyn Musgrave	Senior Executive Assistant
Lisa Sanjurjo	Secretary

Departments & Responsibilities

Business Services

The County Office helps districts and local education agencies maximize revenues and contain costs by providing quality administrative, financial, and business services.

1. Fiscal Information processing provides personnel, payroll, and retirement accounting for 180,000 school employees.

2. Fiscal Oversight provides school district budget oversight services.

3. Purchasing services, including piggy-backed bids and contracts available to California public schools, community colleges, and county superintendents.

   - Accounting & Budget Development
   - Business Advisory Services
   - Business Operations
   - School Financial Services

Communications

The Communications Department assists educators, decision makers, students, parents, community leaders and the general public in staying informed about LACOE and the work of its many divisions, programs, and initiatives. The department provides services to the news media and is LACOE's Public Information Office. In addition, the department conducts outreach and community relations, supports the communications needs of local school districts, and promotes partnerships with other public agencies and the private sector. The department also produces the Los Angeles County Academic Decathlon and the Teacher of the Year Programs.

Educational Programs

LACOE provides comprehensive educational programs for tens of thousands of children with disabilities, juvenile offenders and others who are at risk of dropping out of school or who have special needs.

- Alternative Education
- Controller
- Juvenile Court and Community Schools
- Pupil Support & Special Projects
- LACOE SELPA
- Special Education

Educational Services

The County Office of Education provides regionalized and specialized support services to many different communities -- schools, districts, teachers, administrators, preschoolers, students, and parents.

- Career & Workforce Development
- Career & Instructional Services
- Greater Avenues for Independence
- Head Start – State Preschool
- Parent & Community Services
- School Accountability Report Card
- Southern California Comprehensive Assistance Center
- School Support Services

Grants Development Office

The Grants Development Office facilitates the grant application process for LACOE staff. It provides information about funding sources and assists in administering selected programs. Grants Office staff also works closely with the Federal State and Special Grants and Contracts (FSSGC) office to ensure that grant applications are completed correctly and submitted timely.

- Grants Office technical assistance is available including:
- Navigating the LACOE grant application process including Board procedures
- Interpreting grant guidelines
- Gift to Office forms and procedures
- Receiving and managing grants and gifts
- Donor and fund-provider searches
- Project design
- Proposal writing
- Preparing reports to fund-providers
- Development of memoranda of understanding (MOU)

Human Resource Services

Commitment and dedication to student achievement identifies the Los Angeles County Office of Education (LACOE), the nation's largest regional education agency, as the employer of choice. To advance that aim, Human Resource Services (HRS) provides leadership and quality service to all LACOE customers and communities. As the "heart and conscience" of the organization, HRS promotes:

- Confidence by listening and responding to internal and external customers and communities.
- Teamwork through staff involvement in sharing of information, feelings, attitudes, and values.
- Diversity development emphasizing quality, equity, inclusion and accountability in the work place.
- Commitment to ethical standards in personnel procedures.
- Positive conflict resolution through Labor Relations and Employee Assistance Service for Education, (EASE).
- Nationwide recruitment to staff LACOE programs with the most qualified, professional, and talented candidates.
- Investments in systems improvement for information management.

- On-going organizational development to build LACOE's capacity for change and continuous improvement.

Internal Audit & Analysis

"A proactive approach in holding foremost the children and community we serve by safeguarding LACOE assets and resources through the diligent assistance of our employees." Use the Employee Hotline to Report:

- Missing Property
- Management Improprieties
- Abuse of Work Hours
- Vendor and Supplier Abuse
- Personal Use of LACOE Assets
- Conflict of Interest

LACOE Employment

Commitment and dedication to student achievement identifies LACOE as the employer of choice.

LACOE Partners

The following are independent organizations working in association with the Los Angeles County Office of Education:

- The eleven members of the Los Angeles County Committee on School District Organization (County Committee) review proposals to transfer territory between school districts and to unify or create new school districts.
- The School Employer Advisory Committee (SEAC) site provides information to members of the unemployment insurance claims administration community.
- California Association of School Business Officials (CASBO) empowers through leadership, training, legislative and regulatory advocacy, communication, mentoring and research and development.

Los Angeles County School Districts

Los Angeles County encompasses 80 school districts that serve nearly 1.7 million students at more than 1,700 school sites. One-third of students are considered English language learners. Students and families in the county speak some 90 different languages. Racial distribution among K-12 public school students is: 59 percent Latino, 19 percent Caucasian, 11 percent African American, 8.5 percent Asian/Pacific Islander, 2 percent Filipino, and 0.3 percent American Indian.

In addition to K-12 school districts, Los Angeles County also encompasses 13 community college districts

Personnel Commission

Technology Services

Technology Services was formed in August 2002 to consolidate responsibility for technology oversight within LACOE under a single group. The new organization was formed through a merger between LACOE's two technology organizations, Information Technology Services (ITS) and most of Educational Telecommunications &Technology (ET&T). It also includes the Telephone Services group, formerly under the Division of Business Operations.

The newly formed unit strengthens LACOE's position as a leader and innovator in the fields of educational computing and telecommunications services, and gives technology-related issues higher visibility throughout the organization. Technology Services consolidates ITS' expertise in mainframe and server-based accounting, human resource applications, and microcomputers with ET&T's expertise in networking and IP technologies, video and multimedia production, videoconferencing, and classroom instructional support. Technology Services provides LACOE and the Los Angeles County educational community with a broad range of state-of-the-art solutions, organized within the divisions listed under Related Services to the right.

(NOTE: In the table below, the figure showing in "BUILDING VALUE" column only appears when the building is owned by LACOE)

Inventory of Assets (Listing of Sites)

SITE	ADDRESS	CITY	ZIP CODE	TYPE	SQ FEET	OWNER	MAINT	TYPE CONSTRUCTION	HVAC SVC	USE	BUILDING VALUE
ACADEMY FOR THE ARTS	7021 HOLLYWOOD BLVD	HOLLYWOOD	90028	COMMERCIAL LEASE	3782		OWNER			COMMUNITY CLRM	
ADAMS	2600 RIPLEY AVE	REDONDO BEACH	90278	SCHOOL DISTRICT	1920	REDONDO BEACH	DISTRICT			CLRMS	
AFFLERBAUGH-PAIGE	6621 N STEPHANS RANCH RD	LA VERNE	91750	COUNTY OF LOS ANGELES PROBATION	12615		PROBATION			CLRMS & OFFICE	
ALLEN YOUNG	11401 S BLOOMFIELD	NORWALK	90650	STATE OF CALIFORNIA		STATE OF CALIFORNIA				SCHOOL	
ALLIANCE ASWP	939 ARBOR VITAE ST	INGLEWOOD	90301	SCHOOL DISTRICT	2450	INGLEWOOD	LACOE		ROUTINE MAINT 60 DAYS	CLRM	
ALT ACAD OF BEACH CITIES CS	1666 1/2 S PACIFIC COAST HWY	REDONDO BEACH	90277	COMMERCIAL LEASE	1700		LACOE			CLRM	
ALT ACAD OF SOUTH BAY CS	4453B REDONDO BEACH BLVD	LAWNDALE	90260	COMMERCIAL LEASE	2987		OWNER		OWNER	CLRM	
ALTA VISTA	800 JULIA AVE	REDONDO BEACH	90277	LAND USE	3808	LACOE BLDG/DISTRICT LAND	DISTRICT	STUCCO WOOD FRAME RELO		CLRMS	$92,344
ALTA/PASADENA CEC	66 HURLBUT ST	PASADENA	91105	COMMERCIAL LEASE	3725		OWNER			COMMUNITY CLRM	
ANDERSON	4141 W 156 TH ST	LAWNDALE	90260	LAND USE	8898	LACOE BLDG/DISTRICT LAND	LACOE	STUCCO WOOD FRAME RELO	ROUTINE MAINT 30 DAYS	CLRM	$236,921
ANDERSON	2210 E 130TH ST	COMPTON	90222	SCHOOL DISTRICT	960	COMPTON	DISTRICT			CLRMS	
ANTELOPE	37237 N 10TH ST E	LITTLEROCK	93543	DISTRICT USE	2880	STATE PORT/DISTRICT LAND		STATE PORTABLE		CLRMS	$120,000
ANTELOPE VALLEY AEC/CDS	43423 DIVISION ST SUITES 101-4, 201-2	LANCASTER	93535	COMMERCIAL LEASE	7836		LACOE INT		OWNER	COMMUNITY CLRM	
ANTELOPE VALLEY HS RM 334	44900 N DIVISION ST	LANCASTER	93534	LAND USE	1822	LACOE BLDG SFP/DISTRICT LAND	DISTRICT			CLRMS	$109,223

SITE	ADDRESS	CITY	ZIP CODE	TYPE	SQ FEET	OWNER	MAINT	TYPE CONSTRUCTION	HVAC SVC	USE	BUILDING VALUE
ANTELOPE VALLEY PMP	656-660 W AVE J	LANCASTER	93534	COMMERCIAL LEASE	4140		OWNER		LACOE INTERIOR MAINT ONLY	COMMUNITY CLRMS	
ARCADIA HS	180 CAMPUS DR	ARCADIA	91006	SCHOOL DISTRICT	960	ARCADIA	DISTRICT			CLRM	
ARLETA CAL SAFE	8800 WOODMAN AV	LOS ANGELES	91331	COMMERCIAL LEASE	1160		OWNER			CLRM	
AVALON PAU	16627 S AVALON BLVD	CARSON	90746	COMMERCIAL LEASE	7268		OWNER			OFFICE	
AZUSA HS	240 N. CERRITOS AVE	AZUSA	91702	SCHOOL DISTRICT	2048	AZUSA	DISTRICT			CLRMS	
BALDWIN PARK HS	3900 N. PUENTE AVE.	BALDWIN PARK	91706	SCHOOL DISTRICT	960	BALDWIN PARK	DISTRICT			CLRM	
BASSET HIGH	755 ARDILLA AVE	LA PUENTE	91746	SCHOOL DISTRICT	1345	BASSET	DISTRICT			CLRM	
BELLA VISTA	440 MARKLAND AVE	MONTEREY PARK	91754	LAND USE	6234	LACOE BLDG/DISTRICT LAND	LACOE	STUCCO WOOD FRAME RELO	ROUTINE MAINT 60 DAYS	CLRMS	$106,615
BELLFLOWER DISTRICT ANNEX	16703 S CLARK AVE	BELLFLOWER	90706	SCHOOL DISTRICT	960	BELLFLOWER	DISTRICT			CLRMS	
BELLFLOWER HS	15301 S MCNAB AVE	BELLFLOWER	90706	DISTRICT USE	3840	STATE PORT/DISTRICT LAND	DISTRICT	STATE PORTABLE		CLRM	$146,000
BERMUDEZ ST CDC	9055 BERMUDEZ ST	PICO RIVERA	90660	COMMERCIAL LEASE	5756		LACOE		ROUTINE MAINT 60 DAYS	COMMUNITY CLRM	
BETSY ROSS VICTORY	16315 GREVILLEA ST	LAWNDALE	90260	SCHOOL DISTRICT	13152	LAWNDALE	DISTRICT			SCHOOL	
BETSY ROSS/WHITEWOOD	4718 EAST MICHEALSON	LAKEWOOD	90712	LAND USE	960	STATE PORT/DISTRICT LAND	DISTRICT	STATE PORTABLE		CLRM	$36,000
BOYS REPUBLIC	128 E PALM AV	MONROVIA	91016	COMMERCIAL LEASE	2443		OWNER			COMMUNITY CLRM	
BRIDGEPORT	23670 NEWHALL RANCH RD	VALENCIA	91355	LAND USE		LACOE BLDG SFP/DISTRICT LAND	DISTRICT			CLRM	$726,214
BURSCH	2505 W 156TH ST	COMPTON	90222	SCHOOL DISTRICT	2880	COMPTON	DISTRICT			CLRM	
CAL STATE DH	1000 E VICTORIA ST E 157	CARSON	90747	CAL STATE UNIV	940		CSDH			CLRM	
CALDWELL SCHOOL	2300 W CALDWELL ST	COMPTON	90220	LAND USE	8640	LACOE BLDG SFP/DISTRICT LAND	LACOE	STATE PORTABLE	ROUTINE MAINT 60 DAYS	CLRMS & OFFICE	$74,000

SITE	ADDRESS	CITY	ZIP CODE	TYPE	SQ FEET	OWNER	MAINT	TYPE CONSTRUCTION	HVAC SVC	USE	BUILDING VALUE
CAMPBELL PAU	9027 ARTESIA BLV D	BELLFLOWER	90706	COMMERCIAL LEASE	7300		LACOE		ROUTINE MAINT 60 DAYS	OFFICE	
CAMPBELL TRANSITION	14722 CLARK AVE	BELLFLOWER	90706	COMMERCIAL LEASE	800		OWNER			CLRM	
CANYON HS PRESCHOOL	1000 S CANYON BLVD	MONROVIA	91016	SCHOOL DISTRICT	760	MONROVIA	DISTRICT			CLRM	
CANYON SPRINGS	19059 VICCI ST	CANYON COUNTRY	91351	SCHOOL DISTRICT	2692	SULPHUR SPRINGS	DISTRICT			CLRM	
CARR, EVELYN	3404 W 168TH ST	TORRANCE	90504	SCHOOL DISTRICT	1898	TORRANCE	DISTRICT			CLRMS	
CARVER	1300 SAN GABRIEL BLVD	SAN MARINO	91108	LAND USE	2880	SAN MARINO	LACOE	STATE PORTABLE	ROUTINE MAINT 60 DAYS	CLRM	$73,000
CASIMIR MIDDLE	17220 CASIMIR AVE	TORRANCE	90504	SCHOOL DISTRICT		TORRANCE				CLRM	
CASTLE ROCK	2975 CASTLE ROCK RD	DIAMOND BAR	91765	SCHOOL DISTRICT	1152	WALNUT VALLEY	DISTRICT			CLRM	
CECIL B DEMILLE MIDDLE SWP	7025 E PARKCREST ST	LONG BEACH	90808	SCHOOL DISTRICT	775	LONG BEACH	DISTRICT			CLRM	
CENTENNIAL HS	2606 N CENTRAL AVE	COMPTON	90222	LAND USE	1920	STATE PORT/DISTRICT LAND	LACOE	STATE PORTABLE	ROUTINE MAINT 60 DAYS	CLRM	$72,000
CENTER INTERMEDIATE	5500 N. CERRITOS AVE.	AZUSA	91702	SCHOOL DISTRICT	960	AZUSA	DISTRICT			CLRM	
CENTINELA	1123 MALBOROUGH AV	INGLEWOOD	90302	LAND USE	960	STATE PORT/DISTRICT LAND		STATE PORTABLE		CLRM	$38,000
CENTINELA VAL COMM SCHOOL	17023 HAWTHORNE BLVD	LAWNDALE	90260	COMMERCIAL LEASE	2654		LACOE INT		LACOE	COMMUNITY CLRM	
CENTRAL JUVENILE HALL	1605 EASTLAKE AVE	LOS ANGELES	90033	COUNTY OF LOS ANGELES PROBATION	31822		PROBATION			CLRMS & OFFICE	
CHALLENGER	5700 W AVE I	LANCASTER	93534	COUNTY OF LOS ANGELES PROBATION	34593		PROBATION			CLRMS & OFFICE	
CHAPARRAL	405 S SPRUCE TREE DR	DIAMOND BAR	91765	LAND USE	1920	LACOE BLDG/DISTRICT LAND	DISTRICT	STATE PORTABLE		CLRM	$72,000
CHARTER OAK HIGH	1430 E COVINA BLVD	COVINA	91724	SCHOOL DISTRICT	1920	CHARTER OAK				CLRM	
CHESTER ADULT	1104 E 148TH ST	COMPTON	90220	SCHOOL DISTRICT	960	COMPTON				CLRM	

SITE	ADDRESS	CITY	ZIP CODE	TYPE	SQ FEET	OWNER	MAINT	TYPE CONSTRUCTION	HVAC SVC	USE	BUILDING VALUE
CITRUS TRANSITIONAL CLASS	940 ALOSTA AV (AZUSA PROMENADE)	AZUSA	91702	COMMERCIAL LEASE	3000		OWNER			CLRM	
COLLINS	6125 COKE AV	LONG BEACH	90805	LAND USE	7680	LACOE BLDG/DISTRICT LAND	DISTRICT	STATE PORTABLE		CLRMS	$110,000
COLUMBUS	12330 WOODRUFF AVE	DOWNEY	90241	LAND USE	3000	LACOE BLDG/DISTRICT LAND	LACOE	STUCCO WOOD FRAME RELO	ROUTINE MAINT 60 DAYS	CLRMS	$77,250
COMPTON COMMUNITY COLLEGE	1111 E ARTESIA BLVD f24, 25, 40	COMPTON	90028	SCHOOL DISTRICT	2700	COMPTON COMMUNITY COLLEGE	OWNER			COMMUNITY CLRMS	
COMPTON HOPE CEC	425 477 E COMPTON BLVD	COMPTON	90221	COMMERCIAL LEASE	23000		OWNER			COMMUNITY CLRM	
CORONADO CONT	614 E VINE AVE	WEST COVINA	91790	SCHOOL DISTRICT	928	WEST COVINA	DISTRICT			CLRM	
CORTEZ	226 E RIO VERDE DR	WEST COVINA	91791	SCHOOL DISTRICT & OWN	27115	WEST COVINA	DISTRICT	SCHOOL & STATE PORTABLES		SCHOOL	$74,000
DANA MIDDLE	13500 AVIATION BLVD	HAWTHORNE	90250	SCHOOL DISTRICT	960	WISEBURN				CLRM	
DAVID GONZALES	1301 N LAS VIRGENES RD	CALABASAS	91302	COUNTY OF LOS ANGELES PROBATION	8509	LACOE PORT &PROBATION	LACOE	STUCCO WOOD FRAME RELO	ROUTINE MAINT 30 DAYS	CLRMS & OFFICE	$23,424
DAVIS MIDDLE	621 W POPLAR ST	COMPTON	90220	SCHOOL DISTRICT	1920	COMPTON				CLRMS	
DE ANZA	12820 E BESS AVE	BALDWIN PARK	91706	LAND USE	3840	LACOE BLDG/DISTRICT LAND	DISTRICT	STATE PORTABLE		CLRM	$146,500
DESERT PATHWAYS	6300 W AV L	QUARTZ HILL	93536	DISTRICT USE	960	STATE PORT/DISTRICT LAND		STATE PORTABLE		CLRM	$40,000
DIAMOND BAR HS	21400 E PATHFINDER RD	DIAMOND BAR	91765	SCHOOL DISTRICT	960	WALNUT VALLEY	DISTRICT			CLRM	
DOLORES MISSION ISP	135 N MISSION RD	LOS ANGELES	90033	COMMERCIAL LEASE	5131		OWNER			CLRM	
DOMINGUEZ HS	15301 SAN JOSE AVE	COMPTON	90221	LAND USE	1920	STATE PORT/DISTRICT LAND	LACOE	STATE PORTABLE	ROUTINE MAINT 60 DAYS	CLRM	$72,000
DOROTHY KIRBY	1500 S MCDONNELL AVE	LOS ANGELES	90022	COUNTY OF LOS ANGELES PROBATION	7979	LACOE PORT &PROBATION	LACOE	STUCCO WOOD FRAME RELO	ROUTINE MAINT 60 DAYS	CLRMS & OFFICE	$43,920
DOWNEY PMP	7320/40 FIRESTONE BLVD	DOWNEY	90241	COMMERCIAL LEASE	1800		LACOE		ROUTINE MAINT 60 DAYS	COUNSELING CTR	

SITE	ADDRESS	CITY	ZIP CODE	TYPE	SQ FEET	OWNER	MAINT	TYPE CONSTRUCTION	HVAC SVC	USE	BUILDING VALUE
DOWNEY SELACO HIGH	11044 BROOKSHIRE AVE	DOWNEY	90241	LAND USE	15446	LACOE BLDG/DISTRICT LAND	LACOE	STUCCO METAL FRAME RELO	ROUTINE MAINT 30 DAYS	CLRMS	$625,375
DWNY SELPA OFC	16240E PARAMOUNT BLVD	PARAMOUNT	90723	COMMERCIAL LEASE	2206		LACOE		ROUTINE MAINT 60 DAYS	OFFICE	
E SAN GAB VALLEY	4400 N ROXBURGH AVE	COVINA	91722	LAND USE	33600	LACOE BLDG/DISTRICT LAND	DISTRICT	STUCCO WOOD FRAME RELO		CLRMS & OFFICE	$981,338
EASE	10630 DOWNEY AV	DOWNEY	90241	COMMERCIAL LEASE	1280		OWNER			OFFICE	
EAST LA CDC	1316 S HERBERT AVE	LOS ANGELES	90023	COMMERCIAL LEASE	2260		OWNER			COMMUNITY CLRM	
EAST MIDDLE	10301 WOODRUFF AVE	DOWNEY	90241	LAND USE		LACOE BLDG SFP/DISTRICT LAND				CLRMS	
ECE12430 BELLFLOWER BLVD	12430 BELLFLOWER BLVD	DOWNEY	90242	COMMERCIAL LEASE	3200		LACOE		FULL MAINT SVC	OFFICE	
ECE12432 BELLFLOWER BLVD	12432 BELLFLOWER BLVD	DOWNEY	90242	COMMERCIAL LEASE	5760		LACOE		FULL MAINT SVC	COMMUNITY CLRM	
EDGEWOOD	14135 FAIRGROVE AVE	LA PUENTE	91746	SCHOOL DISTRICT	900	BASSET	DISTRICT			CLRMS	
EDGEWOOD MIDDLE	1625 W DURNESS ST	WEST COVINA	91790	LAND USE	1800	LACOE BLDG/DISTRICT LAND	DISTRICT	STUCCO WOOD FRAME RELO		CLRMS	$43,920
EDISON	3401 INGLEWOOD	REDONDO BEACH	90278	SCHOOL DISTRICT	15800	REDONDO BEACH	DISTRICT			CLRMS	
EDUCATION CENTER	9300 IMPERIAL HWY	DOWNEY	90242	OWN	160000	LACOE	LACOE		FULL MAINT SVC	OFFICE	$9,589,308
EDUCATION CENTER ANNEX	9300 IMPERIAL HWY	DOWNEY	90242	OWN	12000	LACOE	LACOE		FULL MAINT SVC	OFFICE	$1,100,000
EDUCATION CENTER BUNGELOW	9300 IMPERIAL HWY	DOWNEY	90242	OWN	1600	LACOE	LACOE		FULL MAINT SVC	OFFICE	$42,560
EDUCATION CENTER CLARK	12830 CLARK AVE	DOWNEY	90242	OWN		LACOE	LACOE		FULL MAINT SVC	OFFICE	$21,500,000
EDUCATION CENTER EAST	9525 IMPERIAL HWY	DOWNEY	90242	COMMERCIAL LEASE	70650		LACOE		FULL MAINT SVC	OFFICE	

SITE	ADDRESS	CITY	ZIP CODE	TYPE	SQ FEET	OWNER	MAINT	TYPE CONSTRUCTION	HVAC SVC	USE	BUILDING VALUE
EGGLESTON YOUTH CENTER	20350 CIENEGA	COVINA	91723	GROUP HOME	4061		OWNER			CLRMS	
EL CAMINO	400 E ARROW HWY	POMONA	91766	LAND USE	27539	LACOE BLDG/DISTRICT LAND	DISTRICT	STATE PORTABLE & MANUFACTURED		CLRMS & OFFICE	$1,244,209
ELA ISP CENTRO MARVILLA	4716 CESAR CHAVEZ BLVD	LOS ANGELES	90022	COUNTY OF LOS ANGELES DCSCS	230		OWNER			CLRM	
ELIZABETH ST HEAD START	4811 ELIZABETH ST	CUDAHY	90201	LAND USE	2400	LACOE BLDG/DISTRICT LAND	LACOE	STUCCO WOOD FRAME RELO	ROUTINE MAINT 60 DAYS	HEAD START	$105,372
EMBLEM	22637 ESPUELLA DR	SAUGUS	91350	SCHOOL DISTRICT	4900	SAUGUS	LACOE			CLRMS	
ENCINITA	4515 N ENCINITA	ROSEMEAD	91770	LAND USE	1920	LACOE BLDG/DISTRICT LAND	LACOE	STATE PORTABLE	ROUTINE MAINT 60 DAYS	CLRMS	$73,000
FAIR VALLEY	1400 RANGER DR	COVINA	91723	LAND USE	10214	LACOE BLDG SFP/DISTRICT LAND	DISTRICT	STUCCO WOOD FRAME RELO		CLRMS	$262,042
FETTERLY ISP	144 S FETTERLY AVE	LOS ANGELES	90022	COUNTY OF LOS ANGELES			PROBATION			CLRM	
FOSTER	13900 FOSTER AVE	BALDWIN PARK	91706	SCHOOL DISTRICT	1920	BALDWIN PARK	DISTRICT	STATE PORTABLE		CLRM	$74,000
FOSTER YOUTH SERVICES	11610 ELDRIDGE AV	LAKE VIEW TERRACE	91342	COMMERCIAL LEASE	1000		OWNER				
FOSTER YOUTH SERVICES COVINA	376 E ROWLAND AVE	COVINA	91723	COMMERCIAL LEASE	3096		OWNER			OFFICE	
FOSTER YOUTH SERVICES LONG BEACH	3605 LONG BEACH BLVD SUITE 315	LONG BEACH	90807	COMMERCIAL LEASE	745		OWNER			OFFICE	
FOSTER YOUTH SERVICES SFV	11610 ELDRIDGE AV	LAKE VIEW TERRACE	91342	COMMERCIAL LEASE	1000		OWNER			OFFICE	
FRANKLIN	540 CERRITOS AV	LONG BEACH	90802	SCHOOL DISTRICT	1496	LONG BEACH	DISTRICT			COMMUNITY CLRM	
FRANKLIN SCHOOL	5777 S LOCKHEED AVE	WHITTIER	90606	LAND USE	4800	LACOE BLDG/DISTRICT LAND	LACOE	STUCCO WOOD FRAME RELO	ROUTINE MAINT 60 DAYS	COMMUNITY CLRM	$118,835
GABRIELINO (FORMER JEFFERSON INT)	1440 LAFAYETTE	SAN GABRIEL	91776	LAND USE	7680		DISTRICT	STATE PORTABLE		CLRMS	$72,000
GAIN AIRPORT	5250 W CENTURY BLVD	LOS ANGELES	90025	COMMERCIAL LEASE	1169		OWNER				
GAIN CARSON	1299 ARTESIA BLVD SUITE 130, 180	CARSON	90746	COMMERCIAL LEASE	6309		OWNER			COUNSELING CTR	

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GAIN EL MONTE VALLEY	10648 56 64 72 80 VALLEY BLVD	EL MONTE	91731	COMMERCIAL LEASE	6320		OWNER		LACOE INTERIOR ONLY	COUNSELING CTR	
GAIN LANCASTER	811 WEST AVE J	LANCASTER	93539	COMMERCIAL LEASE	880		LACOE		ROUTINE MAINT 60 DAYS	COUNSELING CTR	
GAIN LONG BEACH	3701 E WILLOW ST	LONG BEACH	90815	COMMERCIAL LEASE			DISTRICT			COUNSELING CTR	
GAIN MONTEBELLO	5830 WHITTIER BLVD	EAST LOS ANGELES	90022	COMMERCIAL LEASE	3490		LACOE		ROUTINE MAINT 60 DAYS	COUNSELING CTR	
GAIN POMONA	2239 N GAREY AV	POMONA	91767	COMMERCIAL LEASE	2950		OWNER				
GAIN SIXTH ST LA	1125 W SIXTH ST	LOS ANGELES	90017	COMMERCIAL LEASE	10558		OWNER			COUNSELING CTR	
GANESHA HS	1151 FAIRPLEX DR	POMONA	91768	SCHOOL DISTRICT	2400	POMONA	DISTRICT			CLRM	
GAREY HS PMP	321 W LEXINGTON AVE	POMONA	91768	SCHOOL DISTRICT	864	POMONA	DISTRICT			CLRM	
GIDLEY	10226 E LOWER AZUSA RD	EL MONTE	91731	LAND USE		LACOE BLDG SFP/DISTRICT LAND	DISTRICT			CLRM	$218,796
GLADSTONE	1314 W GLADSTONE	SAN DIMAS	91773	LAND USE	1920	LACOE BLDG/DISTRICT LAND	DISTRICT	STATE PORTABLE		CLRM	$74,000
GLADSTONE ST	1040 E GLADSTONE ST	AZUSA	91702	SCHOOL DISTRICT	960	AZUSA	DISTRICT			CLRM	
GLEN ROCKEY	1900 N SYCAMORE CANYON RD	SAN DIMAS	91773	COUNTY OF LOS ANGELES PROBATION	7959	LACOE PORT &PROBATION	LACOE	WOOD FRAME RELO	ROUTINE MAINT 60 DAYS	CLRMS & OFFICE	$31,232
GOV RELATIONS OFFICE	910 K ST SUITE 345	SACRAMENTO	95814	COMMERCIAL LEASE	1492		OWNER			OFFICE	
HAMILTON ADULT	2606 W 182ND ST	TORRANCE	90504	SCHOOL DISTRICT	480	TORRANCE				CLRMS	
HAMILTON ADULT SCHOOL LA VIDA S & SPEC ED	2606 W 182ND ST	TORRANCE	90504	LAND USE	2160	LACOE BLDG/DISTRICT LAND	LACOE	STUCCO WOOD FRAME RELO	ROUTINE MAINT 60 DAYS	CLRMS	$105,372
HART HIGH	24825 N NEWHALL AVE	NEWHALL	91321	DISTRICT USE	3840	STATE PORT/DISTRICT LAND		STATE PORTABLE		CLRMS	$148,000
HAWAIIAN GARDENS ISP	12026 CENTRALIA AVE SUITE C	HAWAIIAN GARDENS	90716	COMMERCIAL LEASE	2775		LACOE/OWNER			COMMUNITY CLRMS	
HAWTHORNE HS	4859 E SEGUNDO BLVD	HAWTHORNE	90250	SCHOOL DISTRICT	1724	CENTINELA				CLRMS	

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HEAD START BELL	4706 FILMORE ST	BELL	90201	COMMERCIAL LEASE	1915		OWNER			HEAD START	
HEAD START FAM SVC CTR	1122 W WASHINGTON BLVD	LOS ANGELES	90015	COMMERCIAL LEASE	10300		OWNER			HEAD START	
HEAD START FIRST BAPTIST CHURCH	4009 E GAGE AVE	BELL	90201	COMMERCIAL LEASE	1197		OWNER			HEAD START	
HEAD START HOME BASE	2677 ZOE AVE	HUNTINGTON PARK	90255	COMMERCIAL LEASE	1313					HEAD START	
HEAD START OFFICES	17315 STUDEBAKER RD	CERRITOS	90701	COMMERCIAL LEASE	34024		OWNER			OFFICE	
HEAD START OFFICES	17215 STUDEBAKER RD	CERRITOS	90701	COMMERCIAL LEASE	8654		OWNER			OFFICE	
HICKORY	2800 227TH ST	TORRANCE	90505	SCHOOL DISTRICT	960	TORRANCE	DISTRICT			CLRM	
HIGHLAND	430 VENICE WAY	INGLEWOOD	90302	LAND USE	960	STATE PORT/DISTRICT LAND		STATE PORTABLE		CLRM	$38,000
HIGHLAND HS	39055 25TH ST W	PALMDALE	93550	LAND USE	1209	LACOE BLDG SFP/DISTRICT LAND	DISTRICT	RELOCATABLE		CLRM	$109,223
HILL MIDDLE SCHOOL ASWP	1110 IRAQUOIS AV	LONG BEACH	90802	SCHOOL DISTRICT	960	LONG BEACH				CLRM	
HOLLAND JR HS	14250 LANDIS AVE	BALDWIN PARK	91706	SCHOOL DISTRICT	1920	BALDWIN PARK				CLRM	
HOSLER INT.	11300 SPRUCE ST	LYNWOOD	90262	LAND USE	1920	STATE PORT/DISTRICT LAND	DISTRICT	STATE PORTABLE		CLRM	$72,000
HR MOORE JUV JUS CTR	7706 S CENTRAL AVE	LOS ANGELES	90001	COUNTY OF LOS ANGELES	4800	LACOE BLDG/DISTRICT LAND	LACOE		ROUTINE MAINT 60 DAYS	COMMUNITY CLRM	$118,240
HS FOR THE ARTS	5154 STATE UNIV DRIVE	LOS ANGELES	90032	CAL STATE UNIV			CSLA			CLRMS & OFFICE	
HUDNALL	331 W OLIVE ST	INGLEWOOD	90301	LAND USE	960	STATE PORT/DISTRICT LAND		STATE PORTABLE		CLRM	$38,000
HUNTINGTON JR	1700 HUNTINGTON DR	SAN MARINO	91108	SCHOOL DISTRICT	960	SAN MARINO	DISTRICT			CLRM	
IMPERIAL SCHOOL	540 E IMPERIAL HWY	EL SEGUNDO	90245	SCHOOL DISTRICT	26266	EL SEGUNDO	DISTRICT			SCHOOL	

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INGLEWOOD HS	231 S GREVILLEA AV	INGLEWOOD	90301	LAND USE	960	STATE PORT/DISTRICT LAND		STATE PORTABLE		CLRM	$38,000
IPOLY HS	3801 W TEMPLE AVE BLDG 1 & 85	POMONA	91768	CAL STATE UNIV	18008	STATE PORT/DISTRICT LAND	LACOE	PORTABLES	ROUTINE MAINT 60 DAYS	SCHOOL	$592,000
JEFFERSON	10027 E ROSE ST	BELLFLOWER	90706	DISTRICT USE	960	STATE PORT/DISTRICT LAND					
JEFFERSON	1820 HAVEMEYER LANE	REDONDO BEACH	90278	LAND USE	15356	LACOE BLDG/DISTRICT LAND	LACOE	STATE PORTABLE & MANUFACTURED	ROUTINE MAINT 60 DAYS	CLRM	$81,111
JEFFERSON MIDDLE(FORMER MADISON)	1340 LIVE OAK	SAN GABRIEL	91776	LAND USE	1920	STATE PORT/DISTRICT LAND	LACOE	STATE PORTABLE	ROUTINE MAINT 60 DAYS	CLRMS	$73,500
JONAS SALK CDS	24600 CERISE AVE	HAWTHORNE	90250	OWN	7618	LACOE	LACOE	DSA SCHOOL & STATE PORTABLES		SCHOOL	$4,209,452
K-6 LEARNING ACADEMY	5871 ATLANTIC AVE	LONG BEACH	90805							CLRM	
KARL HOLTON	12653 N LITTLE TUJUNGA CANYON RD	SAN FERNANDO	91342	COUNTY OF LOS ANGELES PROBATION	6762	LACOE PORT &PROBATION	LACOE	STUCCO WOOD FRAME RELO	ROUTINE MAINT 30 DAYS	CLRMS & OFFICE	$65,427
KEPPEL COMM SCH	7315/17 PEARBLOSSOM HWY	LITTLEROCK	93553	COMMERCIAL LEASE	2000		LACOE		OWNER	COMMUNITY CLRM	
KRANZ	12460 FINE VIEW	EL MONTE	91732	LAND USE	960	LACOE BLDG SFP/DISTRICT LAND	DISTRICT			CLRM	$240,582
LA FETRA	547 W BENNETT AVE	GLENDORA	91740	LAND USE	1920	LACOE BLDG/DISTRICT LAND	DISTRICT	STATE PORTABLE		CLRM	$72,000
LA MERCED ELEM	724 N POPLAR AVE	MONTEBELLO	90640	SCHOOL DISTRICT	480	MONTEBELLO	LACOE		ROUTINE MAINT 60 DAYS	CLRMS	
LA MERCED INT.	215 AVENIDA DE LA MERCED	MONTEBELLO	90640	LAND USE	2400	LACOE BLDG/DISTRICT LAND	DISTRICT	STUCCO WOOD FRAME RELO	ROUTINE MAINT 60 DAYS	CLRMS	$56,550
STORAGE					1920	LACOE BLDG		STATE PORTABLE		CLRM	$74,000
LA TIJERA MIDDLE	1415 N LA TIERJA BLVD	INGLEWOOD	90302	LAND USE	960	STATE PORT/DISTRICT LAND		STATE PORTABLE		CLRM	$38,000
LA VERNE HTS	1550 BASELINE RD	LA VERNE	91750	SCHOOL DISTRICT	960	BONITA	DISTRICT			CLRM	

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LA VIDA N LA BREA PLAZA	111 N LA BREA 4TH FLOOR	INGLEWOOD	90301	COMMERCIAL LEASE	3299		OWNER			CLRMS	
LA VIDA W - LEUZINGER	14500 LARCH AV	LAWNDALE	90260	SCHOOL DISTRICT	2757	CENTINELA	DISTRICT			CLRMS	
LAKE LOS ANGELES CS	16921 E AVE O SUITE H	LAKE LOS ANGELES	93591	COMMERCIAL LEASE	1025					CLRMS	
LANCASTER CEC	43301 DIVISION ST	LANCASTER	93534	COMMERCIAL LEASE	6192		OWNER			CLRMS	
LANCASTER MOTIVATION SERVICES	314 E K-4 ST	LANCASTER	93535	COMMERCIAL LEASE	200		LACOE		ROUTINE MAINT 60 DAYS	CLRM	
LANE, WARREN	9330 S 8TH AV	INGLEWOOD	90305	LAND USE	960	STATE PORT/DISTRICT LAND		STATE PORTABLE		CLRM	$38,000
LENNOX MIDDLE	11033 S BUFORD AVE	LENNOX	90304	SCHOOL DISTRICT	960	LENNOX				CLRM	
LEUZINGER	14152 LARCH AVE	LAWNDALE	90260	LAND USE	2760	LACOE BLDG SFP/DISTRICT LAND	LACOE		ROUTINE MAINT 60 DAYS	CLRM	
LINCOLN	15324 CALIFORNIA	PARAMOUNT	90732	SCHOOL DISTRICT	1920	PARAMOUNT	DISTRICT			CLRM	
LINCOLN SCHOOL SPEC ED	600 E GRAND AVE	SAN GABRIEL	91776	OWN	35505	LACOE	LACOE		ROUTINE MAINT 30 DAYS	SCHOOL	$4,304,254
LITTLE ROCK HS	10833 E AVENUE R	LANCASTER	93543	LAND USE	1209	LACOE BLDG SFP/DISTRICT LAND	DISTRICT	RELOCATABLE		CLRMS	$109,223
LONE HILL	700 S. LONE HILL	SAN DIMAS	91773	SCHOOL DISTRICT	960	BONITA	DISTRICT			CLRM	
LONG BEACH CEC	2008 PACIFIC AVE.	LONG BEACH	90806	COMMERCIAL LEASE	3800		LACOE			CLRMS	
LONG BEACH COMM SCHOOL	325 ATLANTIC AVE	LONG BEACH	90802	COMMERCIAL LEASE	3200		INTERIOR LACOE		OWNER	COMMUNITY CLRM	
LONG BEACH COMM SCHOOL	607 E 3RD ST	LONG BEACH	90802	COMMERCIAL LEASE	980		OWNER			COMMUNITY CLRMS	
LONGDEN	9501 WENDON AVE	TEMPLE CITY	91780	SCHOOL DISTRICT	1920	TEMPLE CITY	DISTRICT			CLRMS	
LONGFELLOW	1101 S DWIGHT ST	COMPTON	90220	SCHOOL DISTRICT	1920	COMPTON	DISTRICT			CLRM	
LOS PADRINOS	7285 E QUILL DR	DOWNEY	90242	COUNTY OF LOS ANGELES PROBATION	26602	LACOE PORT &PROBATION	LACOE	STUCCO WOOD FRAME RELO	ROUTINE MAINT 60 DAYS	CLRMS & OFFICE	$44,923
LUGO	4345 PENDLETON AVE	LYNWOOD	90262	SCHOOL DISTRICT	6720	LYNWOOD	DISTRICT			CLRMS	

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BERT LYNN MIDDLE	5038 HALISON	TORRANCE	90503	SCHOOL DISTRICT	960	TORRANCE	DISTRICT			CLRM	
LYNNWOOD TRANSITION VISTA	11300 WRIGHT RD	LYNWOOD	90262	SCHOOL DISTRICT	6200	LYNWOOD	DISTRICT			CLRM	
LYNWOOD CS	11387 BULLIS RD	LYNWOOD	90262	SCHOOL DISTRICT		LYNWOOD				CLRM	
LYNWOOD HS	4050 IMPERIAL HWY	LYNWOOD	90262	SCHOOL DISTRICT	960	LYNWOOD	DISTRICT			CLRM	
LYNWOOD MS	12124 BULLIS RD	LYNWOOD	90262	SCHOOL DISTRICT	959	LYNWOOD	DISTRICT			CLRM	
LYNWOOD MS	12124 BULLIS RD	LYNWOOD	90262	SCHOOL DISTRICT	960	LYNWOOD	DISTRICT			CLRM	
MAGRUDER MS	4100 W 185TH ST	TORRANCE	90504	SCHOOL DISTRICT	960	TORRANCE	DISTRICT			CLRM	
MALAGA COVE	300 PASEO DEL MAR	PALOS VERDES	90260	SCHOOL DISTRICT		PALOS VERDES				CLRM	
MANHATTAN BEACH MIDDLE	1501 REDONDO AVE	MANHATTAN BEACH	90266	SCHOOL DISTRICT	480	MANHATTAN BEACH	DISTRICT			CLRM	
MARK KEPPEL ELEM	6630 E MARK KEPPEL ST	PARAMOUNT	90723	SCHOOL DISTRICT	960	PARAMOUNT	DISTRICT			CLRM	
MARK KEPPEL HIGH	501 E HELLMAN AVE	ALHAMBRA	91801	SCHOOL DISTRICT	960	ALHAMBRA	DISTRICT			CLRM	
MARK TWAIN	12315 THORSON	LYNWOOD	90262	SCHOOL DISTRICT	2880	LYNWOOD	DISTRICT			CLRM	
MARK TWAIN	15516 S DOTY AV	LAWNDALE	90260	LAND USE	3960	STATE PORT & LACOE BLDG /DISTRICT LAND	LACOE	STUCCO WOOD FRAME RELO& STATE PORETABLE	ROUTINE MAINT 60 DAYS	CLRMS	$184,177
MARSHALL MIDDLE SWP	5870 E WARDLOW RD	LONG BEACH	90808	SCHOOL DISTRICT	825	LONG BEACH	DISTRICT			CLRM	
MASADA	130 W VICTORIA ST	CARSON	90248	COMMERCIAL LEASE	1000		OWNER			SCHOOL	
MAYFAIR HS	6000 N WOODRUFF AVE	LAKEWOOD	90713	DISTRICT USE	7680	STATE PORT & LACOE BLDG /DISTRICT LAND				CLRMS	$288,000
MAYFLOWER ELEM	210 N MAYFLOWER	MONROVIA	91016	SCHOOL DISTRICT	960	MONROVIA				CLRM	
MAYWOOD HEAD START	4756 E SLAUSON AVE	MAYWOOD	90270	COMMERCIAL LEASE	640		OWNER			CLRM	
MAYWOOD PARK HEAD START	4801 E 58TH ST	MAYWOOD	90270	COMMERCIAL LEASE	1275		OWNER			CLRM	
MCKINLEY	14431 S STANFORD	COMPTON	90220	SCHOOL DISTRICT	960	COMPTON	DISTRICT			CLRMS	

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MID CITY CDS	639 S NEW HAMPSHIRE AV	LOS ANGELES	90010	COMMERCIAL LEASE	20077		LACOE		ROUTINE MAINT 60 DAYS	CLRMS & OFFICE	
MID VALLEY CDS	7531 VAN NUYS BLVD	VAN NUYS	91402	COUNTY OF LOS ANGELES PROBATION	18000		LA COUNTY			CLRMS & OFFICE	
MILLER/KILPATRICK	427 S ENCINAL CANYON RD	MALIBU	90265	COUNTY OF LOS ANGELES PROBATION	19764		LACOE		ROUTINE MAINT 30 DAYS	CLRMS & OFFICE	
MIRA COSTA HIGH	701 S PECK AVE	MANHATTAN BEACH	90266	LAND USE	4800	STATE PORT/DISTRICT LAND	DISTRICT	STATE PORTABLE		CLRMS	$182,500
MIRALESTE	29323 PALOS VERDES DR EAST	RANCHO PALOS VERDES	90275	SCHOOL DISTRICT	1920	PALOS VERDES				CLRMS	
MOKLER	8571 E FLOWER ST	PARAMOUNT	90723	LAND USE	960	LACOE BLDG/DISTRICT LAND	DISTRICT	STATE PORTABLE		CLRMS	$37,000
MONROE	10711 10TH AVE	INGLEWOOD	90303	DISTRICT USE	960	STATE PORT/DISTRICT LAND		STATE PORTABLE		CLRM	$37,000
MONTEBELLO HIGH	2100 W CLEVELAND AVE	MONTEBELLO	90640	LAND USE	2880	LACOE BLDG/DISTRICT LAND	LACOE	STATE PORTABLE	ROUTINE MAINT 60 DAYS	CLRMS	$111,000
MOOR FIELD	1000 S 8TH ST	ALHAMBRA	91801	LAND USE		LACOE BLDG/DISTRICT LAND	DISTRICT				
MORRIS ELEM	19875 E CALLE BAJA	WALNUT	91789	SCHOOL DISTRICT	960	WALNUT VALLEY	DISTRICT			CLRM	
MOUNTAINVIEW ELEM	201 N VERNON AV	AZUSA	91702	SCHOOL DISTRICT	960	AZUSA	DISTRICT				
MOUNTAINVIEW HS	2900 PARKWAY DR	EL MONTE	91732	LAND USE	2880	LACOE BLDG SFP/DISTRICT LAND				CLRMS	
MT SAC	1100 N GRAND AVE	WALNUT	91789	SCHOOL DISTRICT	1236	MT SAC	DISTRICT			CLRM	
MUJERES Y HOMBRE	1260 MONTEREY PASS RD	MONTEREY PARK	91754	COMMERCIAL LEASE	12430		LACOE		ROUTINE MAINT 60 DAYS	CLRMS	
MULHALL	10900 MULHALL AVE	EL MONTE	91731	LAND USE	8220	LACOE BLDG/DISTRICT LAND	LACOE	STUCCO WOOD FRAME RELO& STATE PORETABLE	ROUTINE MAINT 60 DAYS	CLRMS	$200,568

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MUNZ/MENDENHALL	42230 N LAKE HUGHES RD	LAKE HUGHES	93532	COUNTY OF LOS ANGELES PROBATION	15437	LACOE PORT &PROBATION	LACOE	STUCCO WOOD FRAME RELO		CLRMS & OFFICE	$110,820
N LAKE CDC	1460 N LAKE AVE, SUITE 105&6	PASADENA	91104	COMMERCIAL LEASE	3070		LACOE		ROUTINE MAINT 60 DAYS	CLRMS	
NE JUV JUSTICE CTR ISS	1601 EASTLAKE AVE	LOS ANGELES	90033	COUNTY OF LOS ANGELES			PROBATION			CLRM	
NEW DIRECTIONS	7400 VAN NUYS BLVD	VAN NUYS	91405	COMMERCIAL LEASE	5296		OWNER			SCHOOL	
NEW TEMPLE	11033 E CENTRAL AVE	VALLE LINDO	91733	LAND USE	2880	LACOE BLDG/DISTRICT LAND	LACOE	STATE PORTABLE	ROUTINE MAINT 60 DAYS	CLRMS	$72,000
NIDORF BARRY JH	16350 FILBERT ST	SYLMAR	91342	COUNTY OF LOS ANGELES PROBATION	36963		PROBATION			CLRMS & OFFICE	
NORTH HIGH	3620 W 182ND ST	TORRANCE	90504	SCHOOL DISTRICT	3900	TORRANCE	DISTRICT			CLRMS	
NORTH LONG BEACH CS &ISP	1115 MARKET ST	LONG BEACH	90805	COMMERCIAL LEASE	1849		OWNER			COMMUNITY CLRM	
NORTHVIEW INTER	1401 HIGHLAND AV	DUARTE	91010	SCHOOL DISTRICT	960	DUARTE	DISTRICT			CLRM	
NORWALK LA MIRADA ADULT	15920 BARBATA RD	NORWALK	90650	SCHOOL DISTRICT	801	NORWALK LA MIRADA	DISTRICT			CLRMS	
NORWALK/ LA MIRADA CS & ALTAMED ISS	12440 E FIRESTONE BLVD #1000 3314	NORWALK	90650	COMMERCIAL LEASE	1440		OWNER			CLRM	
NORWOOD	4520 N WHISTLER AVE	EL MONTE	91732	SCHOOL DISTRICT	1920	EL MONTE CITY				CLRMS	
OAK KNOLL	620 CERRITOS AVE	AZUSA	91702	COURT SCHOOLS	808		OWNER			CLRM	
OAK MESA	5200 WHEELER	LA VERNE	91750	SCHOOL DISTRICT	960	BONITA	DISTRICT			CLRM	
OLD ORCHARD ELEM	25141 N AVENIDA RONDEL	VALENCIA	91355	LAND USE	960	LACOE BLDG SFP/DISTRICT LAND	DISTRICT			CLRM	$604,033
PACIFIC LODGE	4900 SERRANIA AVE	WOODLAND HILLS	91364	GROUP HOME	5788		OWNER			CLRMS	
PALM CANYON HILLGROVE	15151 PALM AVE	HACIENDA HEIGHTS	91745	LAND USE	7000	LACOE BLDG SFP/DISTRICT LAND	LACOE			SCHOOL	$1,624,945
PALMDALE CEC	39150 TENTH ST W	PALMDALE	93551	COMMERCIAL LEASE	6400		OWNER			CLRMS	
PALMDALE COMM SCH	39139-49 10TH ST E	PALMDALE	93550	SCHOOL DISTRICT	2880	PALMDALE	DISTRICT			COMMUNITY CLRM	

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PALMDALE HS	2137 E AVE R	PALMDALE	93550	LAND USE	1269	LACOE BLDG SFP/DISTRICT LAND	DISTRICT			CLRM	$109,223
PARAMOUNT ADULT	14507 S PARAMOUNT BLVD	PARAMOUNT	90723	SCHOOL DISTRICT	960	PARAMOUNT	DISTRICT			CLRM	
PARAMOUNT ADULT MICHELSON HS	3717 MICHELSON	LAKEWOOD	90712	SCHOOL DISTRICT	960	PARAMOUNT	DISTRICT			CLRM	
PARAMOUNT HS	14429 DOWNEY AVE	PARAMOUNT	90723	SCHOOL DISTRICT	960	PARAMOUNT	DISTRICT			CLRMS	
PARAMOUNT HS WEST	14708 PARAMOUNT BLVD	PARAMOUNT	90723	LAND USE	1920	LACOE BLDG/DISTRICT LAND		STATE PORTABLE		CLRM	$73,000
PARAMOUNT BLVD LAND	13050 PARAMOUNT BLVD	SOUTH GATE	90723	OWN		LACOE					$1,339,554
PASADENA FRIDAT NITE LIVE	1785 LOCUST ST SUITE 4	PASADENA	91106	COMMERCIAL LEASE	1200					CLRM	
PASADENA FOOTHILL PROBATION ISS	199 N EUCLID AVE	PASADENA	91101	COUNTY OF LOS ANGELES PROBATION			PROBATION			CLRM	
PHOENIX ACADEMY	11600 ELDRIDGE AVE	LAKE VIEW TERRACE	91342	COMMERCIAL LEASE	10771		OWNER			CLRMS	
PLAZA DE LA RAZA	328 N ORANGE ST	AZUSA	91702	SCHOOL DISTRICT	959	BALDWIN PARK				CLRM	
PLEASENTVIEW	14900 E NUBIA ST	BALDWIN PARK	91706	SCHOOL DISTRICT	960	BALDWIN PARK	DISTRICT			CLRM	
POMONA ACADEMIC AND ARTS	1650 WEST MISSION BLVD, Suite 107A&B	POMONA	91766	COMMERCIAL LEASE	7800		OWNER			COMMUNITY CLRM	
POMONA HIGH	475 BANGOR	POMONA	91767	SCHOOL DISTRICT	960	POMONA	DISTRICT			CLRM	
POTRERO	2611 N POTRERO AVE	EL MONTE	91733	SCHOOL DISTRICT	929	EL MONTE CITY	DISTRICT			CLRM	
POTRERO HEIGHTS	8026 E HILL DR	MONTEBELLO	91770	LAND USE	1920	STATE PORT/DISTRICT LAND				CLRM	$74,000
PSSP STUDENT RECORDS	9530 IMPERIAL HWY	DOWNEY	90242	COMMERCIAL LEASE	2785		OWNER			OFFICE	
RAMONA	4617 W 136TH ST	HAWTHORNE	90250	SCHOOL DISTRICT	960	HAWTHORNE	DISTRICT			CLRM	
RANCHO VISTA	4323 PALOS VERDES DR. N.	ROLLING HILLS ESTATE	90274	SCHOOL DISTRICT	960	PALOS VERDES	DISTRICT			CLRM	

SITE	ADDRESS	CITY	ZIP CODE	TYPE	SQ FEET	OWNER	MAINT	TYPE CONSTRUCTION	HVAC SVC	USE	BUILDING VALUE
REDONDO UNION HIGH	631 VINCENT PARK	REDONDO BEACH	90277	LAND USE	3840	LACOE BLDG/DISTRICT LAND	DISTRICT	STATE PORTABLE		CLRM	$146,000
REFERENCE CENTER	12757 BELLFLOWER BLVD	DOWNEY	90242	COMMERCIAL LEASE	5084		LACOE		ROUTINE MAINT 60 DAYS	OFFICE	
RICHARDSON MIDDLE	23571 NANCY LEE LANE	TORRANCE	90505	SCHOOL DISTRICT	960	TORRANCE				CLRM	
RIO HONDO	11425 WILDFLOWER RD	ARCADIA	91006	LAND USE	1920	LACOE BLDG/DISTRICT LAND	LACOE	STATE PORTABLE	ROUTINE MAINT 60 DAYS	CLRMS	$74,000
RIO VISTA	43200 N ESTO	EL MONTE	91731	LAND USE	944	LACOE BLDG SFP/DISTRICT LAND	DISTRICT			CLRM	$728,002
ROGERS SWP	365 MONROVIA AV	LONG BEACH	90815	SCHOOL DISTRICT	736	LONG BEACH	DISTRICT			CLRM	
ROOSEVELT	13451 MERKEL AVE	PARAMOUNT	90723	SCHOOL DISTRICT	960	PARAMOUNT				CLRM	
ROSEWOOD PARK	2353 S COMMERCE WAY	COMMERCE	90040	LAND USE	2760	LACOE BLDG/DISTRICT LAND	LACOE	STATE PORTABLE & MANUFACTURED	ROUTINE MAINT 60 DAYS	CLRMS	$84,945
ROYNON	2715 E ST	LA VERNE	91750	SCHOOL DISTRICT	960	BONITA				CLRM	
SAN DIMAS HS	800 W COVINA BLVD	SAN DIMAS	91773	SCHOOL DISTRICT	960	BONITA	DISTRICT			CLRM	
SAN GABRIEL HIGH	801 RAMONA ST	SAN GABRIEL	91776	LAND USE	1500	LACOE BLDG/DISTRICT LAND	DISTRICT	METAL CLAD TRAILER		CLRM	$27,000
SAN MARINO HS	2701 HUNTINGTON DR	SAN MARINO	91108	SCHOOL DISTRICT	960	SAN MARINO	DISTRICT			CLRM	
SAN PEDRO CEC	435 N HARBOR BLVD UNIT H	SAN PEDRO	90731	COMMERCIAL LEASE	3200		LACOE		ROUTINE MAINT 60 DAYS	COMMUNITY CLRM	
SANDBURG	8190 W BENNETT AVE	GLENDORA	91740	SCHOOL DISTRICT	1920	GLENDORA	DISTRICT			CLRMS	
SANTA CLARITA CEC	20730 SOLEDAD ST K,L AND M	SANTA CLARITA	91351	COMMERCIAL LEASE	5700		LACOE			COMMUNITY CLRM	
SANTA MONICA CEC	2705 W PICO BLVD	SANTA MONICA	90405	COMMERCIAL LEASE	4100		LACOE			COMMUNITY CLRM	
SC SELPA OFFICE	25050 PEACHLAND AVE #107	NEWHALL	91381	COMMERCIAL LEASE	1000		OWNER			OFFICE	

SITE	ADDRESS	CITY	ZIP CODE	TYPE	SQ FEET	OWNER	MAINT	TYPE CONSTRUCTION	HVAC SVC	USE	BUILDING VALUE
SCOTT/SCUDDER	28750 N BOUQUET CANYON RD	SAUGUS	91350	COUNTY OF LOS ANGELES PROBATION	12418	LACOE PORT &PROBATION	LACOE	STUCCO WOOD FRAME RELO	ROUTINE MAINT 60 DAYS	CLRMS & OFFICE	$175,330
ALLEN B SHEPERD(SEPULVEDA)	12595 ISIS AVE	HAWTHORNE	90250	SCHOOL DISTRICT	14400	WISEBURN	DISTRICT			SCHOOL	
SHOEMAKER CDS	12505 SHOEMAKER AVE	SANTA FE SPRINGS	90670	COMMERCIAL LEASE	4500		LACOE		ROUTINE MAINT 60 DAYS	CLRM	
SIERRA VISTA HS	3600 FRAZIER AV	BALDWIN PARK	91706	SCHOOL DISTRICT	1920	BALDWIN PARK	DISTRICT			CLRM	
SOUTH BAY ISS	1650 S PACIFIC COAST HWY ST 303	REDONDO BEACH	90277	COMMERCIAL LEASE	400		OWNER			COMMUNITY CLRM	
SOUTH EL MONTE HS	1001 DURFEE AVE	SOUTH EL MONTE	91731	LAND USE	2880	LACOE BLDG SFP/DISTRICT LAND	DISTRICT			CLRM	
SOUTH HS	4801 PACIFIC COAST HWY	TORRANCE	90505	SCHOOL DISTRICT	2209	TORRANCE	DISTRICT			CLRM	
SOUTH PASADENA MIDDLE SCHOOL	1600 OAK ST	SOUTH PASADENA	91030	SCHOOL DISTRICT	837	SOUTH PASADENA	DISTRICT			CLRM	
SOUTH WEST SELPA OFFICE	15901 HAWTHORNE BLVD	LAWNDALE	90260	COMMERCIAL LEASE	3108		OWNER			OFFICE	
SOUTH WESTERN CEC	4277 S WESTERN AVE	LOS ANGELES	90062	COMMERCIAL LEASE	5200		LACOE		ROUTINE MAINT 60 DAYS	CLRM	
SPECIAL ED VISUALLY IMPAIRED	9530 IMPERIAL HWY	DOWNEY	90242	COMMERCIAL LEASE	1565		OWNER			OFFICE	
STANFORD MIDDLE SWP	5871 LOS ARCOS ST	LONG BEACH	90815	SCHOOL DISTRICT	700	LONG BEACH	DISTRICT			CLRM	
SUNRISE EARLY CHILDHOOD CTR	3801 VIA LA SELVA	PALOS VERDES	90274	SCHOOL DISTRICT	960	PALOS VERDES				CLRM	
SUSSMAN SELACO SOUTH	12502 BIRCHDALE AVE	DOWNEY	90242	LAND USE	12730	LACOE BLDG/DISTRICT LAND	LACOE	STUCCO WOOD FRAME RELO& STATE PORETABLE	ROUTINE MAINT 30 DAYS	CLRMS	$495,751
SUZANNE	525 SUZANNE RD	WALNUT	91789	SCHOOL DISTRICT	960	WALNUT VALLEY	DISTRICT			CLRM	
TARZANA TREATMENT CENTER	44443 10TH ST W	LANCASTER	93534		612					CLRM	
THOMPSON ELEM	4544 MAXSON RD	EL MONTE	91732	LAND USE		LACOE BLDG SFP/DISTRICT LAND	DISTRICT			CLRM	$164,148

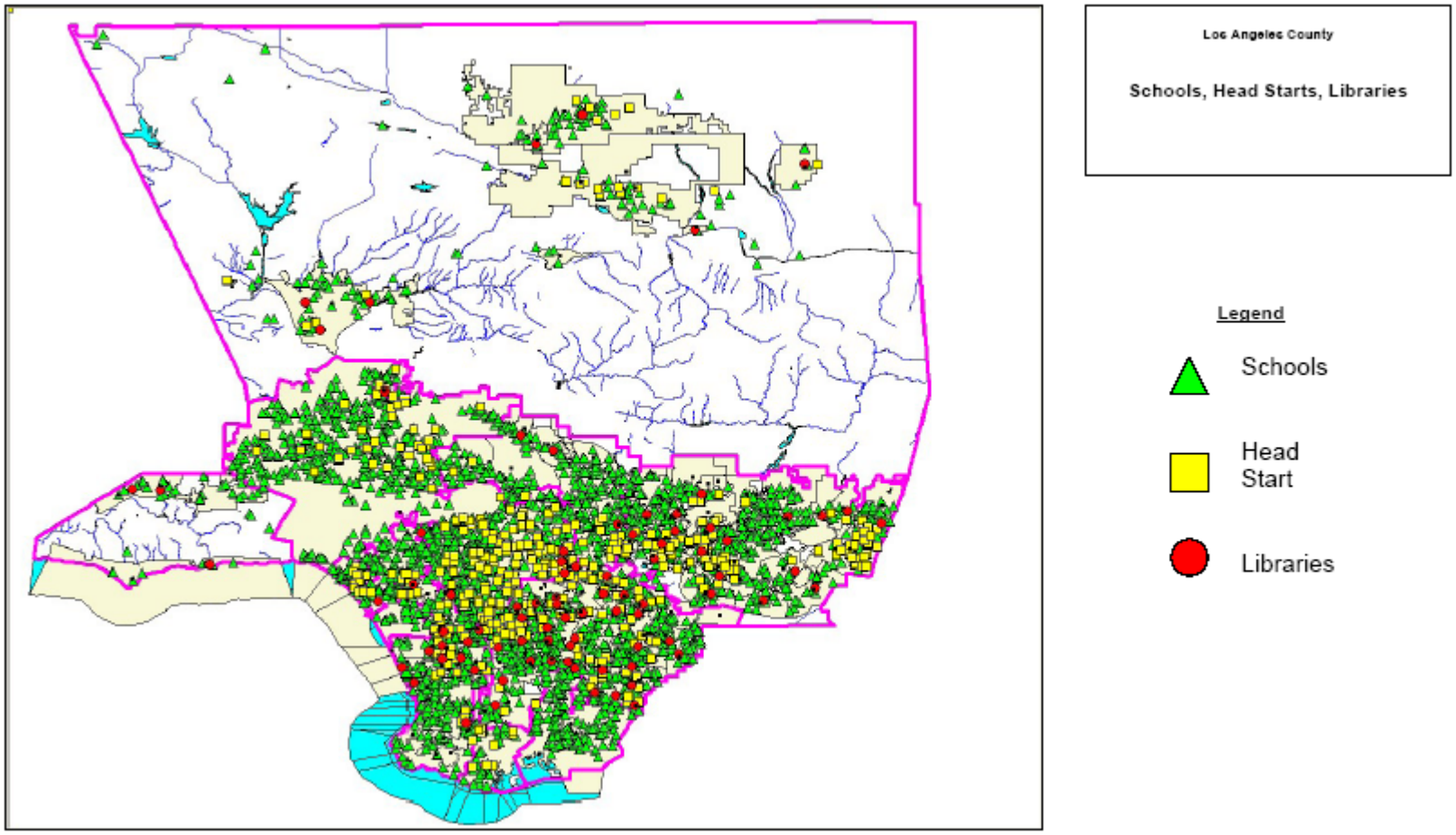
SITE	ADDRESS	CITY	ZIP CODE	TYPE	SQ FEET	OWNER	MAINT	TYPE CONSTRUCTION	HVAC SVC	USE	BUILDING VALUE
TIBBY	1400 W POPLAR ST	COMPTON	90220	SCHOOL DISTRICT	960	COMPTON				CLRM	
TORRANCE HIGH	2200 W CARSON ST	TORRANCE	90501	SCHOOL DISTRICT	5760	TORRANCE	DISTRICT			CLRMS	
TRI COMMUNITY ISS	3209 S ALAMEDA ST SUITE J	COMPTON	90222	COMMERCIAL LEASE	1750		OWNER			COMMUNITY CLRMS	
TRI COMMUNITY OCCUPATION CTR	11100 S WESTERN AV	LOS ANGELES	90047	COMMERCIAL LEASE	1728		OWNER			CLRM	
TRI COMMUNITY YOUTH CTR	12721 S WILLOWBROOK AVE	COMPTON	90222	OWN	960	LACOE	LACOE		ROUTINE MAINT 60 DAYS	COMMUNITY CLRM	$1,053,121
VAL VERDE HEAD START	30246 SAN MARTINEZ RD	SANTA CLARITA	91384	LAND USE	2160	LACOE BLDG/DISTRICT LAND	LACOE	STUCCO WOOD FRAME RELO& STATE PORETABLE	ROUTINE MAINT 60 DAYS	CLRMS	$105,372
VALLEY VIEW	19420 W SIERRA ESTATES DR	NEWHALL	91321	SCHOOL DISTRICT	22376	SULPHUR SPRINGS	DISTRICT			SCHOOL	
VALLEYDALE	700 S LARK ELLEN	AZUSA	91702	SCHOOL DISTRICT	960	AZUSA				CLRM	
VANGUARD	13305 S SAN PEDRO	LOS ANGELES	90061	SCHOOL DISTRICT	3840	COMPTON	DISTRICT			CLRMS	
VINCENT	1024 W WORKMAN	WEST COVINA	91781	SCHOOL DISTRICT	3840	COVINA VALLEY	DISTRICT			CLRMS	
VISTA CAL SAFE	12628 S ATLANTIC BLVD	LYNWOOD	90262	COMMERCIAL LEASE	954		OWNER			CLRM	
VISTA CONTINUATION	11300 WRIGHT RD	LYNWOOD	90262	SCHOOL DISTRICT	920	LYNWOOD	DISTRICT			CLRMS	
WALNUT HIGH	400 N PIERRE RD	WALNUT	91789	SCHOOL DISTRICT	1920	WALNUT VALLEY	DISTRICT			CLRM	
WALTERIA	24456 MADISON ST	TORRANCE	90505	SCHOOL DISTRICT	960	TORRANCE				CLRM	
WALTON MIDDLE	900 W GREENLEAF DR	COMPTON	90220	SCHOOL DISTRICT	1920	COMPTON	DISTRICT			CLRM	
WAREHOUSE	10329 PAINTER AV	SANTE FE SPRINGS	90670	COMMERCIAL LEASE	24228		LACOE		ROUTINE MAINT 30 DAYS	WAREHOUSE	
WASHINGTON	1150 LILLIENTHAL	REDONDO BEACH	90278	LAND USE	16884	LACOE BLDG/DISTRICT LAND	DISTRICT	STATE PORTABLE & MANUFACTURED	ROUTINE MAINT 60 DAYS	CLRM	$141,690
WASHINGTON	9725 E JEFFERSON ST	BELLFLOWER	90706	DISTRICT USE	1920	STATE PORT/DISTRICT LAND		STATE PORTABLE		CLRMS	$72,000

SITE	ADDRESS	CITY	ZIP CODE	TYPE	SQ FEET	OWNER	MAINT	TYPE CONSTRUCTION	HVAC SVC	USE	BUILDING VALUE
WEST COVINA ISP	1760 WEST CAMERON AV SUITE 104	WEST COVINA	91790	COMMERCIAL LEASE	1261		OWNER			CLRM	
WEST VALLEY CEC	22142 SHERMAN WAY CANOGA PARK	LOS ANGELES	91303	COMMERCIAL LEASE	6724		OWNER			SCHOOL	
WHITCOMB CONT HS	350 W MUANA LOA AV	GLENDORA	91740	SCHOOL DISTRICT	1328	GLENDORA	DISTRICT			CLRM	
WILLIAMS SCHOOL	301 S LORRAINE AV	GLENDORA	91410	SCHOOL DISTRICT	960	GLENDORA	DISTRICT			CLRM	
WILLOWOOD	2021 W ALWOOD ST	WEST COVINA	91790	LAND USE		LACOE BLDG SFP/DISTRICT LAND	DISTRICT			CLRM	$1,281,223
WILSON	8317 E SHEFFIELD	SAN GABRIEL	91775	SCHOOL DISTRICT	960	SAN GABRIEL	DISTRICT			CLRM	
WILSON	11700 SCHOOL ST	LYNWOOD	90262	SCHOOL DISTRICT	1920	LYNWOOD	DISTRICT			CLRM	
WIRTZ	8535 CONTRERAS	PARAMOUNT	90723	SCHOOL DISTRICT	1920	PARAMOUNT	DISTRICT			CLRM	
WOOD	2250 W 235TH ST	TORRANCE	90501	SCHOOL DISTRICT	1920	TORRANCE				CLRM	
WSGV SELPA OFFICE	159 E LIVE OAK AV	ARCADIA	91006	COMMERCIAL LEASE	2040		OWNER			OFFICE	

Critical Assets

The Los Angeles County Office of Education Hazard Mitigation Planning Steering Committee designated its critical facilities on the above Inventory of Assets in RED.

Map of Schools, Head Starts and Libraries in Los Angeles County (Los Angeles County GIS Data)



School Districts in Los Angeles County

District Name	Street Address	City	Telephone
Los Angeles County Office of Education	9300 Imperial Hwy	Downey 90242	(562) 922-6111
ABC Unified	16700 Norwalk Blvd	Cerritos 90703	(562) 926-5566
Acton-Agua Dulce Unified	32248 N Crown Valley Rd	Acton 93510	(661) 269-5999
Alhambra Unified	15 W Alhambra Rd	Alhambra 91802	(626) 308-2200
Antelope Valley Joint Union High	44811 North Sierra Hwy	Lancaster 93534	(661) 948-7655
Arcadia Unified	234 Campus Dr	Arcadia 91007	(626) 821-8300
Azusa Unified	546 S Citrus Ave	Azusa 91702	(626) 967-6211
Baldwin Park Unified	3699 N Holly Ave	Baldwin Park 91706	(626) 962-3311
Bassett Unified	904 N Willow Ave	La Puente 91746	(626) 918-3131
Bellflower Unified	16703 S Clark Ave	Bellflower 90706	(562) 866-9011
Beverly Hills Unified	255 S Lasky Dr	Beverly Hills 90212	(310) 551-5100
Bonita Unified	115 W Allen Ave	San Dimas 91773	(909) 599-6787
Burbank Unified	1900 W Olive Ave	Burbank 91506	(818) 729-4400
Castaic Union Elementary	28131 Livingston Ave	Valencia 91355	(661) 257-4500
Centinela Valley Union High	14901 S Inglewood Ave	Lawndale 90260	(310) 970-7700
Charter Oak Unified	20240 Cienega Ave	Covina 91723	(626) 966-8331
Claremont Unified	2080 N Mountain Ave	Claremont 91711	(909) 398-0601
Compton Unified	604 S Tamarind Ave	Compton 90220	(310) 639-4321
Covina-Valley Unified	519 E Badillo St	Covina 91723	(626) 974-7000
Culver City Unified	4034 Irving Place	Culver City 90232	(310) 842-4200
Downey Unified	11627 Brookshire Ave	Downey 90241	(562) 904-3500
Duarte Unified	1620 Huntington Dr	Duarte 91010	(626) 358-1191
East Whittier City Elementary	14535 E Whittier Blvd	Whittier 90605	(562) 698-0351
Eastside Union Elementary	45006 30th Street East	Lancaster 93535	(661) 952-1200
El Monte City Elementary	3540 N Lexington Ave	El Monte 91731	(626) 453-3700
El Monte Union High	3537 Johnson Ave	El Monte 91731	(626) 444-9005
El Rancho Unified	9333 Loch Lomond Dr	Pico Rivera 90660	(562) 942-1500
El Segundo Unified	641 Sheldon St	El Segundo 90245	(310) 615-2650
Garvey Elementary	2730 N del Mar	Rosemead 91770	(626) 307-3400
Glendale Unified	223 N Jackson St	Glendale 91206	(626) 241-3111
Glendora Unified	500 N Loraine Ave	Glendora 91741	(626) 963-1611

District Name	Street Address	City	Telephone
Gorman Joint	49847 Gorman School Rd	Gorman 93243	(661) 248-6441
Hacienda La Puente Unified	15959 E Gale Ave	City of Industry 91716	(626) 933-1000
Hawthorne Elementary	14120 S Hawthorne Blvd	Hawthorne 90250	(310) 676-2276
Hermosa Beach City Elementary	1645 Valley Dr	Hermosa Beach 90254	(310) 937-5888
Hughes-Elizabeth Lakes Union Elem.	16633 Elizabeth Lake Rd	Lake Hughes 93532	(661) 724-1231
Inglewood Unified	401 S Inglewood Ave	Inglewood 90301-2501	(310) 419-2700
Keppel Union Elementary	34004 128th St East	Pearblossom 93553	(661) 944-2155
La Canada Unified	5039 Palm Dr	La Canada 91011	(818) 952-8300
Lancaster Elementary	44711 N Cedar Ave	Lancaster 93534	(661) 948-4661
Las Virgenes Unified	4111 N Las Virgenes Rd	Calabasas 91302	(818) 880-4000
Lawndale Elementary	4161 W 147th St	Lawndale 90260	(310) 973-1000
Lennox Elementary	10319 S Firmona Ave	Lennox 90304	(310) 330-4950
Little Lake City Elementary	10515 S Pioneer Blvd	Santa Fe Springs 90670	(562) 868-8241
Long Beach Unified	1515 Hughes Way	Long Beach 90810	(562) 997-8000
Los Angeles Unified	333 S Beaudry Ave	Los Angeles 90017	(213) 241-1000
Los Nietos Elementary	8324 S Westman Ave	Whittier 90606	(562) 692-0271
Lowell Joint	11019 Valley Home Ave	Whittier 90603	(562) 943-0211
Lynwood Unified	11321 Bullis Road	Lynwood 90262	(310) 886-1600
Manhattan Beach Unified	1230 Rosecrans, Ste 400	Manhattan Beach 90266	(310) 318-7345
Monrovia Unified	325 E Huntington Dr	Monrovia 91016	(626) 471-2000
Montebello Unified	123 S Montebello Blvd	Montebello 90640	(323) 887-7900
Mountain View Elementary	3320 Gilman Road	El Monte 91732	(626) 652-4000
Newhall Elementary	25375 Orchard Village, Ste 200	Valencia 91355	(661) 286-2200
Norwalk-La Mirada Unified	12820 Pioneer Blvd	Norwalk 90650	(562) 868-0431
Palmdale Elementary	39139 10th St East	Palmdale 93550	(661) 947-7191
Palos Verdes Peninsula Unified	3801 Via la Selva	Palos Verdes Estates 90274	(310) 378-9966
Paramount Unified	15110 California Ave	Paramount 90723	(562) 602-6000
Pasadena Unified	351 S Hudson Ave	Pasadena 91101	(626) 795-6981
Pomona Unified	800 S Garey Ave	Pomona 91769	(909) 397-4800
Redondo Beach Unified	1401 Inglewood Ave	Redondo Beach 90278	(310) 379-5449
Rosemead Elementary	3907 Rosemead Blvd	Rosemead 91770	(626) 312-2900
Rowland Unified	1830 Nogales St	Rowland Heights 91748	(626) 965-2541
San Gabriel Unified	408 Junipero Serra Dr	San Gabriel 91776	(626) 451-5400
San Marino Unified	1665 West Dr	San Marino 91108	(626) 299-7000

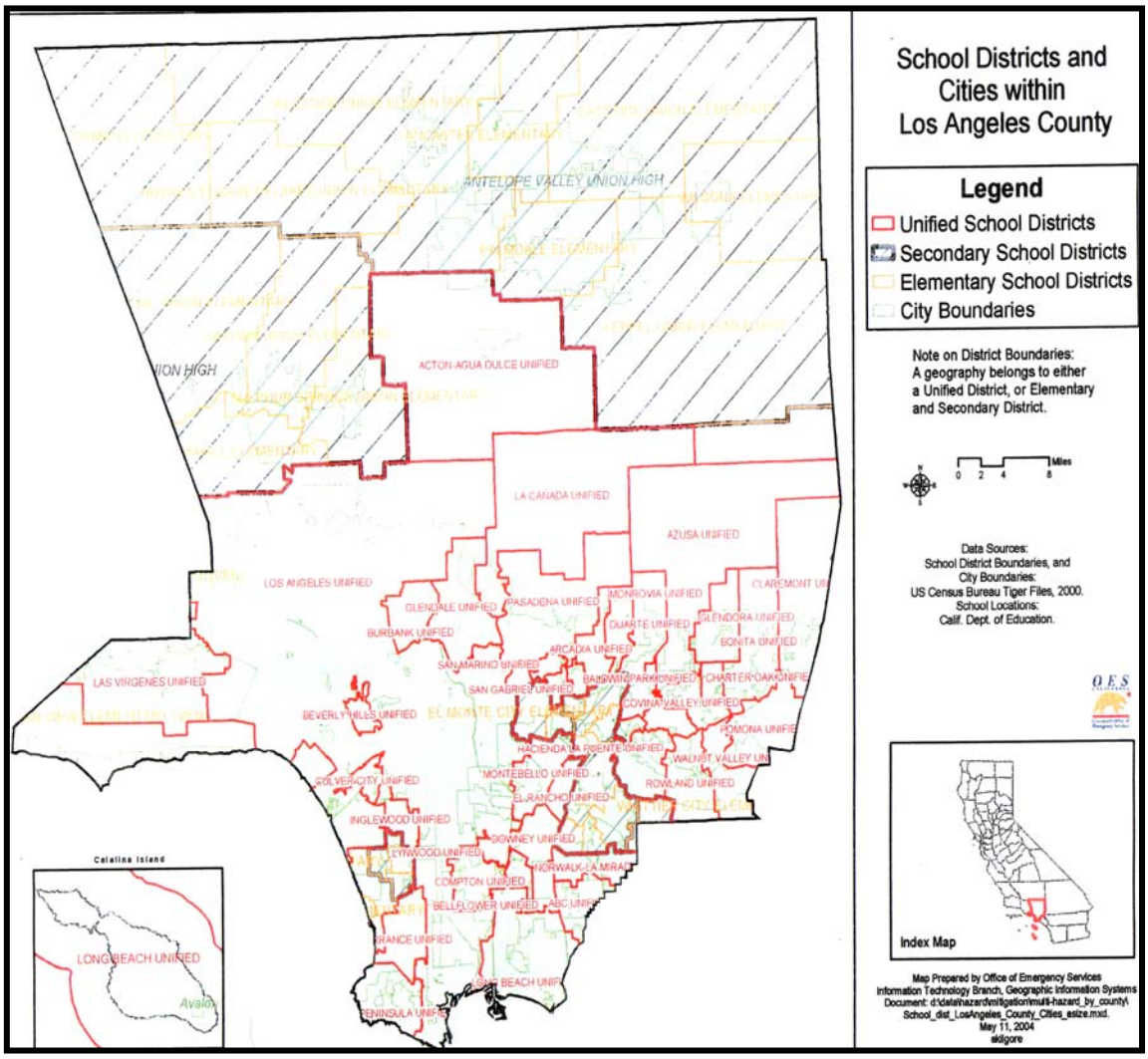
District Name	Street Address	City	Telephone
Santa Monica-Malibu Unified	1651 16th St	Santa Monica 90404	(310) 450-8338
Saugus Union Elementary	24930 Avenue Stanford	Santa Clarita 91355	(661) 294-7500
South Pasadena Unified	1020 El Centro St	South Pasadena 91030	(626) 441-5700
South Whittier Elementary	10120 Painter Ave	Whittier 90605	(562) 944-6231
Sulphur Springs Union Elementary	17866 Sierra Hwy	Canyon Country 91351	(661) 252-5131
Temple City Unified	9700 Las Tunas Dr	Temple City 91780	(626) 285-2111
Torrance Unified	2335 Plaza del Amo	Torrance 90501	(310) 533-4200
Valle Lindo Elementary	1431 N Central Ave	South El Monte 91733	(626) 580-0610
Walnut Valley Unified	880 S Lemon Ave	Walnut 91789-2931	(909) 595-1261
West Covina Unified	1717 W Merced Ave	West Covina 91790	(626) 338-8411
Westside Union Elementary	46809 N 70th St West	Lancaster 93535	(661) 948-2669
Whittier City Elementary	7211 S Whittier Ave	Whittier 90602	(562) 698-9531
Whittier Union High	9401 S Painter Ave	Whittier 90605	(562) 698-8121
William S. Hart Union High	21515 Redview Dr	Santa Clarita 91350	(661) 259-0033
Wilsona Elementary	18050 East Ave O	Palmdale 93591	(661) 264-1111
Wiseburn	13530 Aviation Blvd	Hawthorne 90250	(310) 643-3025

New Facilities

The following documents comprise a checklist that is used to determine the type and amount of environmental analysis the District engages in for new school and modernization projects:

- ✓ School Site Selection & Approval Guide
- ✓ SFPD 4.01 – School Site Approval Procedures
- ✓ Plan Review Checklist – Growth Projects
- ✓ Plan Review Checklist – Modernization Projects
- ✓ Title 5, California Code of Regulations, Division 1, Chapter 13, Subchapter 1, School Facilities Construction

Each of these tools is designed to ensure application of state-of-the-art safety standards of construction and operation to all **new construction**. In terms of vulnerability of future buildings, infrastructure, and critical facilities to damage or destruction by catastrophic natural events, and depending upon the nature of the event, the impact to the school district is estimated to be substantially less.


School Districts and Cities within Los Angeles County
Legend
Unified School Districts
Secondary School Districts
Elementary School Districts
City Boundaries
Note on District Boundaries: A geography belongs to either a Unified District, or Elementary and Secondary District.
Miles
0 2 4 8
Data Sources:
School District Boundaries, and City Boundaries:
US Census Bureau Tiger Files, 2000.
School Locations:
Calif. Dept. of Education.
Index Map
Map Prepared by Office of Emergency Services
Information Technology Branch, Geographic Information Systems
Document: d:\data\hazard\mitigation\multi-hazard_by_county\School_dist_LosAngeles_County_Cities_asize.mxd.
May 11, 2004
eldgore
ANTELOPE VALLEY UNION HIGH
ACTON-AGUA DULCE UNIFIED
LA CANADA UNIFIED
AZUSA UNIFIED
LOS ANGELES UNIFIED
GLENDALE UNIFIED
PASADENA UNIFIED
MONROVIA UNIFIED
CLAREMONT UN
BURBANK UNIFIED
DUARTE UNIFIED
GLENDORA UNIFIED
BONITA UNIFIED
ARCADIA UNIFIED
SAN MARINO UNIFIED
LAS VIRGENES UNIFIED
SAN GABRIEL UNIFIED
BALDWIN PARK UNIFIED
CHARTER OAK UNIFIE
BEVERLY HILLS UNIFIED
COVINA VALLEY UNIFIED
POMONA UNIFIE
HACIENDA LA PUENTE UNIFIED
WALNUT VALLEY UN
CULVER CITY UNIFIED
MONTEBELLO UNIFIED
ROWLAND UNIFIED
EL RANCHO UNIFIED
INGLEWOOD UNIFIED
DOWNEY UNIFIED
LYNWOOD UNIFIED
NORWALK-LA MIRAD
COMPTON UNIFIED
BELLFLOWER UNIFIED
ABC UNIFI
FRANCE UNIFIED
BEACH UNIF
PENINSULA UNIFIE
Catalina Island
LONG BEACH UNIFIED
Avalo

Community Colleges

Community College District	Colleges	Address
Antelope Valley	Antelope Valley College	3041 West Avenue K, Lancaster 93536 (661) 722-6300
Cerritos	Cerritos College	11110 Alondra Blvd, Norwalk 90650 (562) 860-2451
Citrus	Citrus College	1000 West Foothill Blvd, Glendora 91741 (626) 963-0323
Compton	Compton College	1111 E Artesia Blvd, Compton 90221 (310) 900-1600
El Segundo	El Camino College	16007 Crenshaw Blvd, Torrance 90506 (877) 322-6466
Glendale	Glendale College	1500 N Verdugo Rd, Glendale 91208 (818) 240-1000
Long Beach	Long Beach City College	4901 E Carson St, Long Beach 90808 (Liberal Arts Campus) (562) 938-4111 1305 E Pacific Coast Hwy, Long Beach 90806; (Pacific Coast Campus)
Los Angeles	East Los Angeles College	1301 Avenida Cesar Chavez, Monterey Park 91754; (323) 265-8650
	Los Angeles City College	855 N Vermont Ave, Los Angeles 90029 (323) 953-4000
	Los Angeles Harbor College	111 Figueroa Place, Wilmington 90744 (310) 522-8200
	Los Angeles Mission College	13356 Eldridge Ave, Sylmar 91342 (818) 364-7600
	Los Angeles Pierce College	6201 Winnetka Ave, Woodland Hills 91371 (818) 347-0551
	Los Angeles Southwest College	1600 Imperial Hwy, Los Angeles 90047 (323) 241-5225
	L.A. Trade Technical College	400 W Washington Blvd, Los Angeles 90015; (213) 744-9058
	Los Angeles Valley College	5800 Fulton Ave, Van Nuys 91401 (818) 947-2600
	West Los Angeles College	4800 Freshman Drive, Culver City 90230 (310) 287-4200
Mt. San Antonio	Mt. San Antonio College	1100 N Grand Ave, Walnut 91789 (909) 594-5611
Pasadena Area	Pasadena City College	1570 E Colorado Blvd, Pasadena 91106 (626) 585-7123
Rio Hondo	Rio Hondo College	3600 Workman Mill Rd, Whittier 90601 (562) 692-0921
Santa Clarita	College of the Canyons	26455 Rockwell Canyon Rd, Santa Clarita 91355 (661) 259-7800
Santa Monica	Santa Monica College	1900 Pico Blvd, Santa Monica 90405 (310) 434-4000

Section 4 – Hazard Vulnerability Analysis

Hazard Definitions

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 students and employee 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 Risk Prioritization for Los Angeles County Office of Education

The scoring system described in the previous section was used to prioritize the identified hazards for Los Angeles County Office of Education. The following list shows highest risk to lowest risk hazards identified by the Hazard Mitigation Steering Committee.

High Risk Priority Hazards

- Earthquake
- Civil Unrest
- Utility Disruption/Loss
- Data Telecommunications
- Biological/Health Emergency
- Flood

Moderate Risk Priority Hazards

- Severe Weather (Destructive Winds)
- Transportation Accident
- Hazardous Materials Emergency
- Economic Disruption
- Water/Waste Water Disruption

Low Risk Priority Hazards

- Explosion
- Special Events
- Dam Failure
- Sinkholes/subsidence

Los Angeles County Disasters Since 1950

Hazard Type	Disaster Name	Disaster #	Year	Counties and Cities Declared	State Declaration	Federal Declaration	# of Deaths	# of Injuries	Cost of Damage
Flood	Floods	OCD 50-01	1950	Statewide	11/21/50	Not declared	9		$32,183,000
Flood	Fire, Flood, and Erosion	DR-28	1954	Los Angeles, San Bernardino	2/5/54	2/5/54			Not Avail
Flood	Floods	DR-47	1955	Statewide	12/22/55	12/23/55	74		$200,000,000
Fire	Fires	DR-65	1956	Los Angeles (Malibu area), Ventura		12/29/56	1	Several hundred	$70,000,000
Fire	Fires	CDO 58-01	1958	Los Angeles	1/3/58	Not declared	1	23	Not available
Flood	Storm & Flood Damage	N/A	1958	Statewide	4/2/58	82	13		$24,000,000
Flood, Landslide	Potential Flood Damage and Landsides as a Result of Fires	CDO 59-01	1959	Los Angeles	1/8/59	Not declared			Not applicable
Fire	Major and Widespread Fires	N/A	1960	Los Angeles, San Bernardino	7/21-22/60	Not declared		12	$10,000,000
Fire	Bel Air Fires	DR-119	1961	Los Angeles		11/16/61		103	Between $50,000,000 - $100,000,000
Flood	Flood and Rainstorm	DR-122	1962	Los Angeles, Ventura	2/16/62 & 2/23/62	3/6/62			Not available
Flood	Baldwin Hills Dam Failure	DR-161	1963	Los Angeles	12/16/63	12/21/63			$5,233,203
Severe Storm, Flood	Abnormally Heavy and Continuous Rainfall	N/A	1963	Northern California (boundaries of San Luis Obispo, Ventura, Los Angeles, and San Bernardino counties to the Oregon State Line	2/14/64	Not declared			Not Available
Fire	Major Widespread Fires (Weldon Fire)	N/A	1964	Los Angeles	3/16/64	Not declared			$2,000,000
Flood	Storms	N/A	1964	Los Angeles	4/3/64	Not declared			1,610,300
Civil Unrest	Riots	N/A	1965	Los Angeles	8/14/65	Not declared	32	874	$44,991,000
Flood, Landslide	Flooding and Hill Slides Caused by Heavy Rains	N/A	1965	City of Burbank, Los Angeles	1/5/65	Not declared			Not Available
Landslide	Slide Damage	N/A	1965	City of Los Angeles	6/21/65	Not declared			$6,488,600
Fire	Major and Widespread Fires	N/A	1967	Los Angeles, Orange, San Diego, Ventura	1/7/67	Not declared			$11,345,000
HazMat	Major Oil Spill	N/A	1969	Coastal Areas of Southern California		Not declared			Not available

Hazard Type	Disaster Name	Disaster #	Year	Counties and Cities Declared	State Declaration	Federal Declaration	# of Deaths	# of Injuries	Cost of Damage
Flood	1969 Storms	Unknown	1969	Los Angeles, San Luis Obispo, Fresno, Inyo, Riverside, San Bernardino, Santa Barbara, Tulare, Ventura, Amador, El Dorado, Kern, Kings, Madera, Modoc, Mono, Monterey, Orange, Placer, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Tuolumne, Mariposa, Merced, Calaveras, San Benito, Sierra, Contra Costa, Humboldt, Mendocino, Sonoma, Plumas, Tehama, Yuba, Butte, Marin, Yolo	1/23/69, 1/25,69, 1/28/69, 1/29/69, 2/8/69, 2/10/69, 2/16/69, 3/12/69	1/26/69	47	161	$300,000,000
Landslide	Slide Damage Caused by Heavy Rains and Storms	N/A	1970	City of Los Angeles	3/10/70	Not declared			$8,500,000
Fire	Statewide Fires		1970	City of Oakland, Los Angeles, Ventura, San Diego, Kern, San Bernardino, Monterey, Riverside	9/24/70, 9/28/70, 10/1/70, 10/2/70, 10/20/70, 11/14/70	9/29/70	19		$223,611,000
Earthquake	San Fernando Earthquake	DR-299	1971	Los Angeles	2/9/71	2/9/71	58	2,000	$483,957,000
Agricultural	Exotic Newcastle Disease Epidemic	N/A	1972	Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura, Santa Barbara	4/10/72, 5/22/72	Not declared			$10,000,000
Fire	Fires	N/A	1973	Los Angeles	7/16/73	Not declared			$1,300,000
Economic	Gasoline Purchasing Problems	N/A	1974	Alameda, Contra Costa, Los Angeles, Orange, Riverside, San Mateo, Solano, Santa Clara, Ventura	2/28/74, 3/4/74, 3/10/74	Not declared			
Fire	Fires	N/A	1975	Los Angeles	11/24/75	Not declared			$19,486,960
Drought	Drought	N/A	1976	Alpine, Calaveras, Colusa, Fresno, Glenn, Madera, Merced, San Diego, San Joaquin, Solano, Stanislaus, Sutter, Tuolumne, Alameda, Butte, Contra Costa, Kings, Los Angeles, Riverside, San Luis Obispo, Tulare, Yolo, Amador, Monterey, Napa, Nevada, San Benito, San Bernardino, Tehama, San Mateo, Marin	2/9/76, 2/13,76, 2/24/76, 3/26/76, 7/6/76	Not declared			$2,664,000,000
Fire	1978 Los Angeles Fire	EM-3067	1978	Los Angeles	10/24/78	10/29/78	1		$61,279,374

Hazard Type	Disaster Name	Disaster #	Year	Counties and Cities Declared	State Declaration	Federal Declaration	# of Deaths	# of Injuries	Cost of Damage
Severe Storm	Storms	Unknown	1978	Inyo, Mono, San Diego, San Luis Obispo, Kings, Monterey, Kern, Los Angeles, Orange, Riverside, San Bernardino, Santa Barbara, Tulare, Ventura	3/9/78, 2/27,78, 2/13/78	2/15/78	14	21	$117,802,785
Economic	Gasoline Shortage Emergency	N/A	1979	Alameda, Contra Costa, Los Angeles, Marin, Monterey, Orange, Riverside, San Francisco, San Diego, Santa Clara, Santa Cruz, San Mateo, Ventura, San Bernardino, Sonoma, Contra Costa, Los Angeles, Orange, Santa Clara	5/8/79 - 11/13/79	Not declared			
Fire	Fires	N/A	1979	Santa Barbara, Ventura, Los Angeles, El Dorado	9/28/79, 9/21/79, 9/20/79	Not declared			$9,970,119
Flood	1980 Winter Storms	DR-615	1980	Santa Barbara, Los Angeles, Orange, Riverside, Ventura, San Bernardino, San Diego	2/21/80, 2/7/80	2/21/80			
Fire	Southern California Fires	DR-635	1980	San Bernardino, Los Angeles, Orange, Riverside	11/18/80	11/18/80			$64,795,200
Economic	Mediterranean Fruit Fly Infestation	N/A	1981	Contra Costa, Los Angeles, San Benito, Stanislaus, Santa Cruz, San Mateo	8/8/81 - 9/25/81	Not declared			$22,000,000
Flood, Severe Storm	1982-83 Winter Storms	DR-677	1982	Contra Costa, San Joaquin, Sacramento, Marin, San Mateo, Los Angeles, San Diego, Alameda, Orange, San Benito, Santa Barbara, Santa Clara, Santa Cruz, Shasta, Sonoma, Ventura, Trinity, Colusa, Lake, Mendocino, Monterey, San Luis Obispo, Solano, Yolo, Butte, Glenn, Kern, Kings, San Bernardino, Sutter, Tehama, Merced, Del Norte, Fresno, Madera, Napa, Placer, Riverside, Stanislaus, Tulare, Humboldt, Mariposa, Nevada, Yuba	1982, 1983	2/9/83	0	0	$523,617,032
Fire	Dayton Hills Fire	N/A	1982	Los Angeles, Orange, Ventura	10/10/82	Not declared	0		$19,277,102

Hazard Type	Disaster Name	Disaster #	Year	Counties and Cities Declared	State Declaration	Federal Declaration	# of Deaths	# of Injuries	Cost of Damage
Flood	Winter Storms	Unknown	1982	Contra Costa, San Joaquin, Sacramento, Marin, San Mateo, Los Angeles, San Diego, Alameda, orange, San Benito, Santa Barbara, Santa Clara, Santa Cruz, Shasta, Sonoma, Ventura, Trinity, Colusa, Lake Mendocino, Monterey, San Luis Obispo, Solano, Yolo, Butte, Glenn, Kern, Kings, San Bernardino, Sutter, Tehama, Merced, Del Norte, Fresno, Madera, Napa, Placer, Riverside, Stanislaus, Tulare, Humboldt, Mariposa, Nevada, Yuba	12/8/82-3/21/83	2/9/83			$523,617,032
Economic	Mexican Fruit Fly	N/A	1983	Los Angeles	11/4/83	Not declared			
Fire	Statewide Fires	DR-739	1985	San Diego, City of Los Angeles, San Luis Obispo, Monterey, Santa Clara, Santa Cruz, Ventura	7/1/85 - 7/11/85	4/25/84	3	470	$64,845,864
Earthquake	Whittier Earthquake	DR-799	1987	Monterey park, City of Whittier, Los Angeles, Orange	10/2/87 - 10/5/87	10/7/87	9	200	$358,052,144
Economic	Mediterranean Fruit Fly	N/A	1987	Los Angeles	8/25/87	Not declared			
Severe Storm	Coastal Storms	DR-812	1988	Los Angeles, Orange, San Diego	1/21/88	2/5/88	0		
Economic	Mediterranean Fruit Fly	N/A	1988	Los Angeles	7/21/88	Not declared			
Fire, Windstorm	Fires/ High Winds	N/A	1988	Los Angeles	12/9/88	Not declared	0	2	$12,400,000
Economic	Mediterranean Fruit Fly	N/A	1989	Los Angeles	8/9/89	Not declared			
Fire	Santa Barbara Fires	DR-872	1990	Los Angeles, Santa Barbara, Riverside, San Bernardino	6/28/90, 6/29/90	6/30/90	3	89	$300,000,000
Freeze	Freeze	DR-894	1990	Santa Cruz, Fresno, Glenn, imperial, Kern, Mendocino, Monterey, Riverside, San Benito, San Bernardino, San Diego, San Mateo, Santa Barbara, Santa Clara, Solano, Sonoma, Tulare, Ventura, Alameda, Butte, Colusa, Los Angeles, Madera, Marin, Merced, Napa, San Joaquin, San Luis Obispo, Sutter, Yolo, Yuba, Stanislaus, Tehama	12/19/90-1/18/91	2/11/91			$856,329,675
Earthquake	Upland Earthquake	N/A	1990	Los Angeles, San Bernardino	3/9/90, 3/13/90	Not declared	0	38	$12,034,150
Economic	Mexican Fruit Fly	N/A	1990	Los Angeles, San Diego	5/14/90	Not declared			

Hazard Type	Disaster Name	Disaster #	Year	Counties and Cities Declared	State Declaration	Federal Declaration	# of Deaths	# of Injuries	Cost of Damage
Severe Storm	1992 Winter Storms	DR-935	1992	Los Angeles, Ventura, City of Los Angeles, kern, orange, San Bernardino	2/12/92, 2/19/92	2/25/92	5		$123,240,531
Civil Unrest	Los Angeles Civil Disorder	DR-942	1992	Los Angeles	4/29/92	5/22/92	53	2,383	$800,000,000
Flood	1992 Late Winter Storms	DR-979	1992	Alpine, Los Angeles, Humboldt, Napa, Santa Barbara, Culver City, City of Los Angeles, Contra Costa, Mendocino, Sonoma, Fresno, imperial, Madera, Monterey, San Bernardino, Sierra, Tehama, Trinity, Tulare, Modoc, Orange, Riverside, Lassen, Siskiyou, Plumas, San Diego	1/7/93 - 2/19/93	1/15/93	20	10	$600,000,000
Fire	Southern California Firestorms	DR-1005	1993	Los Angeles, Ventura, San Diego, Orange, Riverside, San Bernardino	10/27/93, 10/28/93	10/28/93	4	162	$1,000,000,000
Earthquake	Northridge Earthquake	DR-1008	1994	Los Angeles, Ventura, Orange	1/17/94, 1/24/94	1/17/94	57	11,846	$20,000,000,000
Severe Storm	Severe Winter Storms	DR-1044	1995	Los Angeles, Orange, Humboldt, Lake , Sonoma, Butte, Colusa, Contra Costa, Del Norte, Glenn, Kern, Lassen, Mendocino, Modoc, Monterey, Napa, placer, Plumas, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, Tehama, Ventura, Yolo, Yuba, Alpine, Amador, Nevada, Riverside, Sacramento, San Bernardino, San Mateo, Shasta, Sutter, Trinity, San Diego, Alameda, Marin, Fresno, Kings, El Dorado, Madera, Solano, Siskiyou	1/6/95 - 3/14/95	1/13/95	11		$741,400,000
Storm, Flood	Late Winter Storms	DR-1046	1995	All counties except Del Norte		1/10/95	17		$1,100,000,000
Fire	Southern California Firestorms	EM-3120	1996	Los Angeles, Orange, San Diego	10/1/96			5	$40,000,000
Flood	El Nino		1998	Alameda, Amador, Butte, Calaveras, Colusa, Contra Costa, Fresno, Glenn Humboldt, Kern, Kings, Lake, Los Angeles, Marin, Mendocino, Merced, Monterey, Napa, Orange, Riverside, Sacramento, San Benito, San Bernardino, San Diego, San Francisco, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, Siskiyou, Solano, Sonoma, Stanislaus, Sutter, Tehama, Trinity, Tulare, Ventura, Yolo, Yuba			17		$550,000,000

Hazard Type	Disaster Name	Disaster #	Year	Counties and Cities Declared	State Declaration	Federal Declaration	# of Deaths	# of Injuries	Cost of Damage
Fire	Fire		1999	Various Counties	8/26/99				
Fire	California Wildfires	DR-1498	2003	Ventura, Los Angeles, San Bernardino, Riverside, San Diego		DR1498			
Earthquake	Sierra Madre Earthquake	N/A	2003	Los Angeles	7/5/03	Not declared	1	30	$33,500,000
Fire	Southern California Wildfires	DR-1498	2003	Ventura, Los Angeles, San Bernardino, Riverside, San Diego	10/24-26/03	10/27/03			

High Risk Priority Hazards

Earthquake

Earthquake was rated a HIGH PRIORITY HAZARD by Los Angeles County Office of Education.

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 12	Montebello	9:57am	4.6	---	No deaths; No appreciable damage
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.

Los Angeles County Office of Education administrative facilities are especially susceptible to non-structural damage because of the nature of the layout of the facilities. The LACOE Education Center facilities on Imperial Highway and Clark Avenue are very large converted aircraft assembly and shop buildings formerly owned a large aircraft manufacturing company. These buildings have been converted into modular office spaces with cubicle panels, large lateral file and horizontal file cabinets, book shelves and office machines. Because many of these items are not seismically secured, a large earthquake would cause these heavy, unsecured pieces to move about and fall over. Some of the larger cabinets are heavy enough to be a serious threat to people by falling or emptying their contents on them.

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 require 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.

LACOE is responsible for the safe transportation of severely handicapped and disabled students to and from educational facilities throughout Los Angeles County. In the event that transportation or lifelines are cut off because of a large earthquake, these students may be jeopardized by being deprived of medications or special treatments they need to survive.

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. This could also be the case for LACOE educational facilities.

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.

LACOE maintains an administrative emergency operations center in the Education Center. It is located in the center of the large building and houses computer system and communications/telephone equipment designed to keep the staff in touch with the LA County EOC and other school districts. The equipment requiring power is hooked up to a secondary emergency power feed supported by a diesel generator located outside the building.

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 the 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 Tarzzana, 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-velocity 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.

Updated Fault Parameters

FAULT NAME AND GEOMETRY (ss) strike slip, (r) reverse, (n) normal (rl) rt. lateral, (ll) left lateral, (o) oblique	Fault Length (km)	+/-	Slip Rate (mm/yr)	+/-	Rank (1)	Mmax (2)	Down Dip Width (km) (3)	+/-	Ruptop (4)	Rupbot (5)	Dip	Endpt N (W)	Endpt. S (E)	COMMENTS
Note: Entry highlighted in yellow indicates modifications to 1996 fault parameters. Entry highlighted in grey with red text indicates 1996 source that has been deleted in the 2002 fault parameters.														
A FAULTS														
SAN ANDREAS FAULT ZONE														
San Andreas (Coachella) (rl-ss)	96	10	25.0	5.0	P	7.2	12	2	0	12	90	-116.47; 33.92	-115.71; 33.35	Slip rate based on Sieh and Williams (1990); Sieh (1986); Keller et al. (1982); Bronkowski (1981).
San Andreas (San Bernardino) (rl-ss)	103	10	24.0	6.0	M	7.5	18	2	0	18	90	-117.50; 34.29	-116.48; 33.92	Minor modifications to digitial fault trace and minor length modification.
San Andreas (Mojave) (rl-ss)	103	10	30.0	7.0	P	7.4	12	2	0	12	90	-118.51; 34.70	-117.50 34.29	Minor modifications to digitial fault trace. 1996 slip rate based on Sieh (1984), Salyards et al. (1992), and WGCEP (1995).
San Andreas (Carrizo) (rl-ss)	146	15	34.0	3.0	W	7.4	12	2	0	12	90	-119.87; 35.31	-118.51; 34.70	Minor modifications to digitial fault trace and minor length modification. 1996 slip rate based on Sieh and Jahns (1984).
San Andreas (Cholame) (rl-ss)	63	6	34.0	5.0	P	7.3	12	2	0	12	90	-120.30; 35.75	-119.87; 35.31	Minor modifications to digitial fault trace and minor length modification. 1996 slip rate based on analogy with Carrizo segment.
San Andreas (Parkfield) (rl-ss)	36	4	34.0	5.0	P	6.5	12	2	0	12	90	-120.56; 36.00	-120.30; 35.75	Minor modifications to digitial fault trace.
San Andreas (creeping segment) (rl-ss)	122	12	34.0	5.0	P	6.2	12	2	0	12	90	-121.48; 36.81	-120.56; 36.00	Maximum magnitude based on historic rate of earthquakes.
San Andreas (Santa Cruz Mtn) (rl-ss)	62	8	17.0	4.0	P	7.0	15	2	0	15	90	-122.00; 37.18	-121.48; 36.81	WG99/WG02 source parameters used. Go to the U.S. Geological Survey website for more information on WG99 and WG02.
San Andreas (Peninsula) (rl-ss)	85	13	17.0	4.0	M	7.1	13	2	0	13	90	-122.57; 37.79	-122.00; 37.18	WG99/WG02 source parameters used. Go to the U.S. Geological Survey website for more information on WG99 and WG02.
San Andreas (North Coast North) (rl-ss)	136	14	24.0	3.0	P	7.3	11	2	0	11	90	-124.41; 40.25	-123.79; 39.10	WG99/WG02 source parameters used. Go to the U.S. Geological Survey website for more information on WG99 and WG02.
San Andreas (North Coast South) (rl-ss)	190	19	24.0	3.0	M	7.4	12	2	0	12	90	-123.79; 39.10	-122.57; 37.79	WG99/WG02 source parameters used. Go to the U.S. Geological Survey website for more information on WG99 and WG02.
SAN JACINTO - IMPERIAL FAULT ZONE														
Imperial (rl-ss)	62	6	20.0	5.0	M	7.0	12	2	0	12	90	-115.57; 32.91	-115.17; 32.47	Slip rate based on study by Thomas and Rockwell (1996).
Superstition Hills (rl-ss)	23	2	4.0	2.0	P	6.6	12	2	0	12	90	-115.84; 33.01	-115.64; 32.89	Slip rate and fault length reported by WGCEP (1995).
Superstition Mountain (rl-ss)	24	2	5.0	3.0	M	6.6	12	2	0	12	90	-115.92; 32.99	-115.70; 32.89	Slip rate based on Gurrola and Rockwell (1996).

FAULT NAME AND GEOMETRY (ss) strike slip, (r) reverse, (n) normal (rl) rt. lateral, (ll) left lateral, (o) oblique	Fault Length (km)	+/-	Slip Rate (mm/yr)	+/-	Rank (1)	Mmax (2)	Down Dip Width (km) (3)	+/-	Ruptop (4)	Rupbot (5)	Dip	Endpt N (W)	Endpt. S (E)	COMMENTS
San Jacinto (Borrego) (rl-ss)	29	3	4.0	2.0	M	6.6	12	2	0	12	90	-116.19; 33.20	-115.98; 33.01	Slip rate and fault length reported by WGCEP (1995).
San Jacinto (Coyote Creek) (rl-ss)	41	4	4.0	2.0	M	6.8	15	2	0	15	90	-116.51; 33.46	-116.19; 33.20	Slip rate and fault length reported by WGCEP (1995).
San Jacinto (Anza) (rl-ss)	91	9	12.0	6.0	M	7.2	18	2	0	18	90	-116.92; 33.74	-116.12; 33.26	Slip rate and fault length reported by WGCEP (1995).
San Jacinto (San Jacinto Valley) (rl-ss)	43	4	12.0	6.0	P	6.9	18	2	0	18	90	-117.24; 34.02	-116.92; 33.74	Slip rate and fault length reported by WGCEP (1995).
San Jacinto (San Bernardino) (rl-ss)	36	4	12.0	6.0	P	6.7	15	2	0	15	90	-117.51; 34.25	-117.24; 34.02	Slip rate and fault length reported by WGCEP (1995).
ELSINORE FAULT ZONE														
Laguna Salada (rl-ss)	67	7	3.5	1.5	M	7.0	15	2	0	15	90	-115.88; 32.73	-115.40; 32.29	Slip rate reported by Mueller and Rockwell (1995).
Elsinore (Coyote Mountain) (rl-ss)	39	4	4.0	2.0	M	6.8	15	2	0	15	90	-116.36; 32.97	-116.01; 32.78	Slip rate and fault length reported by WGCEP (1995).
Elsinore (Julian) (rl-ss)	76	8	5.0	2.0	P	7.1	15	2	0	15	90	-117.01; 33.38	-116.36; 32.97	Slip rate and fault length reported by WGCEP (1995).
Elsinore (Temecula) (rl-ss)	43	4	5.0	2.0	M	6.8	15	2	0	15	90	-117.35; 33.64	-117.01; 33.38	Slip rate and fault length reported by WGCEP (1995).
Elsinore (Glen Ivy) (rl-ss)	36	4	5.0	2.0	M	6.8	15	2	0	15	90	-117.64; 33.85	-117.35; 33.64	Reported slip rates vary from 3.0-7.2 (Millman and Rockwell, 1986).
Whittier (rl-r-o) (75 NE)	38	4	2.5	1.0	M	6.8	15	2	0	15	-75	-118.02; 33.99	-117.64; 33.85	Fault dip changed from 90° to 75° NE, based on Ziony and Yerkes (1985). 1996 slip rate based on Rockwell et al. (1990); Gath et al. (1992) description of offset drainage.

(1) Slip-rate rank: W - well-constrained; M - moderately constrained; P - poorly constrained; U - unconstrained.

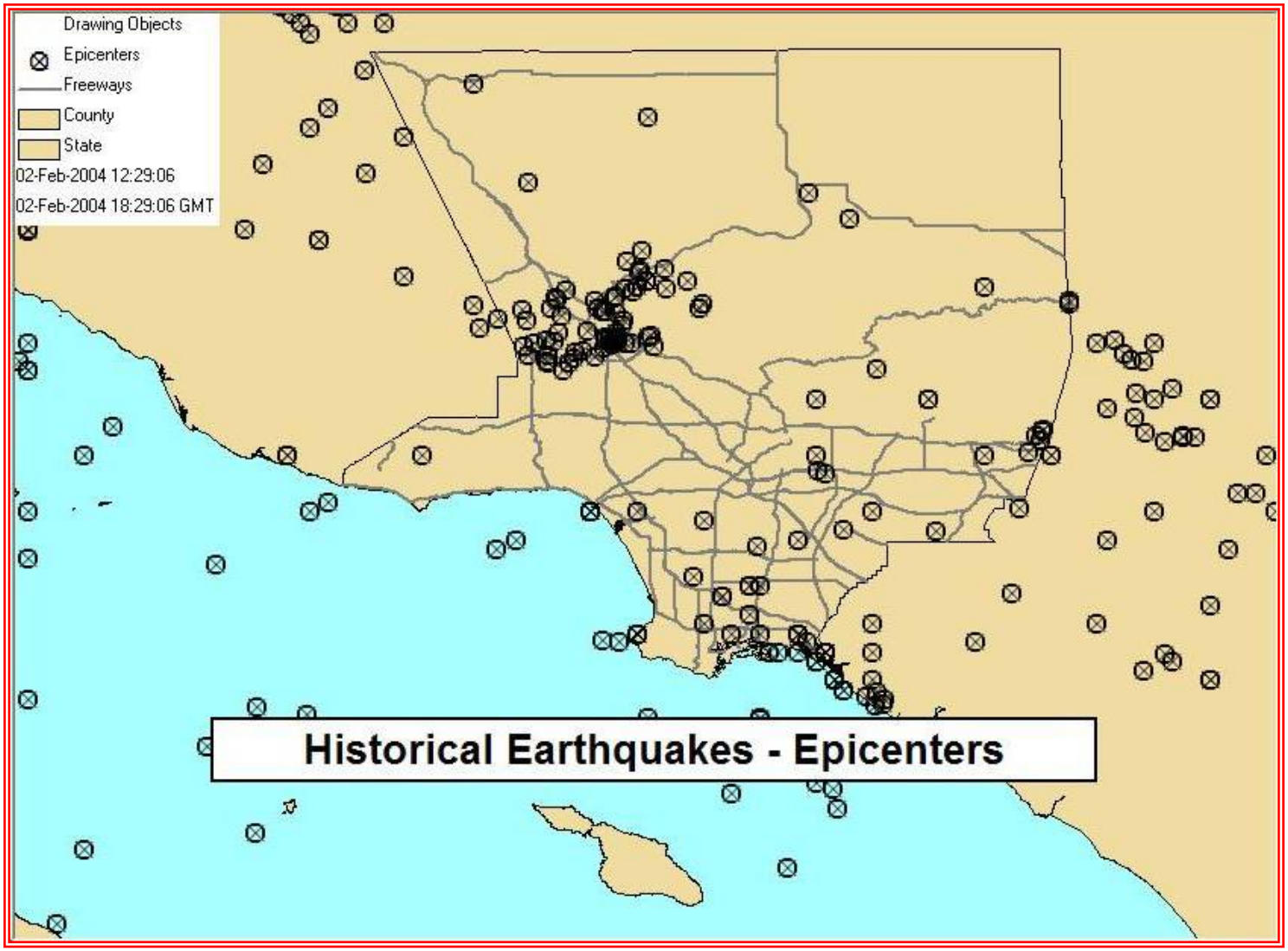
(2) Maximum moment magnitude - representative value for B faults. See discussion on magnitude calculation.

(3) Down-dip width = (rupture bottom minus rupture top) divided by sine of dip angle.

(4) Top of rupture plane.

(5) Bottom of rupture plane.

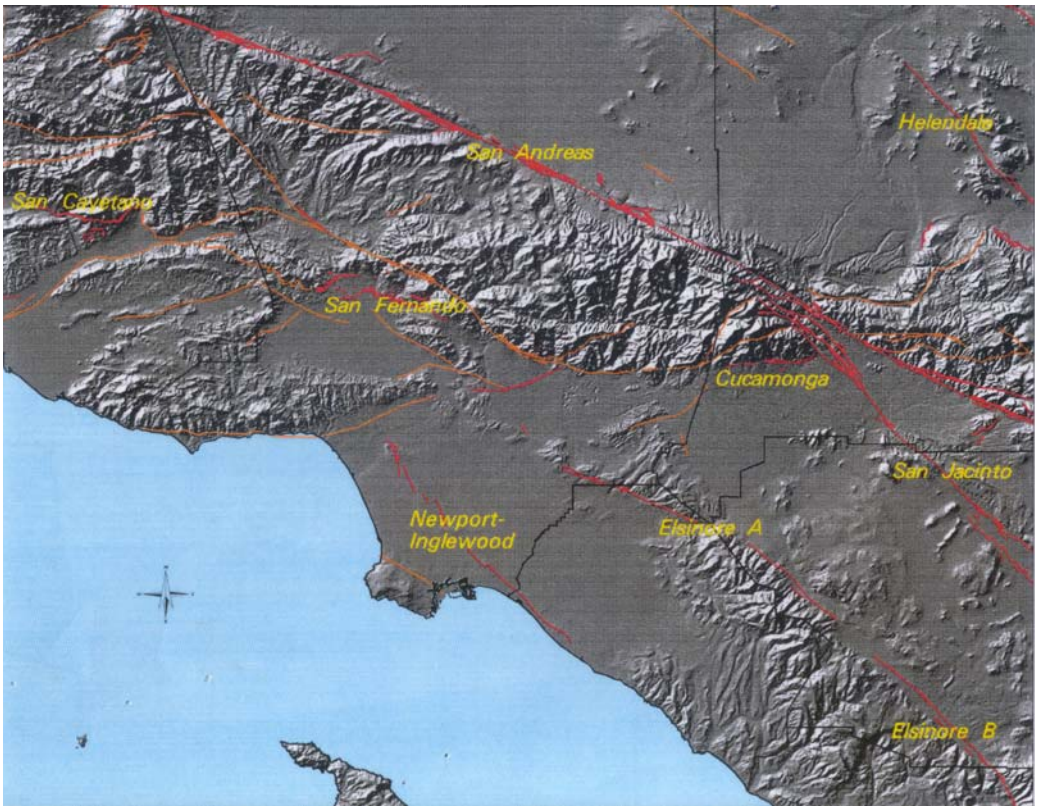
Historic Earthquake Epicenters (Los Angeles County GIS Data)



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.

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.



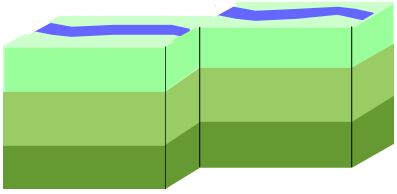
Although the most famous of the faults, the San Andreas, is capable of producing an earthquake with a magnitude of 8+ on the Richter scale, some of the "lesser" faults have the potential to inflict greater damage on the urban core of the Los Angeles Basin. Seismologists believe that a 6.0 earthquake 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 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.

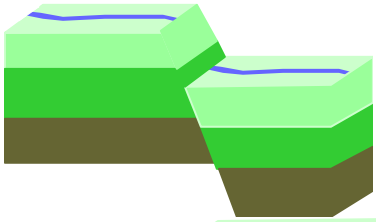
Causes and Characteristics of Earthquakes in Southern California

Fault



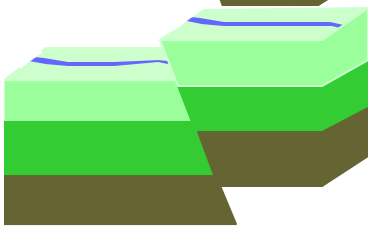
A fault is a fracture along between blocks of the earth's crust where either side moves relative to the other along a parallel plane to the fracture.

Strike-slip



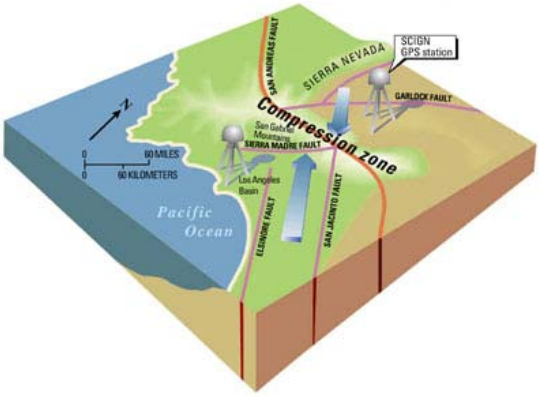
Strike-slip faults are vertical or almost vertical rifts where the earth's plates move mostly horizontally. From the observers perspective, if the opposite block looking across the fault moves to the right, the slip style is called a right lateral fault ; if the block moves left, the shift is called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

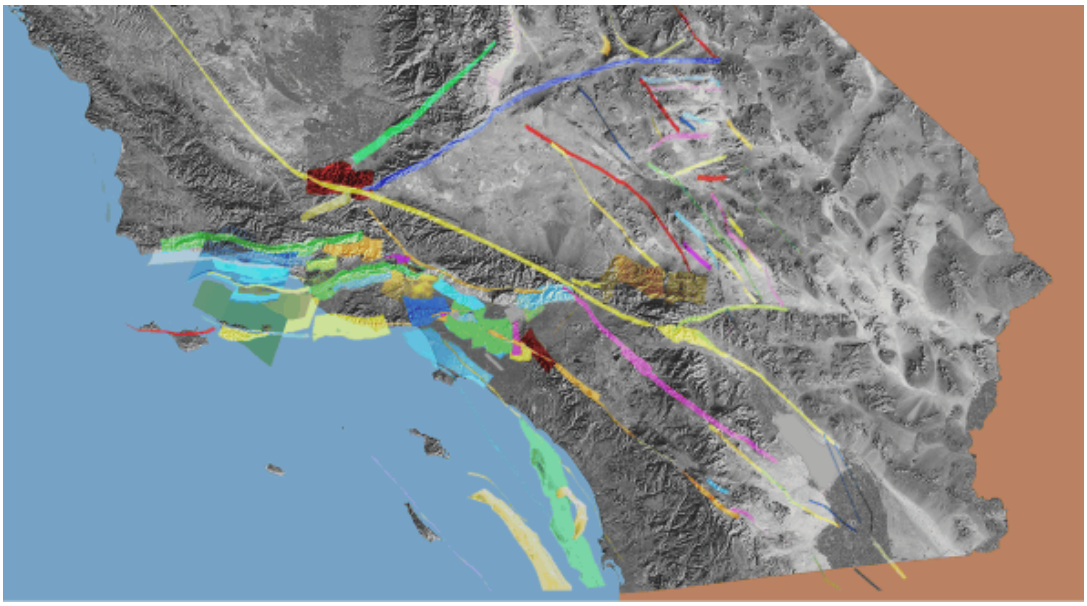
However, this is not the whole picture. Unlike central and Northern California, much of this plate movement in Southern California is not parallel to the San Andreas fault. Between the southern end of the San Joaquin Valley and the San Bernardino mountains, in the so-called "big bend," the San Andreas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

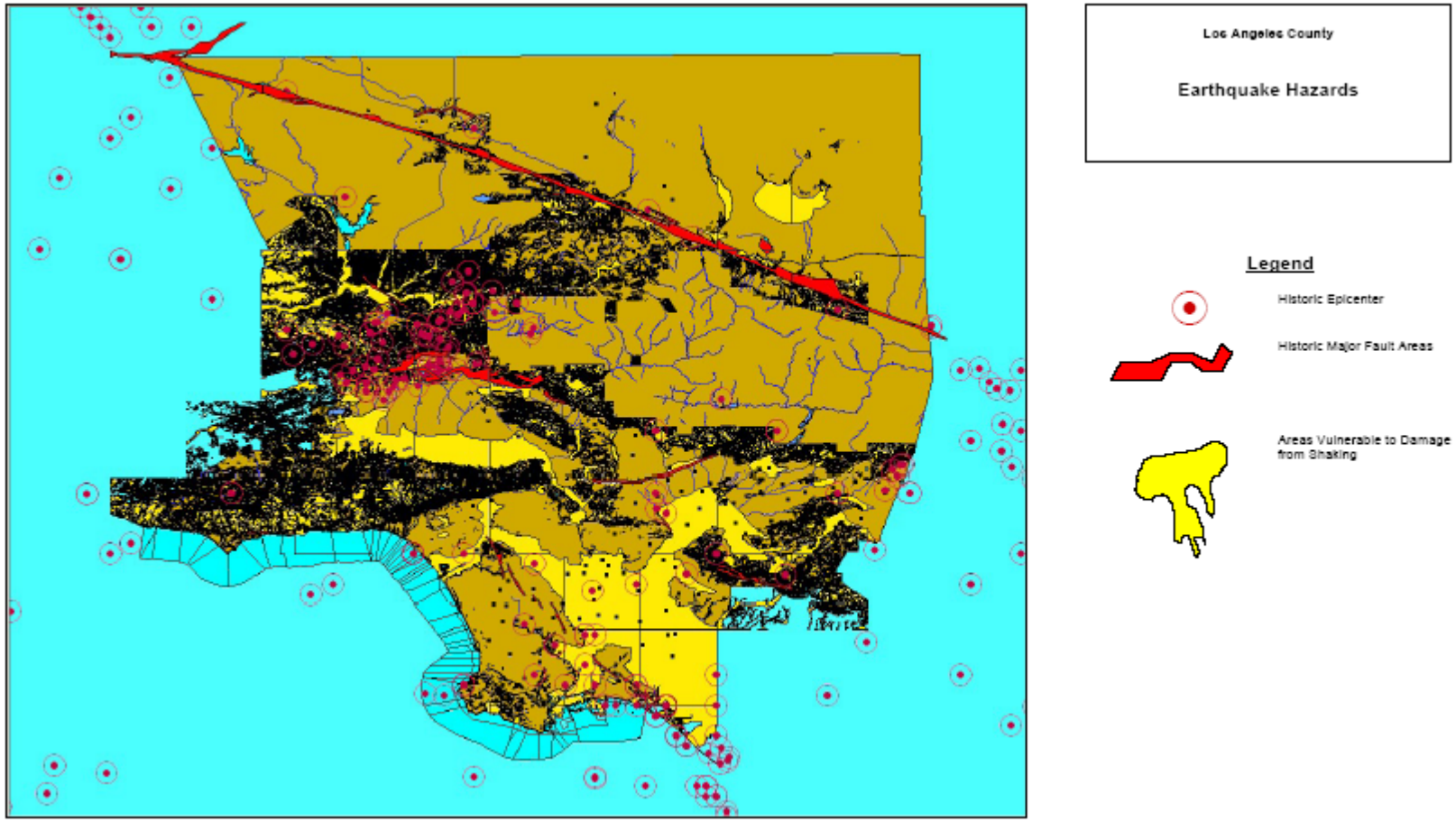
Vulnerability

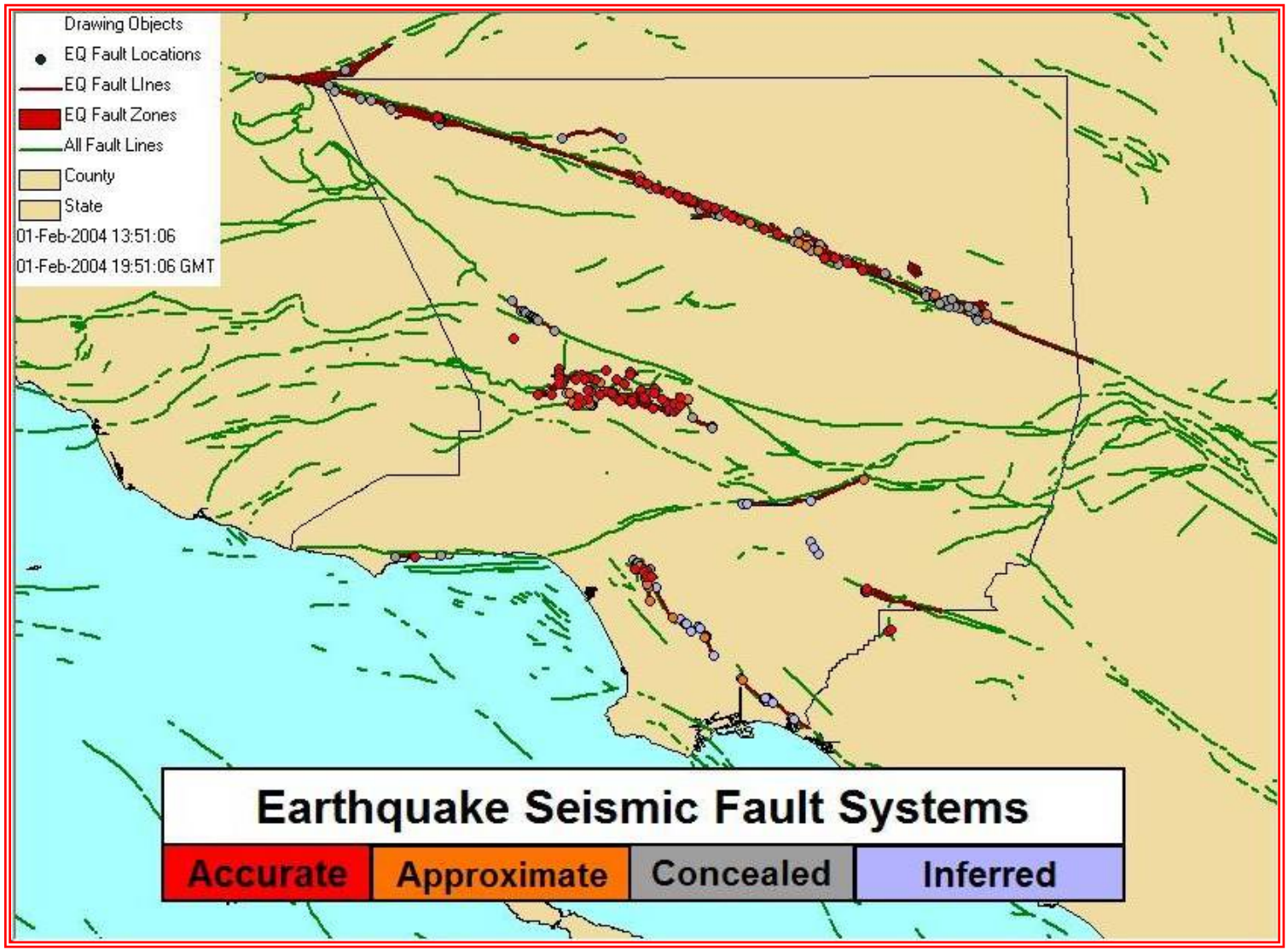
Los Angeles County Office of Education's facilities are dotted all around Los Angeles County as depicted in the maps, and are shown to be in danger areas where, in the event of a catastrophic earthquake, would be destroyed or severely damaged. The majority of facilities lie within the jurisdictional boundaries of the County of Los Angeles, which is highly vulnerable to damage and destruction (see County of Los Angeles Hazard Mitigation Plan).

Impact

According to the Los Angeles County HAZUS Study for earthquakes, a catastrophic earthquake anywhere in the area would potentially damage or destroy approximately 19% of its assets. Structures owned by the Los Angeles County Office of Education are estimated to be vulnerable to the same impact.

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
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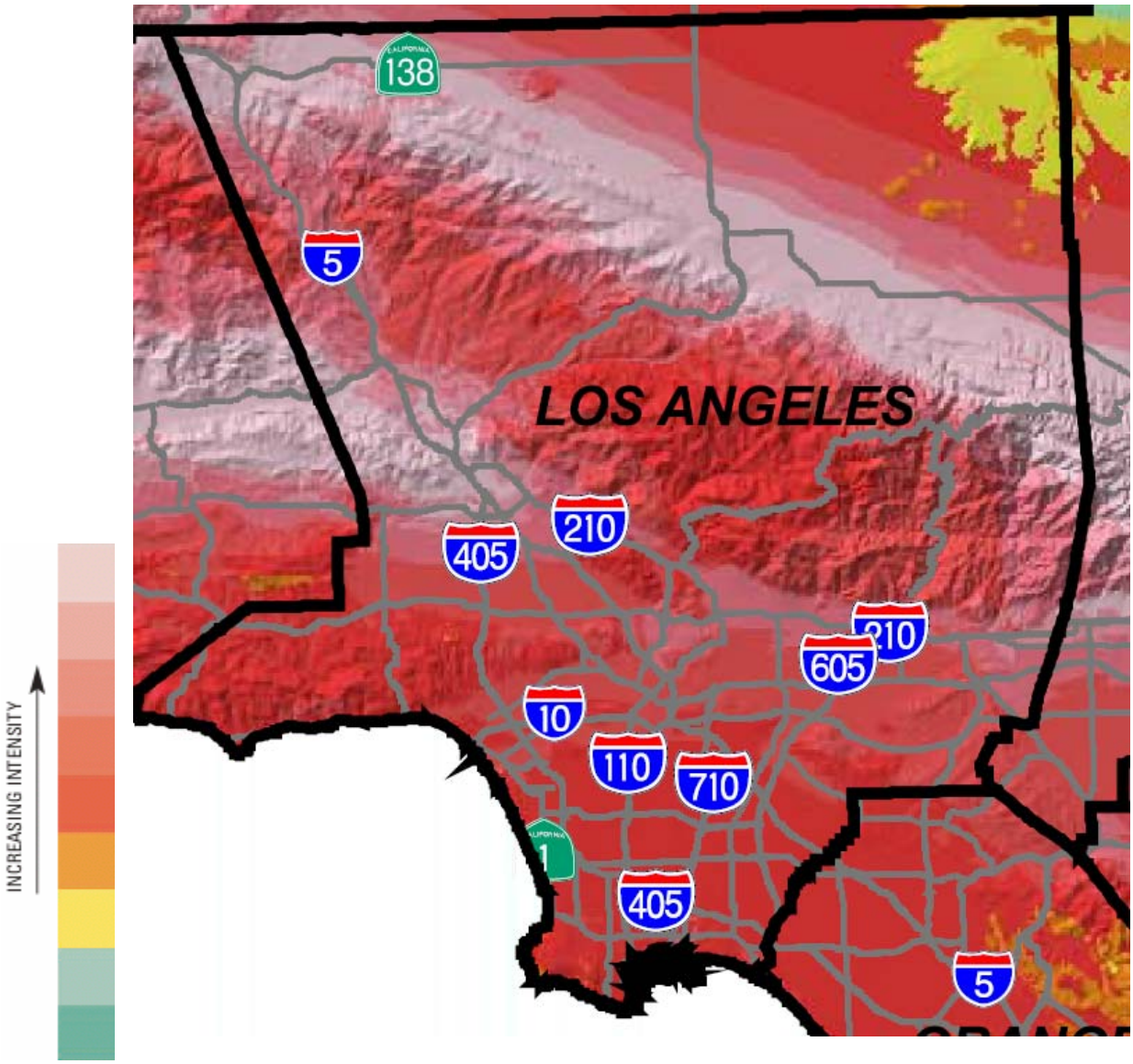
Earthquake Seismic Fault Systems
Accurate
Approximate
Concealed
Inferred

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.

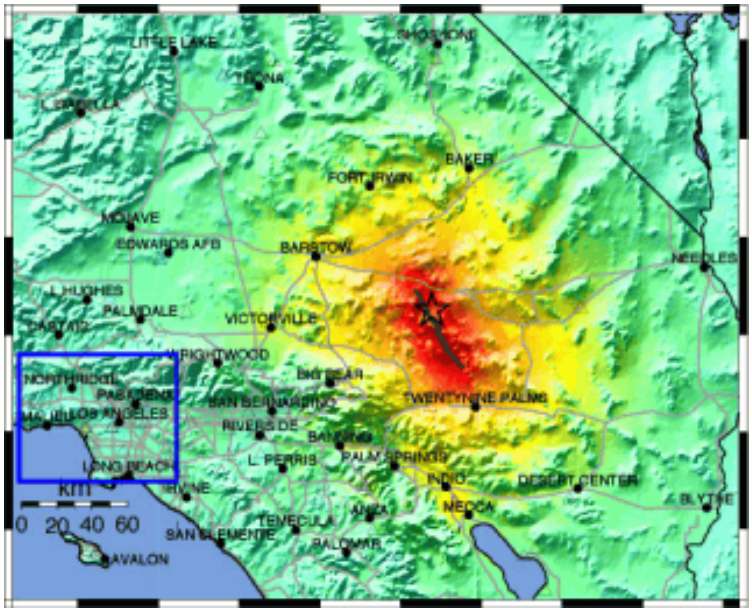
Unfortunately, scientists do not yet have the information needed to predict which earthquakes will happen first, so we must be ready for the shaking in our area from any possible earthquake. To help, scientists have summed up the probable shaking from all our known faults to create this map. It shows 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 areas, no region within the state is immune from the potential for earthquake damage.

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 and the magnitude 4.2 Beverly Hills earthquake. The blue square on the map on the right shows the location of the map below.

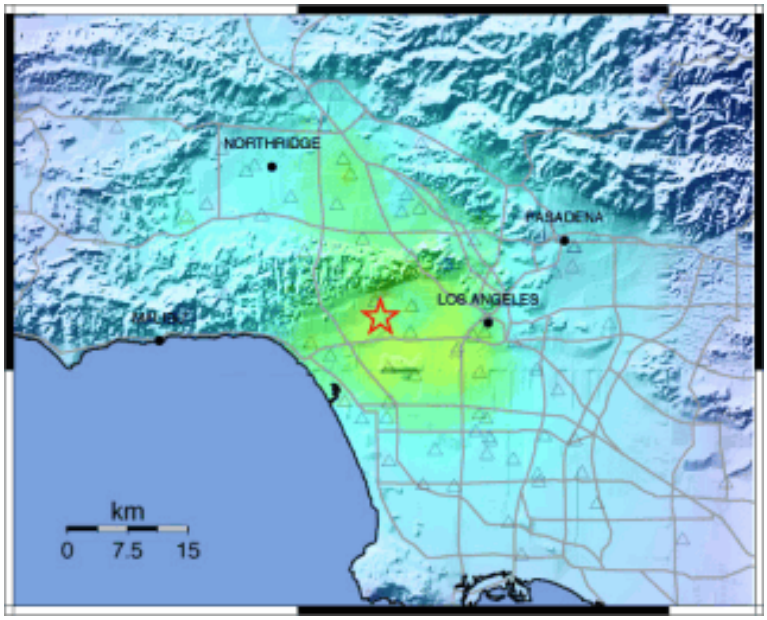
Magnitude 7.1 Hector Mine Earthquake

Saturday, October 16, 1999 03:04:53 a.m. PDT



Magnitude 4.2 Beverly Hills Earthquake

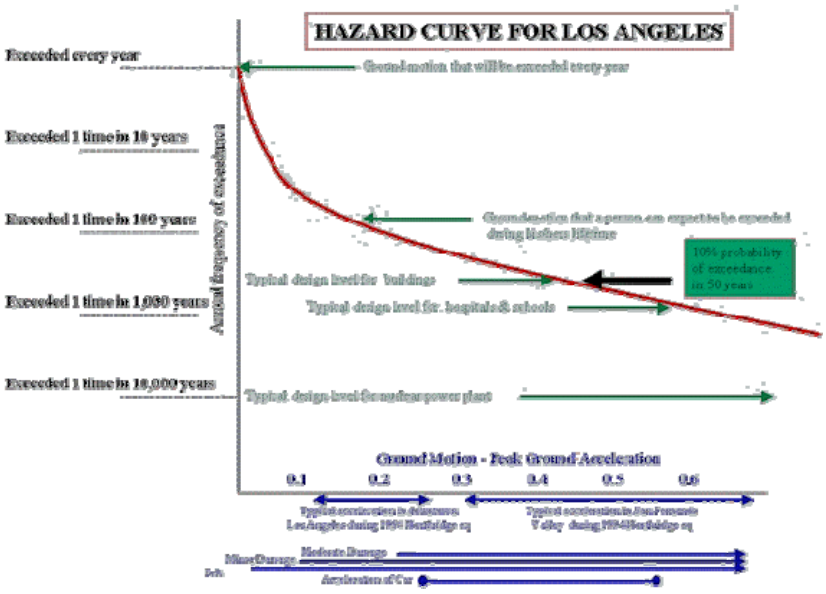
Sunday, September 9, 2001 04:59:18 p.m. PDT



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.

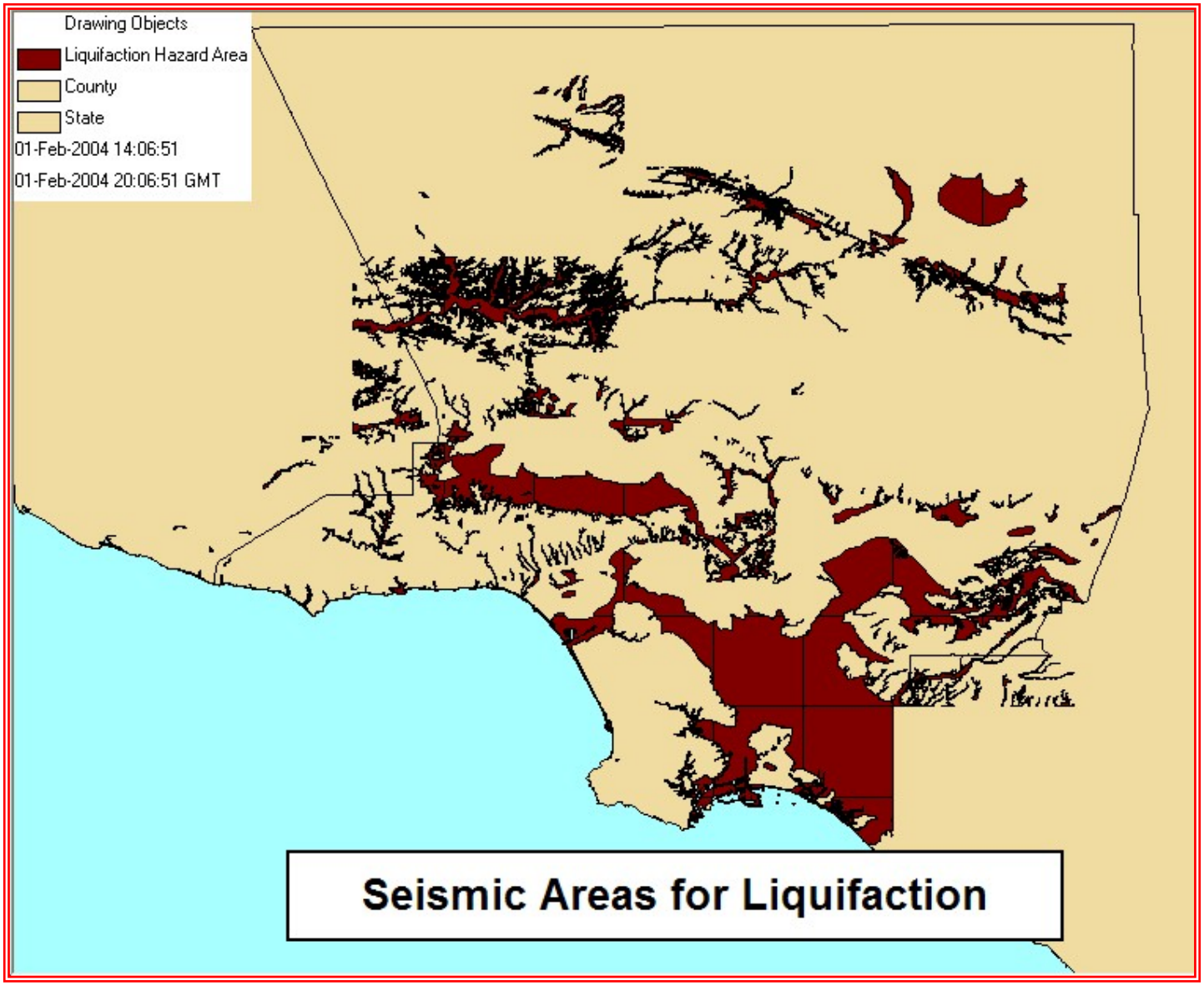


Earthquake Induced Landslides

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

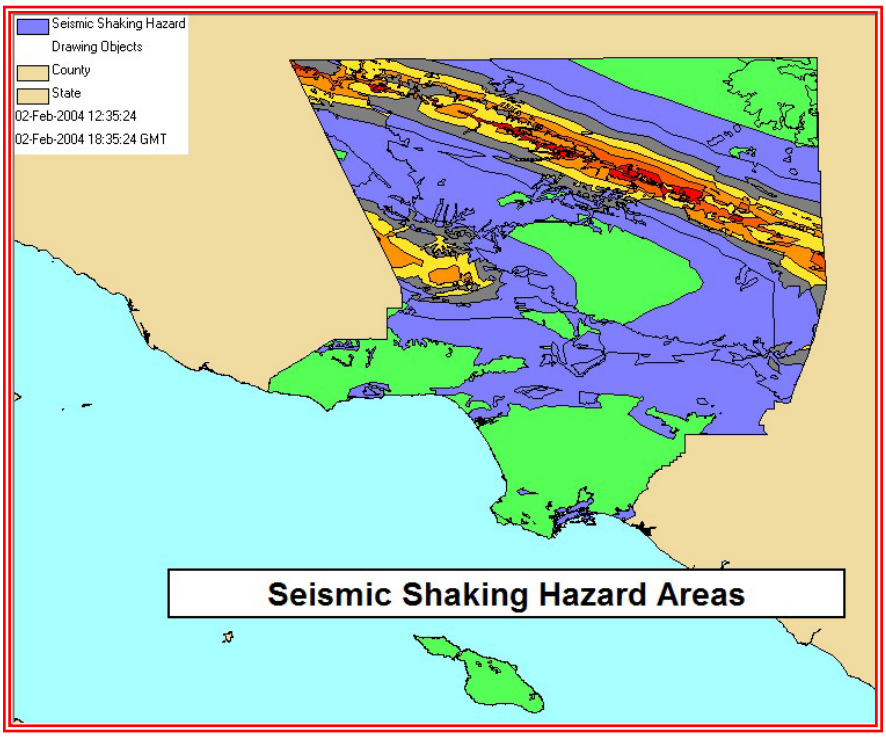
Soils and soft sedimentary rocks near the earth's surface can modify ground shaking caused by earthquakes. One of these modifications is amplification. Amplification increases the magnitude of the seismic waves generated by the earthquake. The amount of amplification is influenced by the thickness of geologic materials and their physical properties. Buildings and structures built on soft and unconsolidated soils can face greater risk. 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.



HAZUS Earthquake Scenario for Los Angeles County

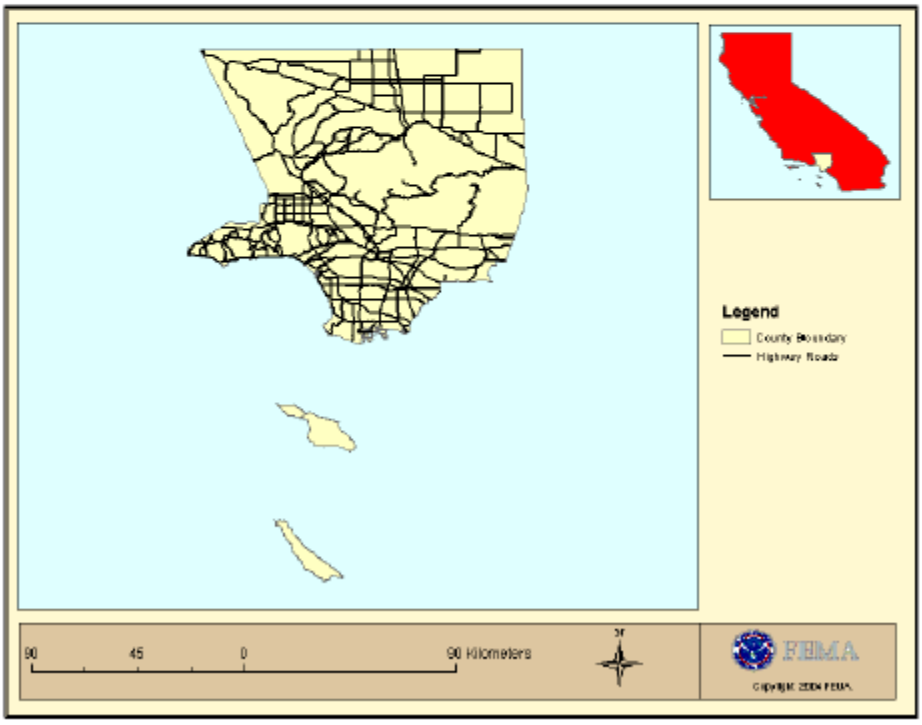
Introduction

HAZUS is a GIS-based regional loss estimation model developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of HAZUS is to provide loss estimates for earthquake, hurricane and flood hazards. These loss estimates may be used by local, state and regional officials to plan and stimulate efforts to mitigate risks from natural hazards and to prepare for emergency response and recovery.

The information provided in this report can be used to support mitigation planning through the assessment of risk and is associated with the earthquake hazard for the region. Similar reports are available for the hurricane and flood hazards. The first section provides earthquake hazard information. The next section provides information on assets associated with building, lifeline infrastructure, and critical facilities. The final section provides loss estimates associated with the earthquake hazard. The six appendices to the report provided additional information on the county's critical facilities.

Los Angeles County, California covers an area of over 4,087 square kilometers and contains 2,054 census tracts (see Figure 1). The population of the county is over 9,519 thousand people (2000 Census data). There are an estimated 2,161 thousand buildings in the region with a building replacement value (excluding contents) of $522,562M. Approximately 98% of the buildings (and 0% of the building value) are associated with residential housing.

Figure 1: County Map - Los Angeles, California

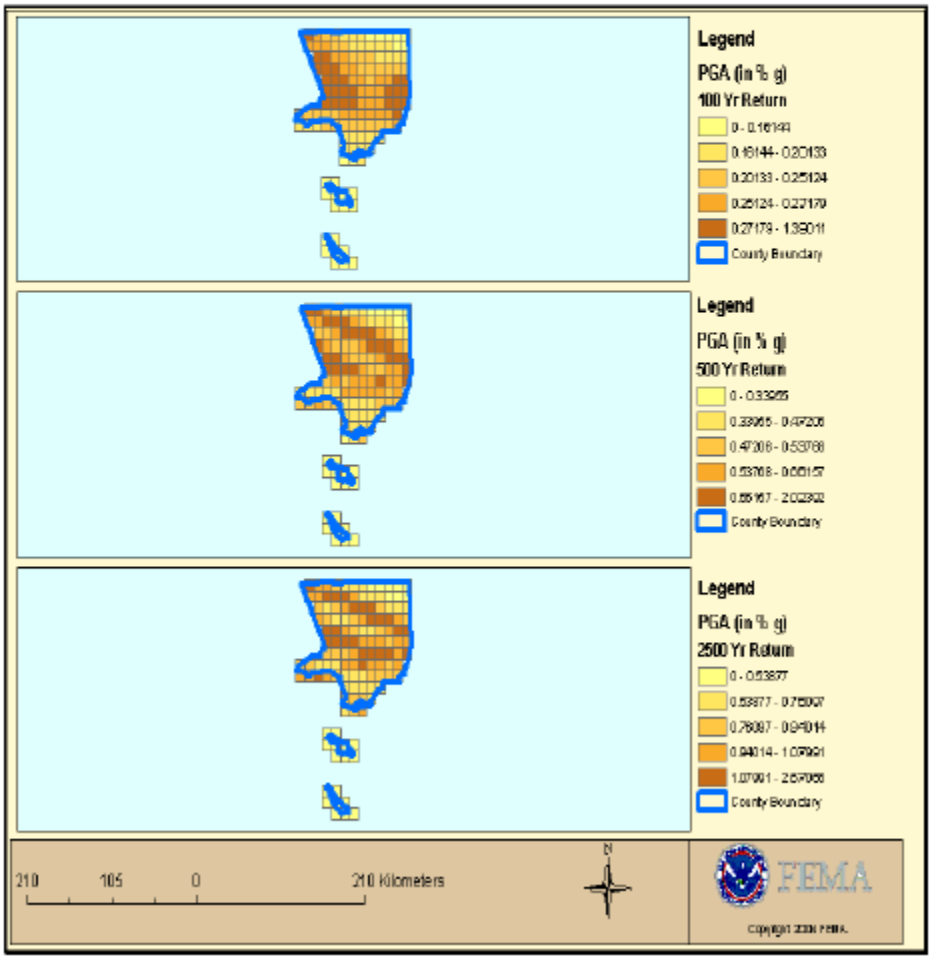


Earthquake Hazard Information

Probabilistic Earthquake Hazard

HAZUS contains probabilistic earthquake hazard information for the entire United States (USGS Open Field Report 02-420) and was used for the 2002 update of the National Seismic Hazard Map. This hazard information was developed by the United States Geological Survey (USGS); Golden, CO. Figure 2 provides earthquake hazard maps for 100, 500, and 2500 year return periods for Los Angeles County. Peak Ground Acceleration (PGA) is the intensity measure used in the maps.

Figure 2: Probabilistic Earthquake Hazard Maps
(PGA for 100, 500 and 2500 year return periods)

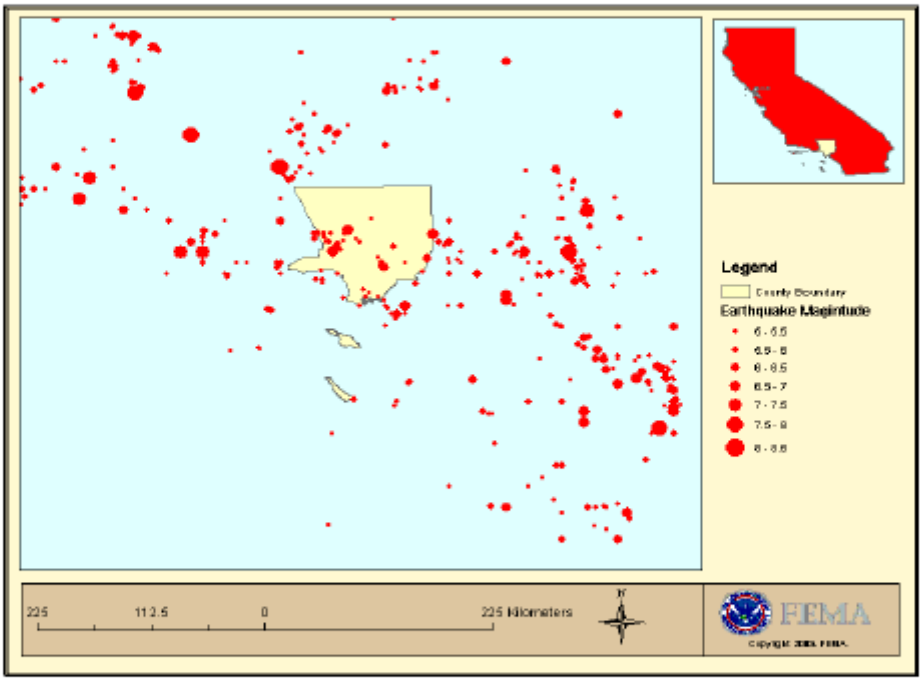


Earthquake Hazard Information (continued)

Historical Earthquake Epicenters

HAZUS contains a catalog of historical earthquake epicenters. The historical epicenter catalog was developed based on information from the CNSS Worldwide Earthquake Catalog (now ANSS), the National Earthquake Information Center (NEIC) database, and the Earthquake Seismicity Catalog Volume 1 (NOAA/USGS).
Figure 3 provides a map of the historical earthquake epicenters that have occurred within 150 km of Los Angeles County. The historical earthquake epicenters (and associated data) shown in the map are also listed in Appendix F of this report.

Figure 3: Historical Earthquake Epicenter Map (within 150 km of county boundary)



Inventory of Assets: Building

Building Inventory

HAZUS estimates that there are 2,161 thousand buildings in the county which have an aggregate total replacement value of $522,562M. Tables 1 and 2 provide information about the building stock in Los Angeles County. Table 1 provides the distribution by occupancy and Table 2 provides the distribution by building type.

Table 1: Building Inventory
(by General Occupancy)

Occupancy	Number of Buildings (In Thousands)	Building Value *	Contents Value *
Residential	2,113.62	$416,398M	$208,199M
Commercial	38.61	$80,334M	$84,345M
Industrial	6.26	$17,934M	$25,958M
Agricultural	0.09	$396M	$396M
Religion	1.32	$3,726M	$3,726M
Government	0.67	$768M	$853M
Education	0.24	$3,005M	$3,609M
Total	2,160.79	$522,562M	$327,085M

Table 2: Building Inventory
(by General Building Type)

Building Type	Number of Buildings (In Thousands)	Building Value *	Content Value *
Wood	2,015.10	$398,991M	$212,922M
Steel	18.12	$27,795M	$28,392M
Concrete	28.15	$50,347M	$47,554M
Masonry	46.65	$43,511M	$37,145M
Mobile Homes	52.77	$1,918M	$1,073M
Total	2,160.79	$522,562M	$327,085M

* 'M' in Building and Content Value represents Millions.

Building Values

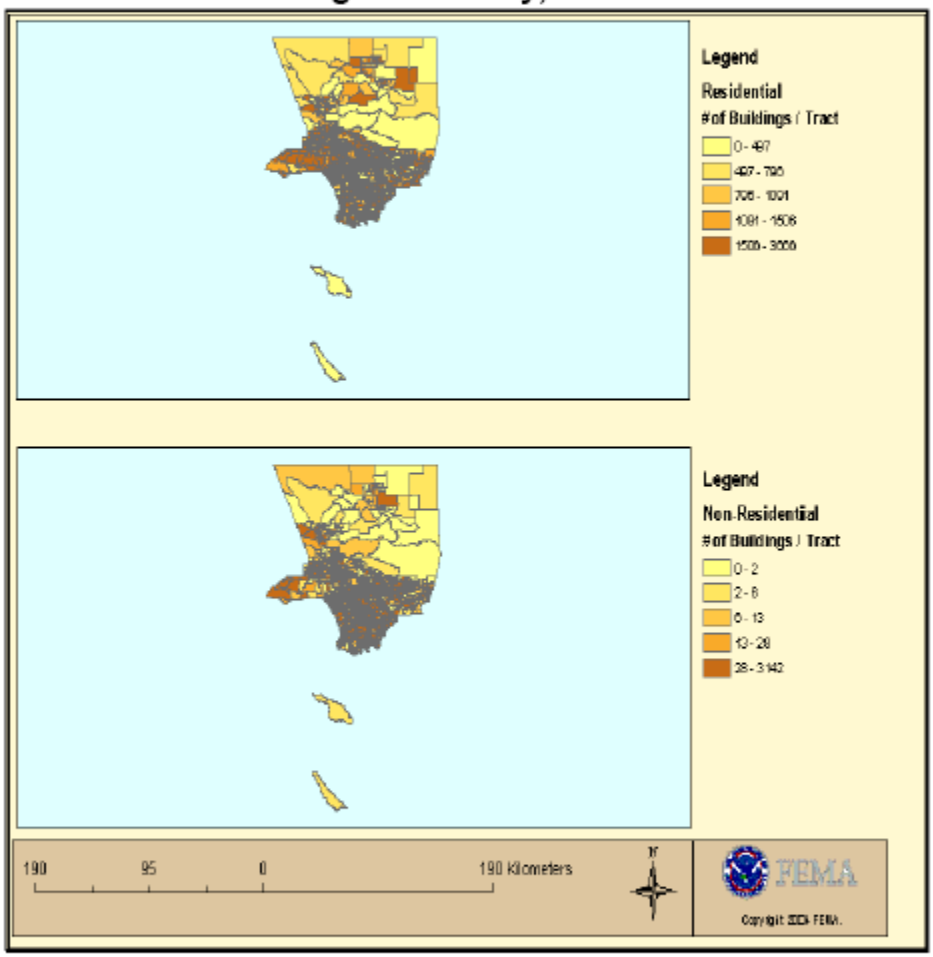
NOTE: The Building $ (cost) figure in the table below represents the cost of construction at the time the facility was built. The following information represents 2004 cost of new construction including change order allowance, demolition and miscellaneous costs and should be used to adjust the dollar figures accordingly:

Elementary School Facilities:	$266 per square foot
Middle School Facilities:	$245 per square foot
High School Facilities:	$265 per square foot
Administrative Facilities:	$258 per square foot

Inventory of Assets: Building Inventory (continued)

Figure 4 provides a map showing the residential and non-residential building count in the county. The building count is presented by census tract within the county.

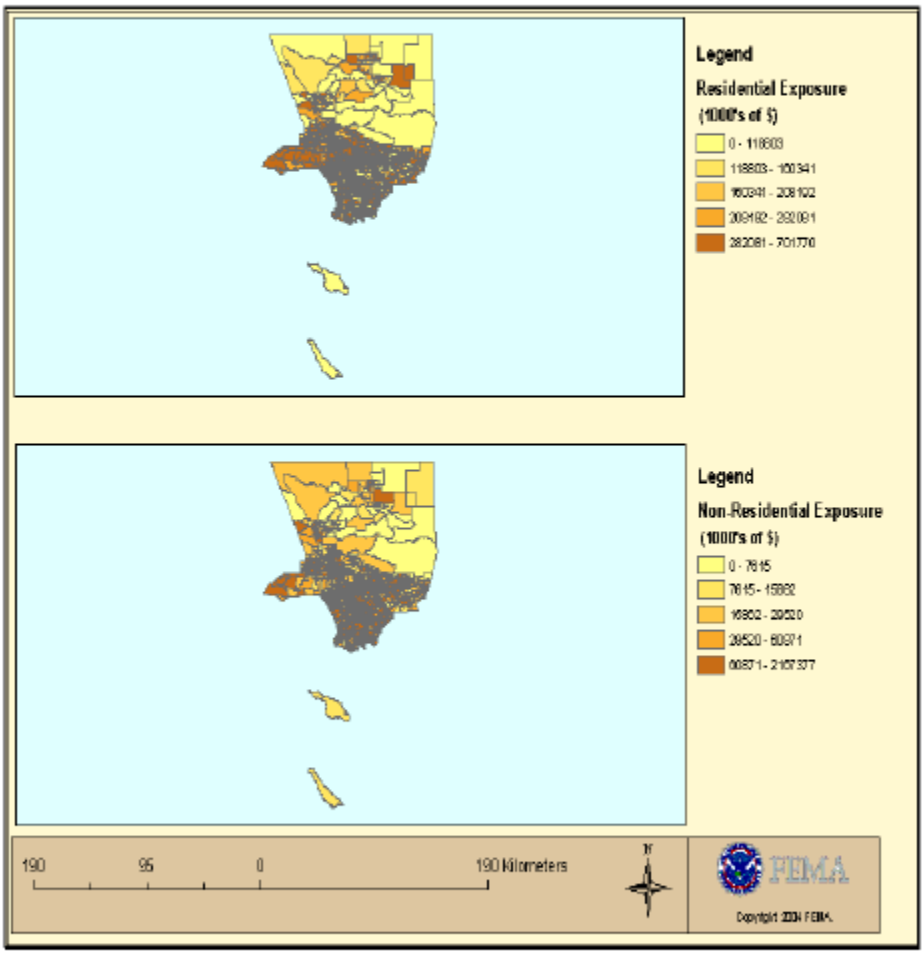
Figure 4: Building Count Map
Los Angeles County, California



Inventory of Assets: Building Inventory (continued)

Figure 5 provides a map showing the residential and non-residential building exposure in the county. The building exposure is presented by census tract within the county.

Figure 5: Building Exposure Map
Los Angeles County, California



Inventory of Assets: Lifeline Infrastructure

Lifeline Inventory

Within HAZUS, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ferry, ports and airports. There are six (6) utility systems that include potable water, waste water, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data is provided in Tables 3 and 4.

Table 3: Transportation System Lifeline Inventory

System	Component	# Locations / Length	Replacement Value*
Highway	Roadways	2,876 km	$11,300.54M
	Bridges	3,128	$10,914.99M
	Tunnels	17	$34.27M
	Sub-Total		**$22,249.80M**
Railway	Tracks	1,011 km	$869.59M
	Bridges	144	$28.36M
	Tunnels	0	$0.00M
	Facilities	84	$216.08M
	Sub-Total		**$1,114.03M**
Light Rail	Tracks	149 km	$128.53M
	Bridges	28	$6.17M
	Tunnels	0	$0.00M
	Facilities	0	$0.00M
	Sub-Total		**$134.70M**
Bus	Facilities	42	$54.02M
	Sub-Total		**$54.02M**
Ferry	Facilities	0	$0.00M
	Sub-Total		**$0.00M**
Port	Facilities	155	$398.72M
	Sub-Total		**$398.72M**
Airport	Facilities	24	$154.34M
	Runways	38	$1,393.63M
	Sub-Total		**$1,547.97M**
	Total		**$25,499.25M**

* **'M'** in Replacement Value represents Millions

Inventory of Assets: Lifeline Infrastructure (continued)

Table 4: Utility System Lifeline Inventory

System	Component	# Locations / Length	Replacement Value*
Potable Water	Pipelines	0 km	$0.00M
	Facilities	15	$589.41M
	Distribution Lines	43,126 km	$862.53M
	Sub-total		**$1,451.94M**
Waste Water	Pipelines	0 km	$0.00M
	Facilities	19	$1,493.17M
	Distribution Lines	25,875 km	$517.52M
	Sub-total		**$2,010.69M**
Natural Gas	Pipelines	0 km	$0.00M
	Facilities	1	$1.29M
	Distribution Lines	17,250 km	$345.01M
	Sub-total		**$346.30M**
Oil Systems	Pipelines	0 km	$0.00M
	Facilities	44	$5.19M
	Sub-total		**$5.19M**
Electrical Power	Facilities	41	$5,321.80M
	Sub-total		**$5,321.80M**
Communication	Facilities	94	$11.09M
	Sub-total		**$11.09M**
	Total		**$9,147.01M**

* 'M' in Replacement Value represents Millions

Inventory of Assets: Essential Facilities

Essential Facility Inventory

Essential facilities include hospitals, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

The following table provides the number of hospitals, emergency response facilities and schools that are in the county and their replacement value. The individual hospitals, schools and emergency response facilities are listed in Appendix A, B and C respectively of this report. The Figures 6, 7 and 8 on following pages provide maps for hospitals, emergency response facilities and schools respectively.

Table 5: Essential Facility Inventory

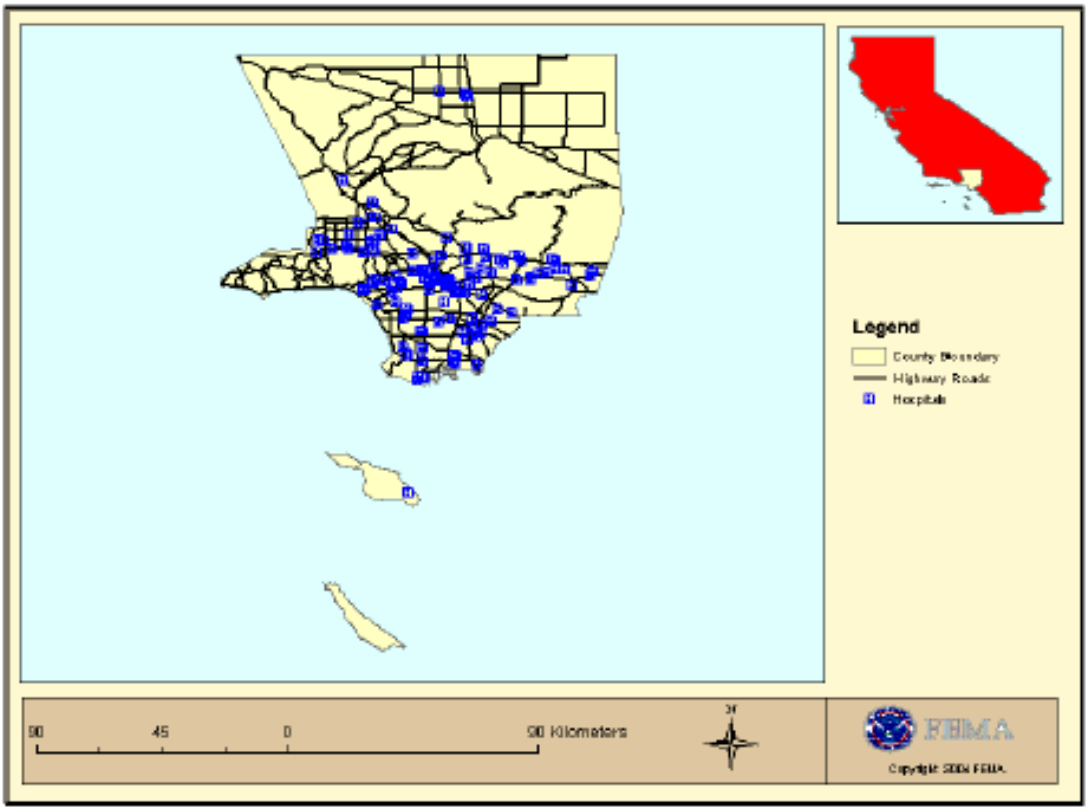
Building Type	Number of Buildings	Replacement Value *
Hospitals	120	$1,569M
Fire Stations	111	$79M
Police Stations	166	$274M
EOCs	12	$14M
Schools	3,022	$1,783M
Total	3,431	$3,719M

* Replacement Value does not include contents, which can be substantial for essential facilities. 'M' in Replacement Value represents Millions.

Inventory of Assets: Essential Facilities (continued)

Figure 6 provides a map of the hospitals in the county.

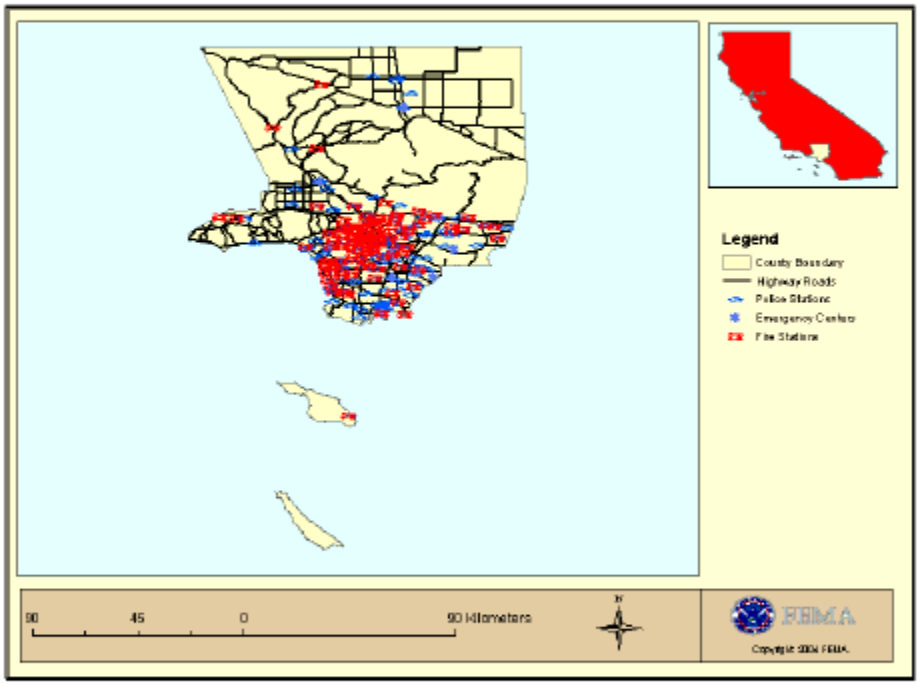
Figure 6: Hospitals Map
Los Angeles County, California



Inventory of Assets: Essential Facilities (continued)

Figure 7 provides a map of the emergency response facilities (police stations, fire stations and emergency operation centers) in the county.

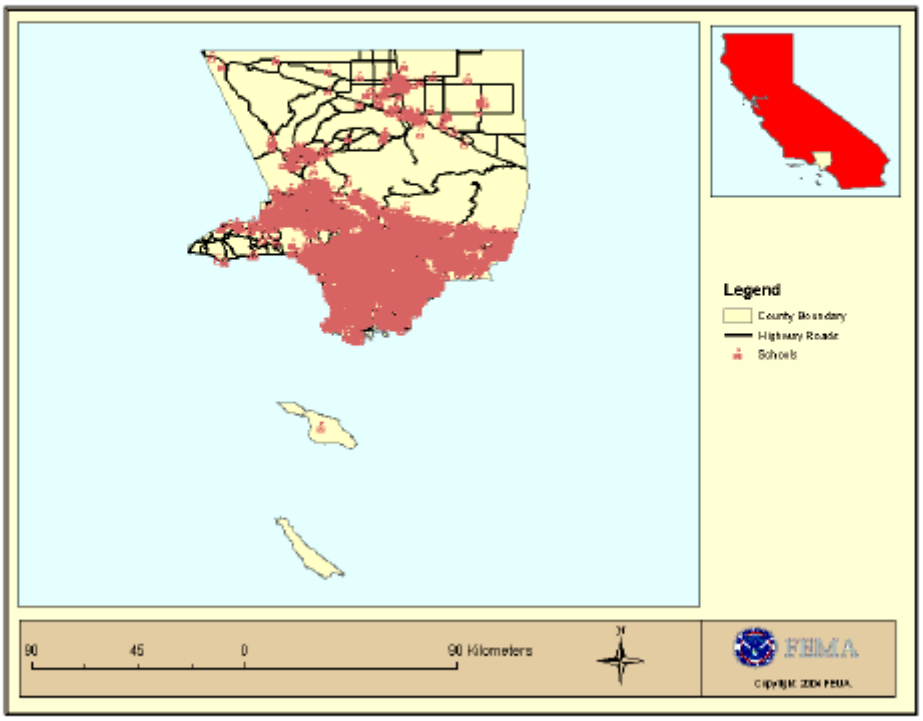
Figure 7: Emergency Response Facilities Map
Los Angeles County, California



Inventory of Assets: Essential Facilities (continued)

Figure 8 provides a map of the schools the county.

Figure 8: Schools Map
Los Angeles County, California



Inventory of Assets: Demographic Information

Demographic Information

HAZUS provides the following statistics (2000 Census data) on the County's population:

- Population by Income
- Population by Age
- Population by Ethnicity
- Population by Gender and
- by Occupancy.

Tables 6-9 present the various groupings.

Table 6: Population by Age and Gender (in thousands)

Category	Age < 16	16 < Age < 65	Age > 65	Total *
Male	1,226.41	3,084.90	381.57	4,692.88
Female	1,166.83	3,111.78	546.28	4,824.88
Total	2,393.24	6,196.68	927.84	9,517.77

Table 7: Population by Ethnicity (in thousands)

	White	Black	Native American	Hispanic	Pacific Islander	Asian	Other	Total *
Population	2,959.61	901.47	25.61	4,242.21	23.27	1,124.57	19.94	9,296.68
Percentage	31.84	9.70	0.28	45.63	0.25	12.10	0.21	

Table 8: Household Distribution by Annual Income (in thousands)

	Income < 20	Income >= 20	Total
Households	730.51	2,558.43	3,288.93
Percentage	22.21	77.79	

Table 9: Household Distribution by Residence Type (in thousands)

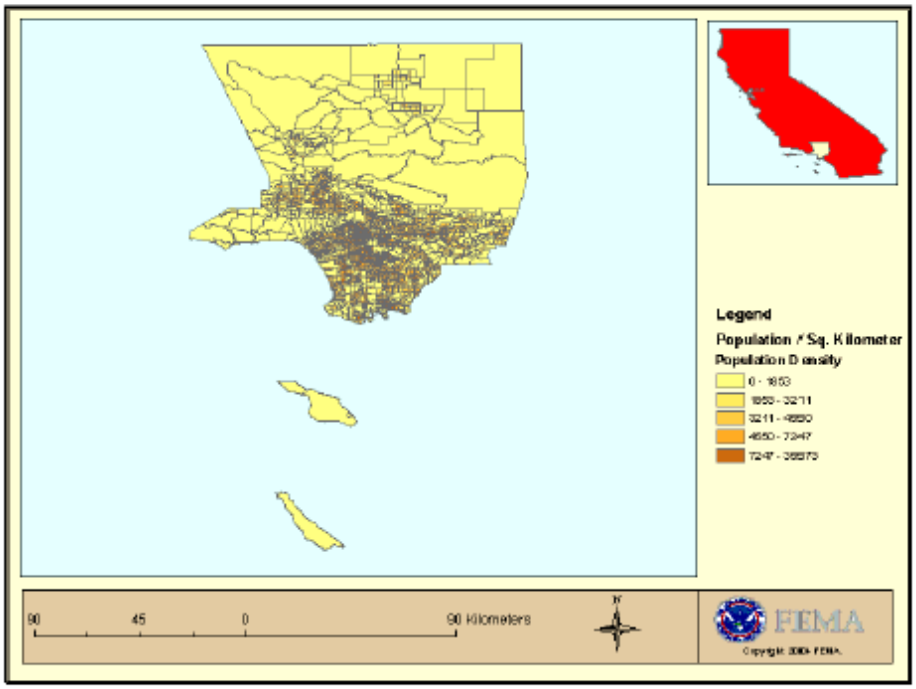
Category	Single Family	Multi-Family	Mobile Homes	Total *
Owner Occupied	1,333.58	128.22	37.83	1,499.63
Renter Occupied	441.95	1,179.89	9.74	1,631.57
Total	1,775.53	1,308.11	47.57	3,131.20

* Total population and household values may not match because of differences in the Census data.

Inventory of Assets: Demographic Information (continued)

The Figure 9 below displays the population density map (number of residents per square kilometer) for the county. The population density is presented by census tract within the county.

Figure 9: Population Density Map
Los Angeles County, California

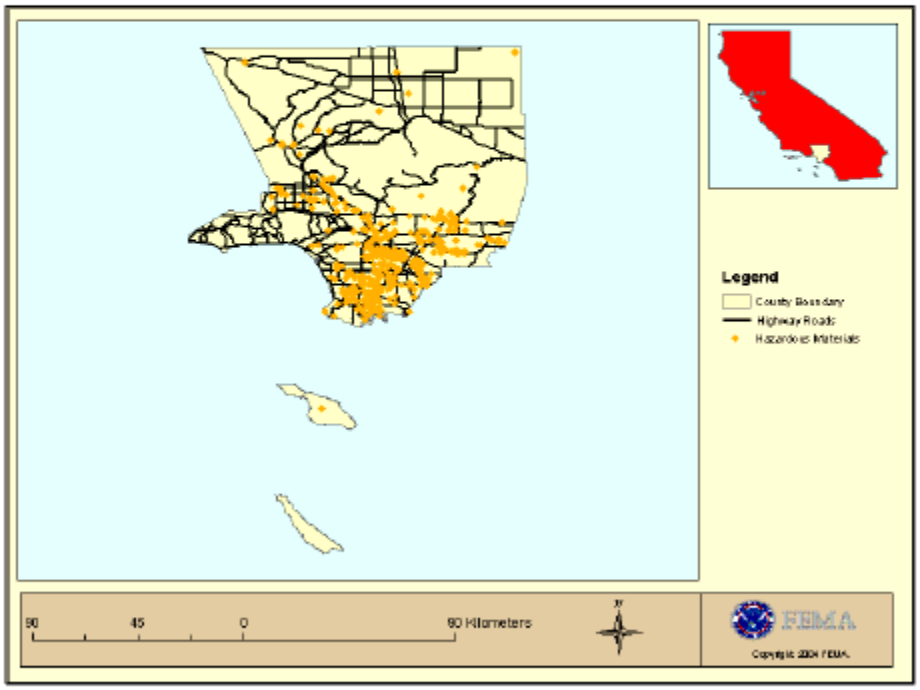


Inventory of Assets: Hazardous Materials Facilities

Hazardous Materials Facilities

Hazardous material sites are identified as High Potential Loss Facilities in HAZUS. In Los Angeles County, there are 1,735 hazardous materials sites. In HAZUS, a 'site' is defined for each facility / chemical combination, so there may be multiple entries for a single facility. Figure 10 provides a map of the sites in the county. The hazardous material sites shown in the map are also listed in Appendix D of this report.

Figure 10: Hazardous Material Sites Map
Los Angeles County, California

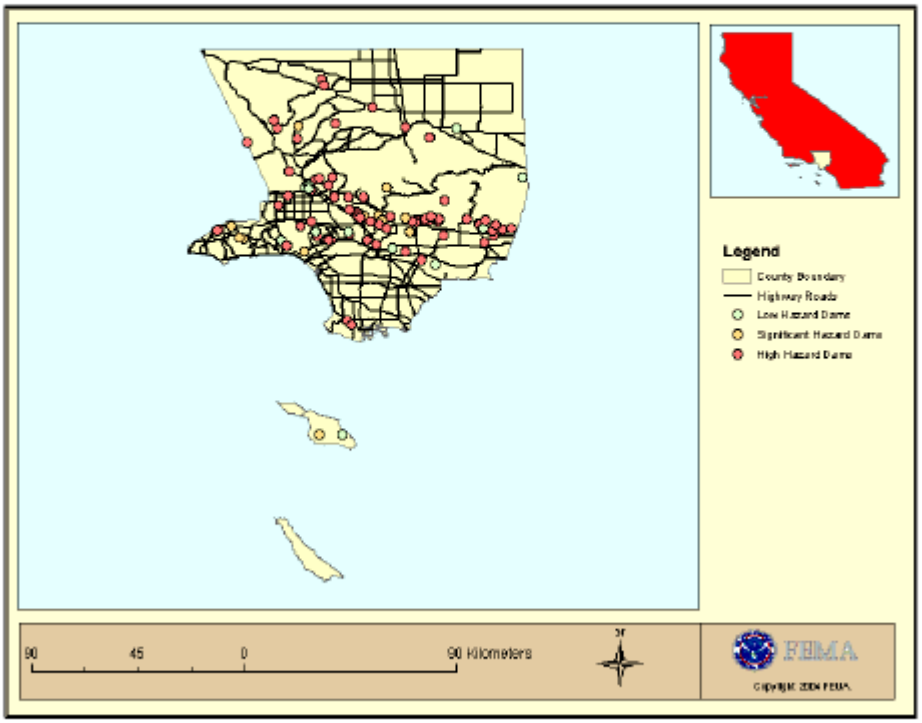


Inventory of Assets: Dams

Dams

Dams are identified as High Potential Loss Facilities in HAZUS. In Los Angeles County, there are 73 high hazard dams, 16 significant hazard dams and 14 low hazard dams. The 'hazard' levels are determined by the US Army Corp of Engineers. Figure 11 provides a map of the dams in the county. The dams shown in the map are also listed in Appendix E of this report.

Figure 11: Dams Map
Los Angeles County, California



Loss Estimates: Buildings

Scenario Definition

Scenario Name:

LA County 100 year prob (6.5)

Building Damage

HAZUS estimates that about 411.34 thousand buildings will be at least moderately damaged. This is over 19% of the total number of buildings in the region. Table 10 below summarizes the expected damage by occupancy for the buildings in the region. Table 11 below summarizes the expected damage by building type.

Table 10: Building Damage by General Occupancy (in thousands of buildings)

Occupancy	None	Slight	Moderate	Extensive	Complete	Total
Residential	921.99	801.56	335.09	44.17	10.82	2,113.62
Commercial	11.51	9.77	11.26	4.87	1.20	38.61
Industrial	1.77	1.47	1.91	0.87	0.23	6.26
Agriculture	0.05	0.02	0.01	0.01	< 0.01	0.09
Religion	0.43	0.36	0.34	0.15	0.04	1.32
Government	0.20	0.17	0.19	0.09	0.02	0.67
Education	0.09	0.06	0.06	0.02	< 0.01	0.24
Total	936.04	813.41	348.86	50.17	12.31	2,160.79

Table 11: Building Damage by Building Type (in thousands of buildings)

Building Type	None	Slight	Moderate	Extensive	Complete	Total
Wood	900.80	782.23	302.23	23.40	6.42	2,015.10
Steel	4.28	3.85	6.19	3.11	0.69	18.12
Concrete	8.10	7.55	7.96	3.74	0.80	28.15
Masonry	18.07	10.15	12.07	5.32	1.03	46.65
Mobile Home	4.78	9.62	20.41	14.59	3.36	52.77
Total	936.04	813.41	348.86	50.17	12.31	2,160.79

Loss Estimates: Buildings (continued)

Economic Loss to Buildings

The total building-related losses were $47,452.90M (2003 dollars); 25% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 60% of the total loss. Table 12 below provides a summary of the losses associated with the building damage by occupancy. Table 13 below provides a summary of the losses associated with the building damage by building type.

Table 12: Economic Loss by General Occupancy

Occupancy	Structural Damage	Nonstructural Damage	Content Loss	Business Interruption	Total
Residential	$3,353.54M	$18,134.15M	$5,049.49M	$1,576.29M	$28,113.46M
Commercial	$2,089.23M	$5,820.19M	$2,641.16M	$4,846.15M	$15,396.72M
Industrial	$406.45M	$1,292.51M	$869.34M	$349.31M	$2,917.61M
Agriculture	$16.91M	$14.00M	$10.82M	$2.86M	$44.58M
Religion	$83.04M	$259.45M	$114.27M	$36.35M	$493.10M
Government	$16.94M	$58.05M	$25.38M	$24.84M	$125.21M
Education	$40.05M	$196.76M	$97.23M	$28.18M	$362.23M
Total	**$6,006.15M**	**$25,775.11M**	**$8,807.69M**	**$6,863.97M**	**$47,452.91M**

Table 13: Economic Loss by General Building Type

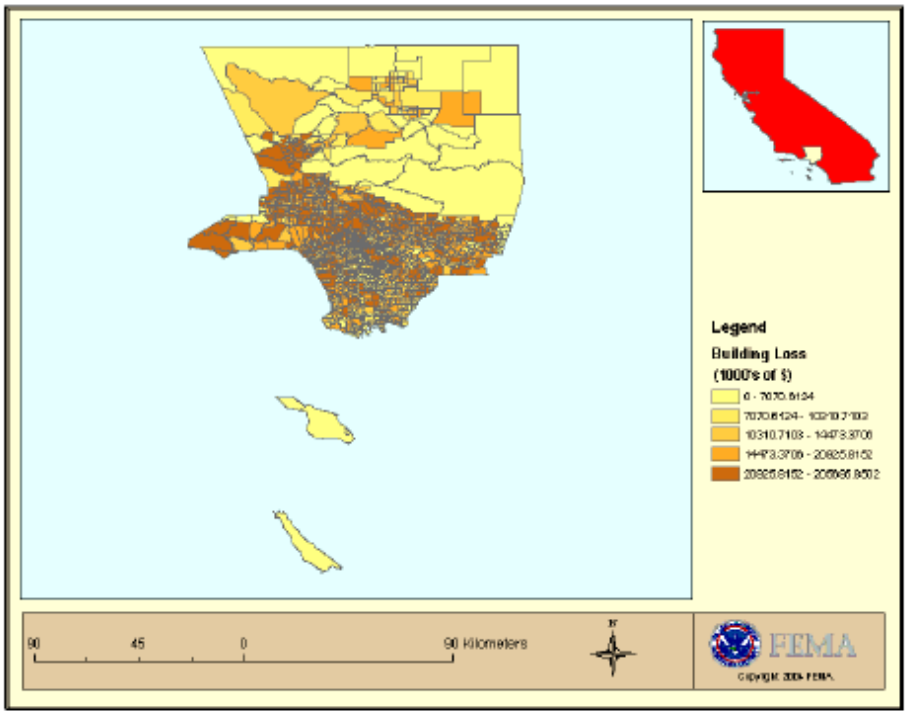
Building Type	Structural Damage	Nonstructural Damage	Content Loss	Business Interruption	Total
Wood	$2,889.51M	$16,329.90M	$5,084.32M	$1,542.81M	$25,846.54M
Steel	$747.87M	$2,327.13M	$892.82M	$1,594.90M	$5,562.72M
Concrete	$1,315.19M	$3,772.70M	$1,561.20M	$1,826.52M	$8,475.60M
Masonary	$967.16M	$3,100.64M	$1,231.73M	$1,889.42M	$7,188.96M
Mobile Home	$86.42M	$244.73M	$37.62M	$10.32M	$379.09M
Total	**$6,006.15M**	**$25,775.11M**	**$8,807.69M**	**$6,863.97M**	**$47,452.91M**

* 'M' in all the values above represents Millions

Loss Estimates: Buildings (continued)

Figure 12 provides a thematic map of building (structural damage + nonstructural damage) loss in the county.

Figure 12: Building Loss Map
Los Angeles County, California



Loss Estimates: Lifelines Infrastructure

Economic Loss to Lifelines

For the transportation and utility lifeline systems, HAZUS computes the direct repair cost for each component. There are no losses computed by HAZUS for business interruption due to lifeline outages. Tables 14 & 15 provide a breakdown in the expected lifeline losses.

Table 14: Transportation System Lifeline Losses

System	Component	Replacement Value *	Economic Loss *	Loss Ratio (%)
Highway	Roadways	$11,300.54M	$0.00M	0.00
	Bridges	$10,914.99M	$575.40M	5.27
	Tunnels	$34.27M	$0.99M	2.89
	Sub-total	**$22,249.80M**	**$576.39M**	
Railway	Tracks	$869.59M	$0.00M	0.00
	Bridges	$28.36M	$0.77M	2.71
	Tunnels	$0.00M	$0.00M	0.00
	Facilities	$216.08M	$47.26M	21.87
	Sub-total	**$1,114.03M**	**$48.02M**	
Light Rail	Tracks	$128.53M	$0.00M	0.00
	Bridges	$6.17M	$0.17M	2.76
	Tunnels	$0.00M	$0.00M	0.00
	Facilities	$0.00M	$0.00M	0.00
	Sub-total	**$134.70M**	**$0.17M**	
Bus	Facilities	$54.02M	$13.57M	25.12
	Sub-total	**$54.02M**	**$13.57M**	
Ferry	Facilities	$0.00M	$0.00M	0.00
	Sub-total	**$0.00M**	**$0.00M**	
Port	Facilities	$398.72M	$78.66M	19.73
	Sub-total	**$398.72M**	**$78.66M**	
Airport	Facilities	$154.34M	$34.64M	22.44
	Runways	$1,393.63M	$0.00M	0.00
	Sub-total	**$1,547.97M**	**$34.64M**	
	Total	**$25,499.25M**	**$751.45M**	

* 'M' in Replacement Value and Economic Loss represents Millions

Loss Estimates: Lifelines Infrastructure (continued)

Table 15: Utility System Lifeline Losses

System	Component	Replacement Value *	Economic Loss *	Loss Ratio (%)
Potable Water	Pipelines	$0.00M	$0.00M	0.00
	Facilities	$589.41M	$103.19M	17.51
	Distribution Lines	$862.53M	$161.46M	18.72
	Sub-total	**$1,451.94M**	**$264.65M**	
Waste Water	Pipelines	$0.00M	$0.00M	0.00
	Facilities	$1,493.17M	$215.40M	14.43
	Distribution Lines	$517.52M	$127.70M	24.68
	Sub-total	**$2,010.69M**	**$343.10M**	
Natural Gas	Pipelines	$0.00M	$0.00M	0.00
	Facilities	$1.29M	$0.00M	0.00
	Distribution Lines	$345.01M	$136.51M	39.57
	Sub-total	**$346.30M**	**$136.51M**	
Oil Systems	Pipelines	$0.00M	$0.00M	0.00
	Facilities	$5.19M	$0.73M	13.98
	Sub-total	**$5.19M**	**$0.73M**	
Electrical Power	Facilities	$5,321.80M	$837.78M	15.74
	Sub-total	**$5,321.80M**	**$837.78M**	
Communication	Facilities	$11.09M	$1.88M	16.99
	Sub-total	**$11.09M**	**$1.88M**	
	Total	**$9,147.01M**	**$1,584.65M**	

* 'M' in Replacement Value and Economic Loss represents Millions

Loss Estimates: Essential Facilities

Essential Facility Damage

Of the 3,431 essential facilities in the county, HAZUS estimates that 609 facilities may be at least moderately damaged. This is over 18% of the total number in the region. Table 16 summarizes the expected damage for the essential facilities in the region.

Table 16: Building Damage for Essential Facilities (number of buildings)

Classification	None	Slight	Moderate	Extensive	Complete	Total
Hospitals	54.21	49.87	14.93	0.95	0.02	120
Fire Stations	50.43	48.36	11.62	0.48	0.08	111
Police Stations	78.21	70.65	16.32	0.66	0.12	166
EOCs	5.63	5.13	1.18	0.05	0.01	12
Schools	1,629.78	829.03	496.19	60.27	5.97	3,021
Total	1,818.26	1,003.04	540.24	62.41	6.20	3430

Loss Estimates: Casualties

Casualty Estimates

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. HAZUS estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening
- Severity Level 4: Victims are killed by the earthquake

Table 17 provides a summary of the casualties estimated for this earthquake (by occupancy).

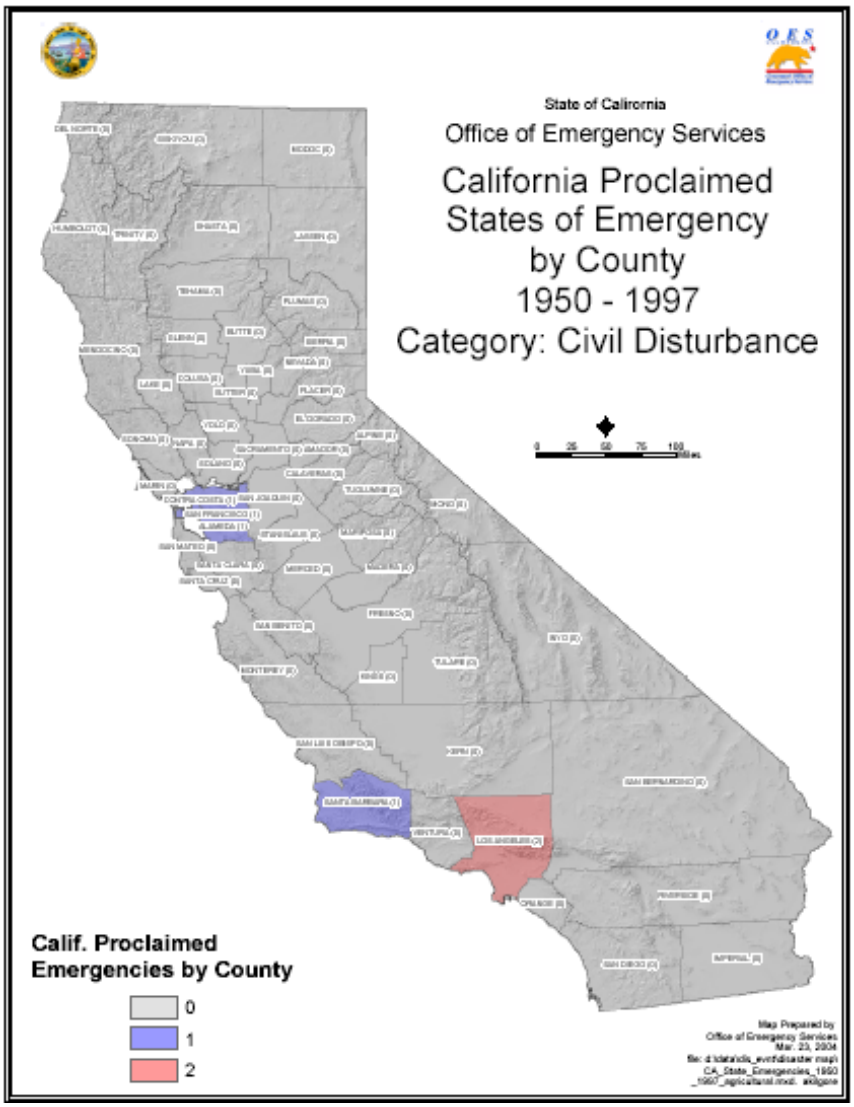
Table 17: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	265.48	64.23	9.43	18.61
	Commuting	1.08	1.66	2.54	0.51
	Educational	0.00	0.00	0.00	0.00
	Hotels	171.18	38.29	5.24	10.29
	Industrial	270.80	66.84	9.67	19.02
	Other-Residential	6,874.69	1,397.86	160.81	310.32
	Single Family	5,156.54	633.28	22.45	36.85
	Total	**12,739.78**	**2,202.16**	**210.16**	**395.59**
2 PM	Commercial	15,863.10	3,839.35	565.38	1,108.71
	Commuting	9.75	14.94	22.88	4.55
	Educational	1,759.52	401.58	58.32	113.65
	Hotels	32.92	7.37	1.01	1.97
	Industrial	1,993.81	491.16	71.35	138.94
	Other-Residential	1,416.11	291.67	34.72	64.45
	Single Family	1,021.12	127.39	5.60	7.49
	Total	**22,096.33**	**5,173.46**	**759.25**	**1,439.76**
5 PM	Commercial	11,909.01	2,881.98	427.90	821.09
	Commuting	412.12	594.48	949.26	186.56
	Educational	283.01	64.72	9.40	18.38
	Hotels	51.26	11.47	1.57	3.08
	Industrial	1,246.13	306.98	44.59	86.84
	Other-Residential	2,626.28	541.69	64.62	119.97
	Single Family	1,977.95	247.98	10.96	14.66
	Total	**18,505.77**	**4,649.29**	**1,508.30**	**1,250.58**

Civil Unrest

Civil Unrest was rated a HIGH PRIORITY HAZARD by Los Angeles County Office of Education.

Civil disturbances can occur almost anywhere. However, the most significant ones in California have historically taken place in large urban centers. Deaths and injuries occurred to individuals who were in or around the disturbances while they were happening. Damage was caused by thrown objects, fires, and looting. . Educational facilities operated by LACOE are thought to be especially vulnerable because of the nature of many of the student populations it serves (e.g. disabled, handicapped, special education, juvenile offenders, etc.).



History of Civil Unrest in Los Angeles County

Los Angeles Chinese Massacre

October 24, 2001 represent(ed) the 130th Anniversary of the infamous Chinese Massacre, which resulted in the murder of 19 Chinese men and boys in the first Los Angeles Chinatown. Some ten percent of the town's population of 5,000 participated in what might have been the City's first race riot, one that would regrettably be followed by others. Historically, this event was one of the worst occurrences of anti-Chinese violence in the United States during an era of virulent discrimination against the Chinese.

The incident was triggered by an internal dispute in the community between two Chinese men arguing over a Chinese girl, which led to the accidental slaying of a Caucasian man caught in the crossfire. The social conflagration that followed was fueled by the growing movement of anti-Chinese discrimination in California, which would climax in the passage of the Chinese Exclusion Act in 1882. At the base of the unrest was the uncertain and unstable economy in the West following the Civil War, leading to high unemployment, especially among veterans. This historical development led to a growing resentment of a growing group of industrious immigrants, many deliberately imported to build the transcontinental railroad, who undertook, at a minimal wage, jobs and tasks too menial, harsh, or difficult for settlers and citizens to care to take. Originally, the Chinese newcomers were welcomed. Then, this willing work force of differing cultures and religions was perceived by the body politic to be usurping jobs and resources intended for those deemed more worthy. The all-too-familiar attitude of growing resentment and discrimination set the stage for a day and a half eruption of rampant looting and burning, in a town already known for its lawlessness.

In defense of a great majority of good citizens, descendants of eyewitnesses are today bringing to light many stories about the protection of Chinese families by their forefathers-from neighborhood vendors to family servants. Others acted out of a sense of righteousness and of fair play. This 1871 nadir of Chinese American history in Southern California also casts a light on the resilience and resourcefulness of immigrants as well as their earnest perseverance and optimism in quest of that better life that America can offer:

After the Massacre, few Chinese of Los Angeles left; Chinese continued to operate their laundries in the City, with the industry peaking in the 1880's and yielding to the French, Italians and other Southern Europeans; Chinese continued as farm hands and ranch hands, comprising over 50% of the work force at one time, helping to build the great Southern California citrus industry Within five years, Chinese became the principal truck gardeners and vegetable vendors of Los Angeles, controlling over 90% of the industry for the next 25 years, later transitioning to Italian-, Japanese-, and Mexican-American growers and wholesalers; Within 15 years, Chinese units were participating in the festive parades of Los Angeles.

The growing integration of the Chinese into the region's economy was followed by a gradual acculturation, which fostered the development of settlement and family life: first in Old Chinatown, at today's El Pueblo de Los Angeles Historical Monument and Union Station, and later in the Chinese American neighborhoods of Southern California. Much of this progress took place under heavy pressure of discrimination, during a period of political and social isolation. But this evolution, with its increasing interdependence among all communities, took place nonetheless, demonstrating the major role Chinese Americans have played in establishing the rich diversity and proud heritage of Southern California.

Today's descendants of these Chinese American pioneers find themselves in all types of professions and businesses, in every neighborhood, at all social strata, and in all economic levels. Chinese

Americans are now scientists and athletes, CEOs and teachers, artists and policemen, actors and producers, to name a few varied careers. Many have served America in its wars and other external conflicts, a proudly fulfilled responsibility of citizenship long denied the Chinese immigrant and once so difficult to achieve. In many households, the semi-annual ritual of voting in all government elections for officials and on questions of public policy is still viewed as a sacred duty, a verification of the privilege of citizenship. In many ways, the hopes of these first pioneers in achieving the American dream have been fulfilled by their posterity.

Looking back at the achievements, against all odds, of those Chinese immigrants who endured 1871, we proclaim that American history tells us that immigrants have always been valuable in developing and building our Southern California community and our American civilization. We further declare that immigrants will always bring new talents, and boundless energy, and that they will succeed even when given less-than-an-even-chance because they believe in America and the possible access to its opportunities. We observe that they and their descendants do acculturate in time, and moreover, they serve to shape the unique diversity of America.

On this 130th Anniversary, we further proclaim that the 1871 lesson of the Chinese Massacre holds truths for us today: that immigrants have proven to be a most valuable and important segment of our society. And because their influx insures a continued healthy, prosperous America, the process of immigration should and must continue. The opportunities America offers should never be closed to anyone residing in this country seeking to better themselves and their families.

The occurrence of the riot of 1871 was indeed a major hate crime in American history. It manifested the worst in human behavior and racial intolerance during an era of strong anti-Chinese sentiments. On the other hand, those who moved to aid and protect Chinese people during the occurrence, and the subsequent steady but measurable progress of the community's leadership toward healing and harmony over the years that have since followed were among the most noble of decent human reactions.

One can hardly avoid noticing the positive lessons from 1871 that also help us to cope with the recent tragedies of September 11, 2001. The combined events of that day now rank as the worst hate crimes ever perpetrated on American soil. Application of the moral principles, fundamental American ideals, and ready compassion that marked the collective reaction to both incidents, 130 years apart, were once again an affirmation of our American character. We realize that tolerance of others, compassionate understanding of their ways, customs, and beliefs, and the continual goal of community harmony are essential for furthering the progress and growth of our communities. Commitment to the practice of these ideas is a profound demonstration of the truth, vitality, and success of our American way of life.

Munson Kwok, Ph.D.
Board Member
Friends of the Chinese American Museum

Zoot Suit Riot (1943)

Citizens of early 1940s Los Angeles lived in an atmosphere of tension that ultimately exploded in the Zoot Suit Riots. But what caused the unrest?

Census information tells part of the story. In the decades leading up to the rioting, Los Angeles experienced an unprecedented population explosion. Along with Midwesterners who flocked to Los Angeles, thousands of Mexican refugees fleeing the Mexican Revolution made their way there. So too did landless white laborers escaping the Dust Bowl of the drought-plagued Southern Plains, and African Americans seeking more opportunity than they'd found in the South.

The coming of war in 1941 further complicated the city's social dynamics. White men went off to fight in a segregated military, and women and people of color filled the jobs in the defense industry previously reserved for white males. Rather than embrace such events as social advances, many whites accepted the changing social realities only as the lesser of two evils -- the greater being German and Japanese militarism. While wartime conditions reconfigured gender and racial boundaries, segregation was emphatically reinforced in other areas. Civilian and military leaders in Los Angeles all too easily saw cultural and racial difference among Japanese Americans as subversion and betrayal, and actively supported the forced relocation of Japanese Americans into camps set up in the rural West.

Many Angelenos saw themselves on the frontline of the battle with Japan and felt vulnerable to a West Coast attack. Civilian patrols were established throughout the city and Los Angeles beaches were fortified with anti-aircraft guns. Southern California also served as a key military location with bases located in and between San Diego and Los Angeles. Consequently, up to 50,000 servicemen could be found in L.A. on any given weekend.

Independent of these social tensions, young people were growing fascinated with jazz. It was a musical, cultural, and even ideological expression that was far removed from the Hit Parade music commonly played on mainstream radio. Jazz music and dance were sensual, expressive, joyous, and raucous. Jazz musicians openly defied segregation by mixing on and off the stage, and jazz enthusiasts also mixed on and off the dance floor.

The zoot suit was one part of the jazz world that visually defied the norms of segregation. Unwritten rules demanded that people of color remain unseen and unheard in public spaces, but the zoot suit, with broad shoulders, narrow waist, and ballooned pants, was loud and bold. Zoot-suited young men (and some young women) held themselves upright and walked with a confident swagger that seemed to flow from the very fashion itself. As the Sleepy Lagoon murder trial of 1942, involving mostly Mexican American young men, proved, this particular demographic, zoot-suited or not, came to be singled out and associated with criminality and gangsterism by Los Angeles authorities. In a time of war, when social boundaries were rapidly changing, questions of allegiance and conformity became invested with particular significance. Many Angelenos objected to the zoot suiters -- including, incidentally, older generations of Mexican Americans, whose communities were traditional, conservative, and self-contained. Critics saw Mexican American youths as cultural rebels and delinquents who openly defied cherished American values and customs.

Tensions between servicemen and civilians were on the rise as thousands of military men on leave poured into Los Angeles, seeing the city as a playground for booze, women, and fights. While many civilians tolerated them because of the war effort, others did not. Particularly in the segregated, ethnic enclaves of Los Angeles, unruly servicemen met stiff opposition from young men and women who refused to defer to the presumed prerogatives of white privilege. While white military men and civilian youth of all colors clashed in the streets, confrontations occurred most frequently between white servicemen and Mexican Americans, because they were the largest minority group in Los Angeles.

Drunken military men on their way back to base after a night of carousing were often "rolled" by civilian minority youth hoping to teach them proper respect. With equal animosity the sailors would often insult Mexican Americans as they traveled through their neighborhood. In the barrios, rumors spread about sailors searching out Mexican American girls. On the military bases, stories circulated about the violent reprisals suffered by sailors who dared to date Mexican American females. Sailors complained bitterly about their wives or girlfriends being subjected to the sexual taunts of young Mexican Americans. The tension continued to escalate until a street fight between sailors and Mexican American boys sparked more than a week of fighting in June of 1943 known as the Zoot Suit Riots.

On the evening of Monday, May 30, 1943 about a dozen sailors and soldiers were walking on a downtown street. After spotting a group of young Mexican American women on the opposite side of the street, the sailors and soldiers changed direction and headed their way. Between the military men and the young women stood a group of young men in zoot suits. As the two groups passed each other, Sailor Joe Dacy Coleman, fearing he was about to be attacked, grabbed the arm of one of the zoot-suited young men. Coleman's move proved to be a big mistake. Coleman was almost immediately struck on the head from behind and fell to the ground, unconscious. Other young civilians pounced on the sailors with rocks, bottles and fists. After the ferocious attack, the sailors managed to escape and carry Coleman to the safety of the Naval Armory. "The fracas lasted little more than a few minutes, but the shock reverberated for days," wrote historian Eduardo Pagán, "The details of the fight grew larger and more distorted in each re-telling of the story." It wasn't long before sailors organized a retaliatory strike against zoot-suiters.

About fifty sailors left the Armory on the night of Thursday, June 3, armed with makeshift weapons. The attack on Seaman Coleman was still fresh in their minds and rumors of new attacks were swirling through the base. Their first stop was the nearby neighborhood of Alpine Street -- scene of many previous confrontations. Unable to find any zoot-suiters at Alpine, they proceeded toward downtown and stopped at the Carmen Theater. After turning on the house lights, the sailors roamed the aisles looking for zoot-suiters. The first victims of the zoot suit riots -- 12 and 13-year-old boys -- were guilty of little more than being in the wrong place at the wrong time. Ignoring the protests of the patrons, the sailors tore the suits off their bodies and beat and clubbed the boys. The remains of their suits were then set ablaze.

As the mob of sailors moved on, reports began to reach the Armory's watch commander. Executive Officer Lieutenant Charles Bacon was sent to investigate. After failing to find any evidence of wrongdoing at numerous spots, Bacon came upon the Shore Patrol marching a group of sixty men to the Central Police Station, where they were to be placed in jail. Bacon assumed control of the situation and saw to it that no charges were recorded by the Shore Patrol.

As the second night of rioting began, Mexican American young men drove back and forth in front of the Armory, hurling epithets at the guards. Later that night sailors once again headed out in search of trouble. When the sailors could not find enough zoot-suiters, they decided to take the fight into the Mexican American neighborhoods of East Los Angeles and Boyle Heights. It was a new twist on the violence: instead of focusing their attacks in areas where sailors and civilian youth had clashed, the sailors moved into the Mexican American neighborhoods. Thus their retaliatory strike became an assault on the Mexican American community itself. The sailors cruised the barrio, storming into bars, cafes and theaters.

Los Angeles police were unwilling to step in and protect civilians. One policeman was quoted after the riots as saying: "You can say that the cops had a 'hands-off' policy during the riots. Well, we represented public opinion. Many of us were in the First World War, and we're not going to pick on kids in the service."

The violence continued during subsequent nights, enveloping even those who had no connection to jazz or the zoot suit. When a group of Mexican musicians exited the Aztec Recording Company after a recording session, they too were attacked. The musicians were all adults, and none of them wore a zoot suit. Military commander Clarence Flogg reported that there were "hundreds of servicemen prowling downtown Los Angeles mostly on foot -- disorderly -- apparently on the prowl for Mexicans." The Navy reported that "Groups vary in size from 10 - 150 men and scatter immediately when Shore Patrol approaches. Men found carrying hammock cues [clubs], belts, knives and tire irons..."

Although groups of armed servicemen roamed the streets attacking civilians, the military seemed more concerned with regaining control over their men than with the violence they were committing. Leery of the negative press that would result from mass arrests, Admiral Bagley, the commanding officer, appealed to his sailors' "common sense."

Mexican American kids organized and fought back. Rudy Leyvas and his friends set traps for the sailors and civilians who were pursuing them, using decoys to lure their attackers in to a trap. "And they let out a cry: There they are! There they are! And they came in. As they came in, once they got all the way in, we all came out. I, myself, had a bat. And I used it."

The worst violence occurred on Monday, June 7. One Los Angeles paper printed a guide on how to "de-zoot" a zoot suiter: "Grab a zooter. Take off his pants and frock coat and tear them up or burn them." That night a crowd of 5,000 civilians gathered downtown. By this time the mob was no longer made up of only sailors from the Armory. Soldiers, Marines, and sailors from other installations as far away as Las Vegas eagerly joined in the assaults. Part of the mob headed south for the predominately African American section of Watts and another group headed east for Mexican American East Los Angeles.

Al Waxman, editor of the *Eastside Journal*, a small Jewish newspaper, witnessed the chaos. He describes a "mass of humanity locked in violent struggle, arms swinging, legs kicking, shrieking with anger." The police were arresting dozens of young Mexican Americans. "Why am I being arrested?" one of them asked. The response was a savage clubbing with a nightstick. Although the boy fell to the sidewalk unconscious, he was kicked in the face by police.

By Tuesday morning the rioting was finally under a measure of control. Senior military officials declared Los Angeles off limits to all sailors, soldiers and Marines. The Shore Patrol gave orders to arrest disorderly personnel. The following day the city council adopted a resolution that banned the wearing of zoot suits on Los Angeles streets, punishable by a thirty-day jail term.

As the riots subsided, the governor ordered the creation of a citizens' committee. Its charge was to investigate and determine the cause of the riots. In 1943 the committee issued its report; it determined racism to be a central cause of the riots. At the same time, Mayor Fletcher Bowron came to his own conclusion. The riots, he said, were caused by juvenile delinquents and by white Southerners. Racial prejudice was not a factor.

PBS Online

Watts Riot (1965)

The **Watts Riot** began on August 11, 1965 in Los Angeles, California when the Los Angeles Police pulled over Marquette Frye, whom they suspected of driving drunk. While police questioned Frye and his brother, a group of people began to gather around the scene. A struggle ensued shortly after Frye's mother Rena arrived on the scene, resulting in the arrest of all three family members. Police used their batons to subdue Frye and his brother, angering the growing crowd. Shortly after police left, tensions boiled over and the rioting began. What followed was six days of rioting that claimed the lives of 34 people, injured 1,100 and caused an estimated $100 million dollars damage.

One of the few structures in Watts that remained untouched by the damage was the Watts Towers, a group of tall steel sculptures constructed by Italian immigrant Sam Rodia (often erroneously called Simon Rodia).

Rodney King Riot (1992)

On April 29, 1992, following the not guilty verdicts of four Los Angeles Police Officers accused of beating motorist Rodney King, violence erupted at the intersection of Florence and Normandie in South Los Angeles. At the same time, individuals at the corner of 67th Street and 11th Avenue were revolting against passer-bys and motorists. Black residents were outraged that four LAPD officers received not guilty verdicts from an all white jury in Simi Valley, despite the videotape evidence of the beating of Rodney King, and the testimonial by veteran police officers on behalf of the prosecution. From April 29, 1992 at approximately 3:30 p.m. until May 1st, the violence raged on. The National Guard were called in to bring calm to the city, and by Friday afternoon the violence and looting were subdued. The most violent urban revolt that the United States had ever experienced in the twentieth century resulted in 52 deaths, 2,499 injuries, 6,559 arrests, 1,120 building damaged, 2,314 stores damaged and close to 1 billion in damages.

If we go back to 1992 and examine the precipitating factor of the riot, economics actually played a small role influencing the revolt. Yes, there was a recession in Los Angeles and around the country, unemployment was at an all time high, high levels of poverty probably exacerbated the riots that took place, but the critical events and underlying factors to the revolt were the beating of Rodney King in 1991, the probation sentence handed down on Sun Ja Doo, a Korean store clerk that shot Latasha Harlins, a 15 year old black girl, in the back of the head after a dispute over orange juice, and the acquittal of the four LAPD officers. In the Sun Ja Doo incident the jury came back with a second-degree murder conviction, but Judge Joyce Karlin, a white woman, did the unheard of when she sentenced Doo to five years probation. This is what I believe paved the way for the worst urban riot in contemporary history and the fact that over 50% of the damaged or destroyed property was Korean owned was no accident, and is the reason why many characterize this event as an uprising or a revolt. Although many of the images captured certainly show those acting as opportunists taking advantage of an unfortunate situation, at the same time there was an organized attack against Korean establishments within South LA and outside of the black community along Vermont and Western Avenues, north of the black community. Relations between blacks and Koreans in Los Angeles have often been full of tension and there is housing evidence that suggests that those tensions are still present in 2002.

The critical factors that influenced the events of April 29, 1992 all took place within the criminal justice sector of society with the police department central to the events. This is where we must look to address the question of a potential third Los Angeles riot. Chief Daryl Gates was held accountable for the type of relationship that was created between the police and minority communities in South LA and his response to the first day of the riot was considered dismal. Also let us not forget history, when in 1965 people took to the streets of Los Angeles in protest the day following alleged police abuses after

the arrest of a Marquette Frye on 116th Street and Avalon. Chief William Parker was also highly criticized for the sharp divide that was created between the black community and the militaristic police, and resentment towards the police grew worse every year since Parker took over as Chief in 1950 up until the violence erupted in 1965. One indication of the increasing tension between the police and the community was the number of complaints that blacks filed between 1950 and 1965. Parker claimed no responsibility during a commission and when asked what sparked the riot he replied "someone threw a rock, and like monkeys in a zoo, they all started throwing rocks."

All of the seven race riots of 1964 were also sparked by an incident of police misconduct. The Otto Kerner Commission of 1968 stated that police actions led to outbreaks in half of the cases studied and those that believe that another revolt will take place will need to examine law enforcement and the criminal justice system. If the LAPD of LASD engage in any inappropriate activity such as excessive force or unlawful officer involved shootings, an outbreak of violence is definitely possible. Let us not forget what happened in Cincinnati in April 2001 when the shooting death of Timothy Thomas, 19, whose death touched off three days of riots. Cincinnati police officer Steven Roach was later found not guilty of negligent homicide in the shooting, but these are the types of events that will determine if Los Angeles will see part three. Under Bernard Parks inappropriate activity from the rank and file was highly unlikely with the disciplinary system that he had in place, but the actions of the next police chief may determine if what happened in 1965 and 1992 will occur again.

Alejandro A. Alonso, Los Angeles Riots 10 Years Later and the Likelihood of Another Revolt, April 29, 2002 (et sec)

Chronology of the 1992 Los Angeles Riots		
29 April	1515	Acquittal verdicts announced in the trial of police officers accused of beating Rodney King.
	1850	Rioters beat and nearly kill truck driver Reginald Denny as a television crew captures both the horror of the incident and the absence of Los Angeles Police Department (LAPD) officers. Hundreds of arson and looting incidents begin.
	2100	The California governor's office informs the adjutant general that the governor has decided to mobilize (call to state active duty) 2000 California National Guard (CANG) troops at the request of the LA mayor.
30 April	-	A dusk-to-dawn curfew is imposed in large portions of the city of LA and the surrounding county.
	0400	Approximately 2000 CANG soldiers have reported to armories.
	1100	Los Angeles County requests 2000 more CANG personnel; the governor approves the request.
	1350	Ammunition from Camp Roberts (in central California) arrives in LA area via CH-47 helicopter.
	1435	The first CANG elements (two military police companies) deploy in support of the LAPD and the LA Sheriff's Department (LASD).
	2000	About 1000 CANG troops are currently deployed "on the street," with more than 1000 more prepared to deploy and awaiting mission requests from law enforcement agencies.
	2356	LAPD and LASD request 2000 additional CANG troops, for a total of 6000.
1 May	0100	Perceiving the CANG deployment to be too slow, the governor requests federal troops.
	0515	The President agrees to deploy 4000 federal troops to LA.
	0630	Approximately 1220 CANG soldiers are deployed in support of LAPD; 1600 are deployed in support of LASD; and 2700 are in reserve awaiting missions.
	1430	Active component Marines from Camp Pendleton, California, begin arriving in the LA area via convoy.

Chronology of the 1992 Los Angeles Riots		
	1630	Commander, Joint Task Force-Los Angeles (JTF-LA) arrives in LA area.
	1730	Active component soldiers from Ft. Ord, California, begin arriving in the LA area via C-141 aircraft.
	1800	The President announces that the CANG will be federalized.
2 May	0400	Final plane with active component soldiers arrives.
	1100	Approximately 6150 CANG troops are deployed on the street, with 1000 more in reserve; 1850 soldiers from the 7th Infantry Division are in staging areas; Marines prepare for deployment.
	1900	First active component troops deploy on the street; a battalion of Marines replaces 600 CANG soldiers.
	2359	More than 6900 CANG soldiers are deployed, with 2700 more in reserve. Approximately 600 Marines are deployed, but most active component Army and Marine Corps personnel remain in staging areas.
9 May	1200	CANG reverts to state status, ending federalization; active component forces begin redeploying home.
13-27 May	-	CANG releases troops from state active duty, returning them to "part-time" status.
Source: Compiled from Harrison (1992), Delk (1995), and various CANG after-action reports.		

Gangs in Los Angeles County

All Blood Gangs in Los Angeles County

There are **88 incorporated cities** and dozens of other unincorporated places in Los Angeles County (LAC). In doing this research on the proliferation of gangs within Los Angeles, each of these places were visited in an attempt to not just identify gangs active in Los Angeles, but to determine their territories too.

Through several weeks of field work and research there were a total of 274 Black gangs in 17 cities and five unincorporated areas in Los Angeles County. In this research, both the cities and unincorporated areas are identified as "places," a term that the U.S. Census uses.

Athens | Carson | Compton | Duarte | Florence | Gardena | Hawthorne | Inglewood | Lakewood | Long Beach | Los Angeles | Lynwood | Paramount | Pasadena | Pomona | Rosewood | Santa Monica

- 135 Piru
- 456 Island
- 64 Brims (defunct)
- 706 Blood
- 92 Bishops
- Athens Park Boys
- Aliso Village Brim (defunct)
- Avenue Piru Gang
- Be-Bopp Watts Bishops
- Black P Stones-City
- Black P Stones-Jungles
- Blood Stone Pirus
- East Compton Piru
- East Side Piru
- Elm Street Piru
- Family Swan Blood 89/92
- Fruit Town Brims
- Fruit Town Pirus
- Ghost Town/ES Pain
- Harvard Park Brim
- Hawthorne Piru
- Holly Hood Pirus
- Hoover Family (defunct)
- Inglewood Family Gang
- Pacoima Pirus
- Parke Nine Bloods
- Pasadena Denver Lane
- ProJect Gangster Blood
- Pueblo Bishops 52
- Queen Street Blood
- Queen Street Blood 76 Block
- Samoan Warriors Bounty Hunters
- Scott Park Blood
- ScottsDale Piru
- Squiggly Lane Gangster

- Blood Stone Villian
- Bounty Hunters
- Campenella Park Piru
- Cedar Block Piru
- Center Park Blood
- Center View Piru
- Centinela Park Family
- Circle City Piru
- Crenshaw Mafia Gang
- Cross Atlantic Piru
- Dalton Gangster Blood (defunct)
- DBCP
- Denver Lane Blood
- Doty Block Gang
- Down Hood Mob
- Kabbage Patch Piru
- Kalas Park Loks
- Leuders Park Piru
- Lime Hood Piru
- Lynwood Mob Piru
- Mad Swan Blood
- Miller Gangster Bloods
- Mob Piru
- Neighbor Hood Pirus
- Neighborhood Pirus 145
- Rollin 20s NeighborHood Blood
- Original Block Piru 151
- Outlaw 20s
- Summit Street Bloods
- Tree Top Piru
- Ujima Village Bloods
- Van Ness Gangster
- Village Town Piru
- Water Front Piru
- Weirdoz Blood
- West Covina Mob
- West Side Piru - Compton
- West Side Piru - West Covina
- Hacienda Village Blood

All Crip Gangs in Los Angeles County

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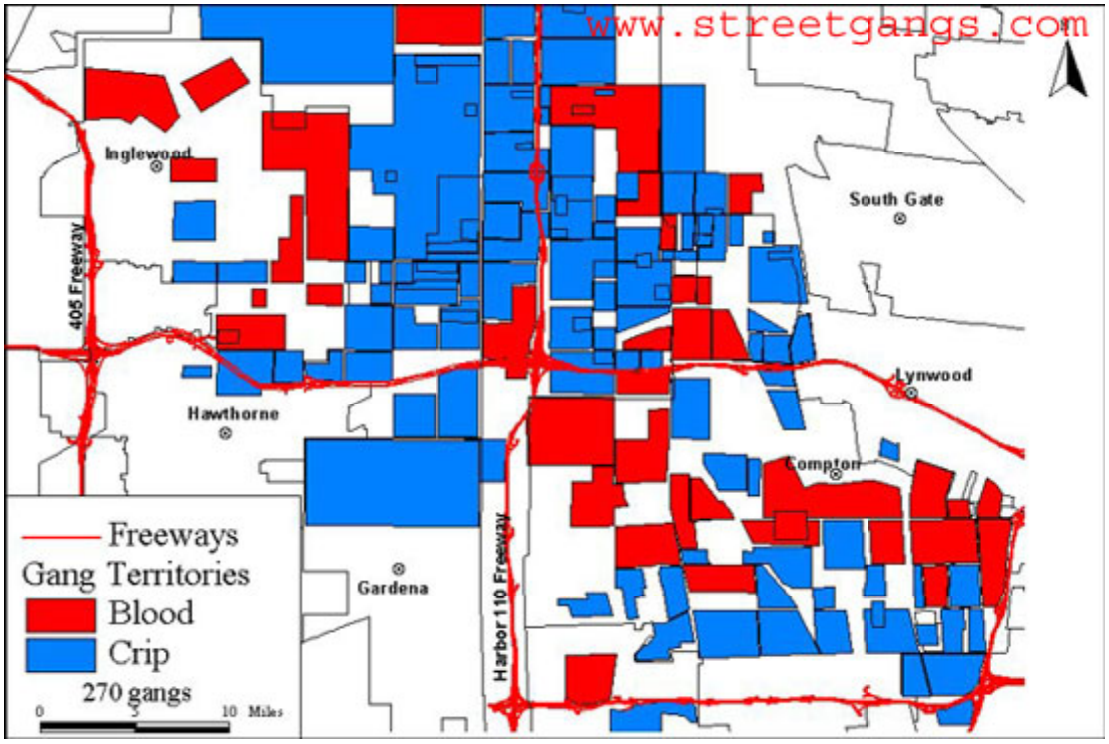
Altadena | Athens | Carson | Compton | Duarte | Florence | Gardena | Hawthorne | Inglewood | Lakewood | Long Beach | Los Angeles | Lynwood | Paramount | Pasadena | Pomona | Rosewood | Santa Monica | Torrance | West Covina | Willowbrook

- 101 Crip Gang
- 7th Street Watts Crip
- Acacia Block Compton Crip
- Altadena Block Crip
- Angelo Mafia Crip
- Anzac Grape Compton Crip
- Atlantic Drive Compton Crips
- Avalon 40's Crip
- Avalon Gangster Crips 53
- Avalon Ganster Crip 116
- Avalon Garden Crips 88
- Back Street Crip
- Beach Town Mafia Crip
- Big Daddyz (BDZ)
- Gangster, Hoover 52
- Gardena Pay Back Crip
- Geer Gang Crip
- Ghost Town Crips
- Grape Street Watts
- Grave Yard Crip
- Gundry Blocc Paramount Crip
- Harbor City Crips
- Hard Time Hustler Crip, 88, 93
- Hard Time Hustler Crip, 103, 104
- Hard Time Hustler Crip, 78
- Harvard Gangster Crip, 127
- Hat Gang Watts Crip
- PlayBoy Huster Crip
- PlayBoy Style Crip 82
- PlayBoy Style Crip 101,106
- Pocket Hood Compton Crip
- Raymond Ave Crip 102
- Raymond Ave Crip 120
- Raymond Ave Crip Pasadena
- RHG
- Rollin' 130's
- Rollin 20s Long Beach
- Rollin 30s
- Rollin 40s
- Rollin 50s
- Rollin 60s

- ☐ Blunt Smoking Only Gang
- ☐ BOGC
- ☐ Born To Jacc Crip 73rd st
- ☐ Boulevard Mafia Crips
- ☐ Bricc Block Crip
- ☐ Broadway Gangster Crip 112
- ☐ Broadway Gangster Crip 52
- ☐ BudLong Crip Gang 102
- ☐ Burnside Avenue Crip Gang
- ☐ Butler Blocc Compton Crips
- ☐ By Yourself Hustler Crips
- ☐ Carver Park Compton Crips
- ☐ Chester Street Compton Crips
- ☐ Compton Avenue Crip, 95
- ☐ DAWGS
- ☐ Dirty Old Man Gang
- ☐ Dodge City Crips
- ☐ Don't Give a Fuck
- ☐ Down Ass Pimp Gang, 109
- ☐ Dragnet
- ☐ DSHC 91st
- ☐ Du Rocc Crip
- ☐ Ducky Hood Compton Crip
- ☐ East Coast Blocc Crip, 190
- ☐ East Coast Blocc Crip, 118
- ☐ East Coast Crip, Q102
- ☐ East Coast Crip, 200
- ☐ East Coast Crip, 59
- ☐ East Coast Crip, 62 NHC
- ☐ East Coast Crip, 66
- ☐ East Coast Crip, 68
- ☐ East Coast Crip, 69 Shacc Boys
- ☐ East Coast Crip, 76
- ☐ East Coast Crip, 89 NHC
- ☐ East Coast Crip, 97
- ☐ East Side DAWGS
- ☐ East Side Hustler Crip 104, 108
- ☐ East Side Hustler Crip 115,118
- ☐ East Side Players, 97
- ☐ East Side Ridas, 64
- ☐ East Side Ridaz, 59
- ☐ Farm Dog Comton Crip
- ☐ Hickery Street Watts Crip
- ☐ Holmes Town Crip
- ☐ Home Boys Crimino Gang
- ☐ Hoover, 107
- ☐ Hoover, 112
- ☐ Hoover, 59
- ☐ Hoover, 74
- ☐ Hoover, 83
- ☐ Hoover, 92
- ☐ Hoover, 94
- ☐ HSHG
- ☐ Inglewood Village Crip
- ☐ Insane Crip
- ☐ Kelly Park Compton Crip
- ☐ Kitchen Crip Gang, 87
- ☐ Kitchen Crip Gang, 95
- ☐ Kitchen Crip, 116
- ☐ Latana Blocc Compton Crip
- ☐ LDH 73
- ☐ Lettin Niggas Have It
- ☐ Osage Legend Crip, 102
- ☐ Mack Mafia Crip
- ☐ Mafia Crip, 99
- ☐ Main Street Crip
- ☐ Main Street Mafia Crip
- ☐ Mansfield Gangster Crip
- ☐ Marvin Gangster
- ☐ Mayo Ave Compton Crip
- ☐ Menlo Gangster Crip, 103
- ☐ Menlo Gangster Crip, 65
- ☐ McKinley Avenue Crips
- ☐ Mona Park Compton Crips
- ☐ Most Valuable Pimp Gangster Crip
- ☐ NBGC
- ☐ Neighbor Hood 90 Crip
- ☐ Neighbor Hood Compton Crips
- ☐ Neighbor Hood Crip 106, 102
- ☐ Neighbor Hood Crip 115
- ☐ Neighbor Hood Crip 67
- ☐ Neighbor Hood Crip, 111, 112 (w/s)
- ☐ Neighbor Hood Crip, 111, 112 (e/s)
- ☐ Neighbor Hood Crip, 46
- ☐ Neighbor Hood Crip, 55
- ☐ Neighbor Hood Crip, 57
- ☐ Neighbor Hood Crip, 59
- ☐ Neighbor Hood Crip,
- ☐ Rollin 80's West Coast Crip
- ☐ Rollin 90s NHC
- ☐ Rollin 90s Westcoast
- ☐ RSH Compton Crip
- ☐ Santa Fe Mafia Crip
- ☐ Santana Blocc Compton Crip
- ☐ School Yard Crips
- ☐ Sex Symbols
- ☐ Shotgun Crip
- ☐ Sin Town Crip 357
- ☐ Six Hood Compton Crip
- ☐ Sons of Samoa
- ☐ South Side Compton Crips
- ☐ South Side Village Crips
- ☐ Stevenson Village Crip (Cold Village Dog)
- ☐ Straight Ballers Society
- ☐ T Zone Crip 110
- ☐ Ten Line Ganster Crip
- ☐ Tiny Hoodsta Crip
- ☐ TMHG
- ☐ Tonga Crip Gang
- ☐ Tragniew Park Compton Crip
- ☐ Twilight Zone Compton Crip 157
- ☐ UCPS 1400 Block
- ☐ Under Ground Crip
- ☐ Venice Shore Line
- ☐ Victoria Park Crips
- ☐ Ward Lane Compton Crip
- ☐ WaterGate Crip
- ☐ Watts Mafia Crip Gang
- ☐ Watts Playground Crip 115
- ☐ We Dont Care Crip
- ☐ West Boulevard Crip 28
- ☐ West Boulevard Crip 64
- ☐ West Covina NH Crip
- ☐ West Side Mafia
- ☐ Young Ass Playas

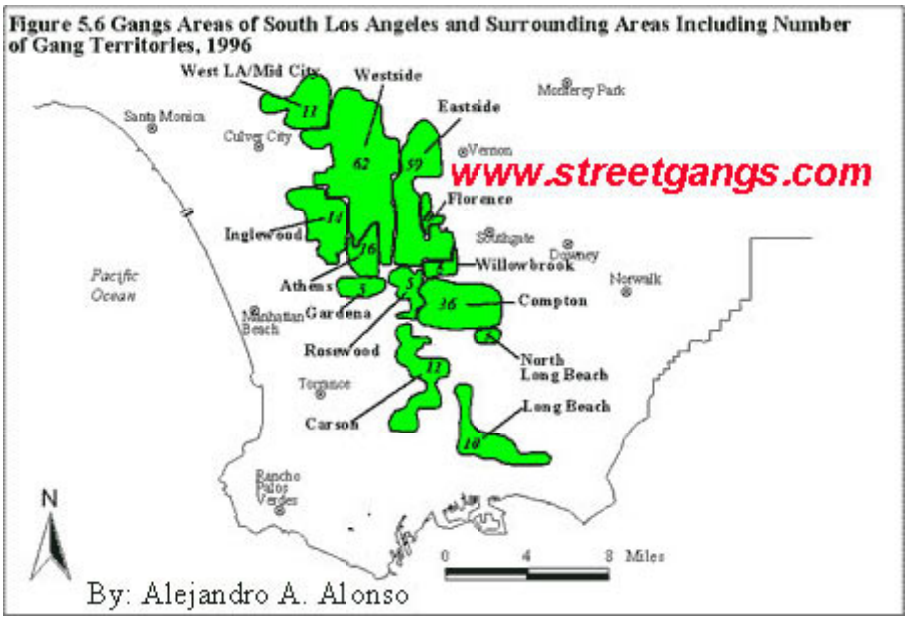
- Four Corner Block Crip
- Four Duece Crip Gang(w/s)
- Four Line Drive Crip
- Front Street Crip
- Fudge Town Mafia Crip 105, 107
- Gangster Crip, 105
- Gangster Crip, 118
- Gangster Crip, 42(e/s)
- Gangster Crip, 43
- Gangster Crip, 43 SS
- Gangster Crip, 47 S
- Gangster Crip, 48
- Gangster Crip, 83
- Gangster Crip, 87
- Gangster Crip, 96
- Gangster Crip, 97
- Gangster Crip, 98 Lynwood
- Neighborhood Watts Crip
- Nestor Ave Compton Crip
- Nothing But Trouble Halldale Crip
- NSG Senyo Gang
- Nutty Blocc Compton Crip
- Original Blocc Crip Gang
- Original Hood Crip
- Original Swamp Compton Crip
- Palm & Oak Gangster
- Palmer Blocc Compton Crips
- Park Village Compton Crips
- Perverts
- Pimp Town Murder Squad
- PJ Watts Crip
- Play Boy Gangster Crip

Black Gang Territories of South Los Angeles



The above map shows south Los Angeles, Inglewood, Gardena, Compton and gang territories in Hawthorne. There are more Crip gangs than Blood, but in Inglewood there are more Bloods and in Compton it is about even between the two.

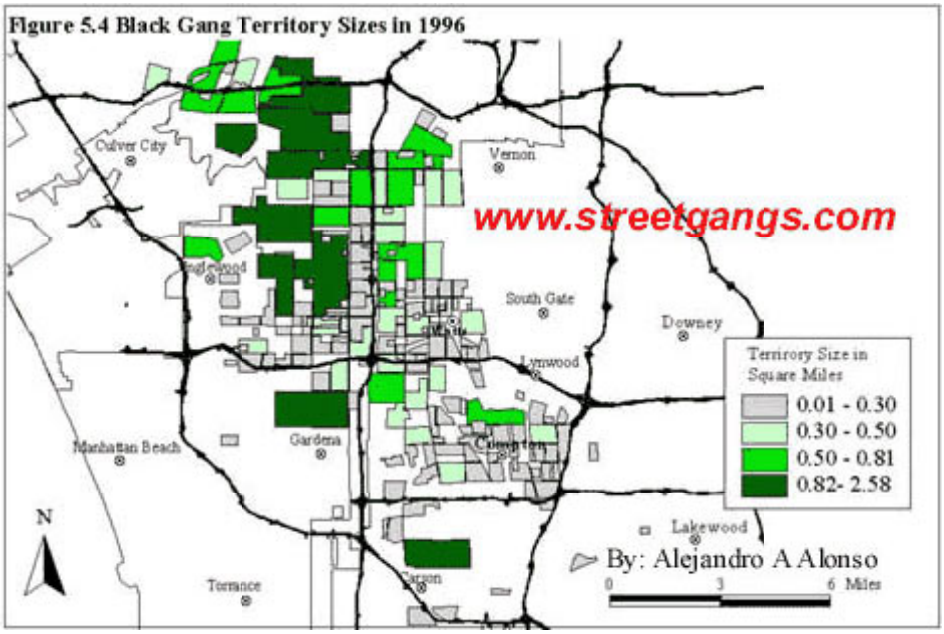
Gang Regions in South Los Angeles



In South Los Angeles I divided the area into 13 areas from the Mid City/West LA area to Long Beach. The Mid City/West LA, Westside, and Eastside, are within the City of Los Angeles. Athens, Florence,

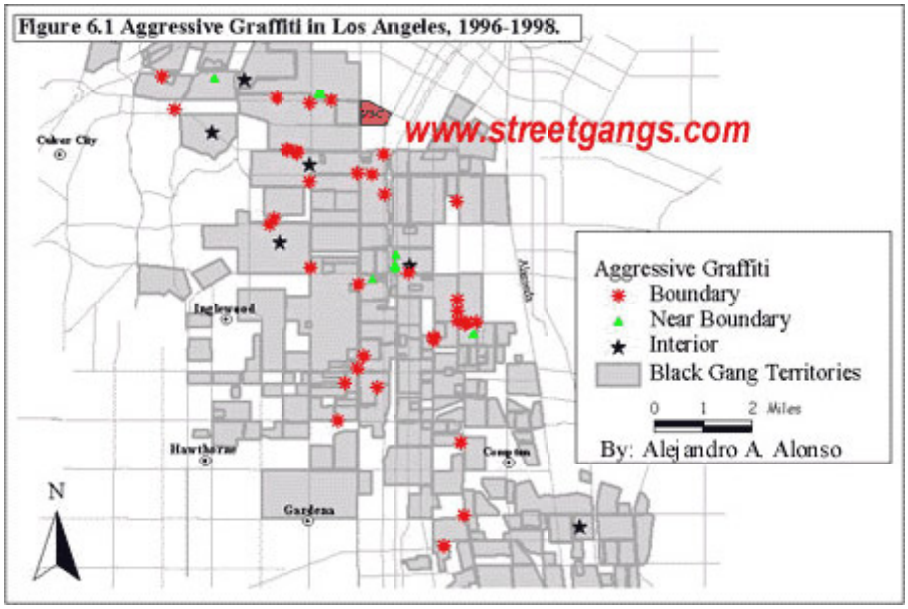
Rosewood, and Willowbrook are unincorporated places policed by the Los Angeles Sherrif's Department.

Territory Size Variation Among South Los Angeles Gangs



This map reveals that gangs with significant territories are concentrated on the Westside portion of the city. On the Eastside, which consists of Watts, and the City of Compton have significantly smaller territories. I determined that the size variation had little to do with population density, but more to do with the temporal aspect of gangs in a particular area. The older more original gang territories were smaller and those gangs that developed in the newer "unclaimed" areas, where able to develop larger territories. This notion is very similar to how the United States developed individual states over time. The older original colonies are significantly smaller than the West coast states that joined the union later.

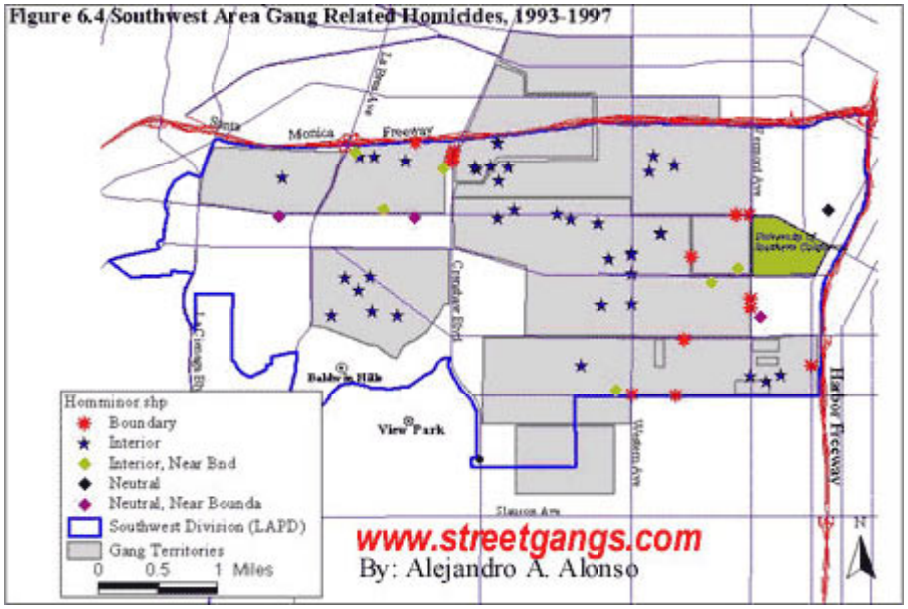
Aggressive Graffiti in Los Angeles



I surveyed all the gang graffiti and identified the places where aggressive graffiti was the most prevalent. I designated an address for each occurance and matched it to a street file of South Los Angeles. I categorized each location as either **boundary**, **near boundary**, or **interior**.

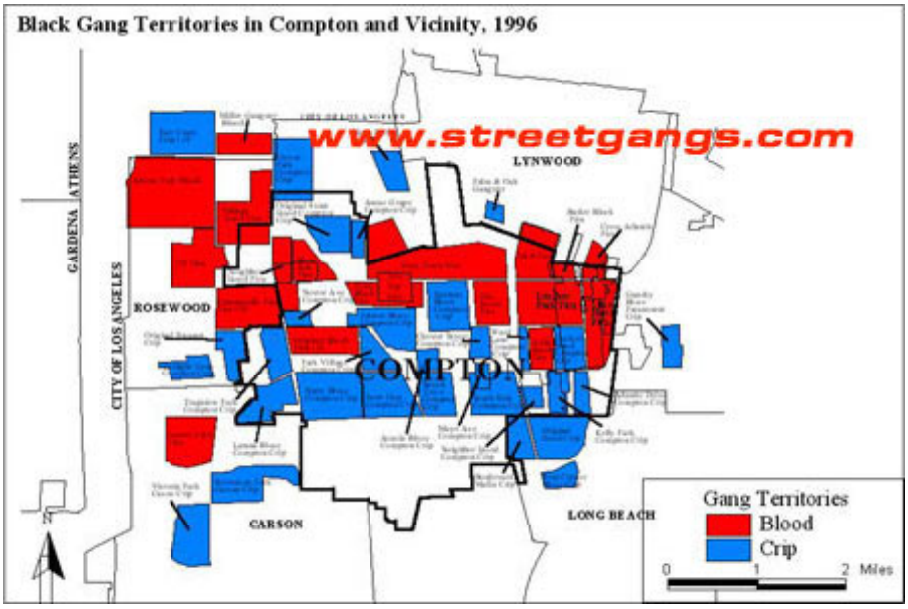
This analysis explored the extent to which aggressive graffiti messages are found on the boundaries of gang territories more so than the interior. Special attention was given to the hypothesis put forth by geographers David Ley and Roman Cybriwsky stating that the most aggressive graffiti is found at the boundaries of gang territories (1974). This map reveals that the same pattern was found among Los Angeles gang graffiti written by Black gangs.

Homicides in the Southwest Division of Los Angeles



I was trying to determine if Black aggressive gang graffiti, which was more prevalent on the boundaries of gang territories, would coincide with the places of Black gang homicides by examing a section of Los Angeles. As the map reveals, a significant number of gang related homicides actually occurred in the interior areas of gang territories, an area that is nearly absent of the most aggressive type of gang graffiti.

Blood and Crip Compton Gang Territories



Blood and Crip gang territories of Compton and surrounding unincorporated areas of Willowbrook, Athens, Rosewood and the areas of Carson, Lynwood and N. Long Beach. Notice how the northern part of Compton is dominated by Blood gangs while the southern portion of Compton has a greater Crip presence.

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Asian Gangs in Los Angeles County

There are approximately 20,000 Asian gang members in Los Angeles County and represent a diversre array of backgrounds and affiliations. There are Asian gangs that down with the Surenos, some affiliated with Bloods and Crips and several independent entities such as the Chinese Wah Chings, Philipino, Cambodian and Vietnamese gangs. Below is a preliminary list of cities and places within Los Angeles County where Asian gangs are active:

- Antelope Valley
- Arcadia
- Carson
- Cerritos
- Glendale
- Hawthorne
- Los Angeles
- LA - San Fernando Valley
- Long Beach
- Monterey Park
- Pomoma
- San Gabriel Valley Area
- Torrance
- West Covina

OTHER SOUTHERN CALIFORNIA AREAS

- Garden Grove
- Fullerton
- Santa Ana

Hispanic Gangs in Los Angeles County

There are over 600 Latino gangs in Los Angeles County representing over 50% of the gang memberbership in the area and they are more geographically distributed throughout the region than black, asian and white gangs. They are found in great numbers in the San Fernando Valley, San Gabriel Valley, the Beach commmunities, Long Beach, Compton and South Central Los Angeles.

Below is a preliminary list of cities within Los Angeles County where Hispanic gangs are active.

☐ Alhambra	☐ Cudahy	☐ Lakewood	☐ Pico Rivera
☐ Antelope Valley	☐ Culver City	☐ Lancaster	☐ Pomona
☐ Artesia	☐ Downey	☐ Lawndale	☐ Redondo Beach
☐ Atwater	☐ Duarte	☐ Lomita	☐ Rosemead
☐ Azusa	☐ El Monte	☐ Long Beach	☐ San Dimas
☐ Baldwin Park	☐ El Sereno	☐ Los Angeles County	☐ San Fernando
☐ Bell	☐ Gardena	☐ Los Angeles	☐ Santa Clarita
☐ Bell Gardens	☐ Glendale	☐ Lynwood	☐ Santa Fe Springs
☐ Bellflower	☐ Hacienda Heights	☐ Maywood	☐ Santa Monica
☐ Burbank	☐ Hawaiian Gardens	☐ Monrovia	☐ South Gate
☐ Carson	☐ Hawthorne	☐ Montebello	☐ Temple
☐ City of Commerce	☐ Huntington Park	☐ Monterey Park	☐ Torrance
☐ City of Industry	☐ Inglewood	☐ Newhall	☐ Walnut
☐ Claremont	☐ Irwindale	☐ Norwalk	☐ West Covina
☐ Compton	☐ La Mirada	☐ Paramount	☐ West Whittier
☐ Covina	☐ La Puente	☐ Pasadena	☐ Whittier

Maravilla Gangs

All Hispanic Gangs in Los Angeles County

Gang Legislation

Since the 1980s many states have adopted legislation and laws specifically drafted to combat street gangs and to make it easier to prosecute their offenses. California has led the nation in laws written to prosecute gangs, but many US states have their own laws. This section will will focus on California, City of Los Angeles, and the County of Los Angeles' laws related to gang activity.

CALIFORNIA

California 186.20, also known as the "California Street Terrorism Enforcement and Prevention Act" or STEP Act.

California 186.22(a)

California 186.22(b)(c)(d) , gang participation

California 186.22(e)(f), gang definitions

California 186.22(b)(4) , gang enhancement

California 189, Drive-by Shootings; Murder; Carjacking

California 190.2(a)(22), Shooting from a Motor Vehicle

California 213, Robbery

California 246, discharging a weapon from a car.

California Code 666.7, sentence enhancement

California 12022.55, Shooting from a Motor Vehicle

California 12034, Driver's responsibilities

City of Los Angeles Municipal Code

Graffiti

City of Los Angeles Municipal Code - 03/31/99 CHAPTER IX - Building Regulations

ARTICLE 1 - Buildings [Building Code] (Article I, Chapter IX, Amended by Ordinance No. 170,953, Eff. 3/17/96, Oper. 1/1/96, incorporating by reference portions of the 1994 Edition of the Uniform Building Code and the 1995 Edition of the California Building Code).

SEC. 91.8904. SPECIAL PROVISIONS FOR VACANT PROPERTY GRAFFITI REMOVAL.
91.8904.1. Duties of the Owner of Vacant Property. (Title and Section Amended by Ord. No. 171,175, Eff. 7/25/96.)

91.8904.1.1. Procedure for Securing Vacant Property and Removing Graffiti - Notification. (Amended by Ord. No. 171,175, Eff. 7/25/96.)
91.8904.1.2 Abatement by the City., (Amended by Ord. No. 171,400, Eff. 12/20/96.)

County of Los Angeles

Title 13 PUBLIC PEACE, MORALS AND WELFARE Chapter 13.12 GRAFFITI PREVENTION, PROHIBITION AND REMOVAL 13.12.020. Definitions.

13.12.030. Unlawful to apply graffiti -- Prohibition of defacement

13.12.040. Possession of graffiti implements by minors prohibited

13.12.050. Possession of graffiti implements prohibited in designated public places

13.12.060. Limiting access to graffiti implements -- Furnishing to minors prohibited

13.12.060. Limiting access to graffiti implements -- Furnishing to minors prohibited

13.12.070. Display for sale -- Requirements

13.12.090. Graffiti declared public nuisance

13.12.100. Removal of graffiti by perpetrator

13.12.110. Removal provisions

13.12.120. Rewards for information

13.12.130. Penalties and civil liability of parents

13.12.140. Violations--Civil remedies available

13.12.150. Severability

A. Alonso, PO Box 18238, Los Angeles, California 90018, 1-800-249-1324, mraaalonso @ yahoo . com]

Gangs and Civil Unrest

Gang organizations have been known to provoke episodes of civil unrest in communities where there is disputed control. Sometimes gang organizations will exacerbate civil unrest or rioting to divert attention from other illegal and/or violent activity they deem necessary because of retribution or control. Schools in areas where gang activity is prevalent can become targets for perpetuating civil unrest as well as places where gang members “hang out” or make contact with other members. LACOE realizes that they operate many sites that may be vulnerable or hotbeds for civil unrest and gang violence.

Utility Disruption/Loss

Utility Loss was rated a HIGH PRIORITY HAZARD by Los Angeles County Office of Education..

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.

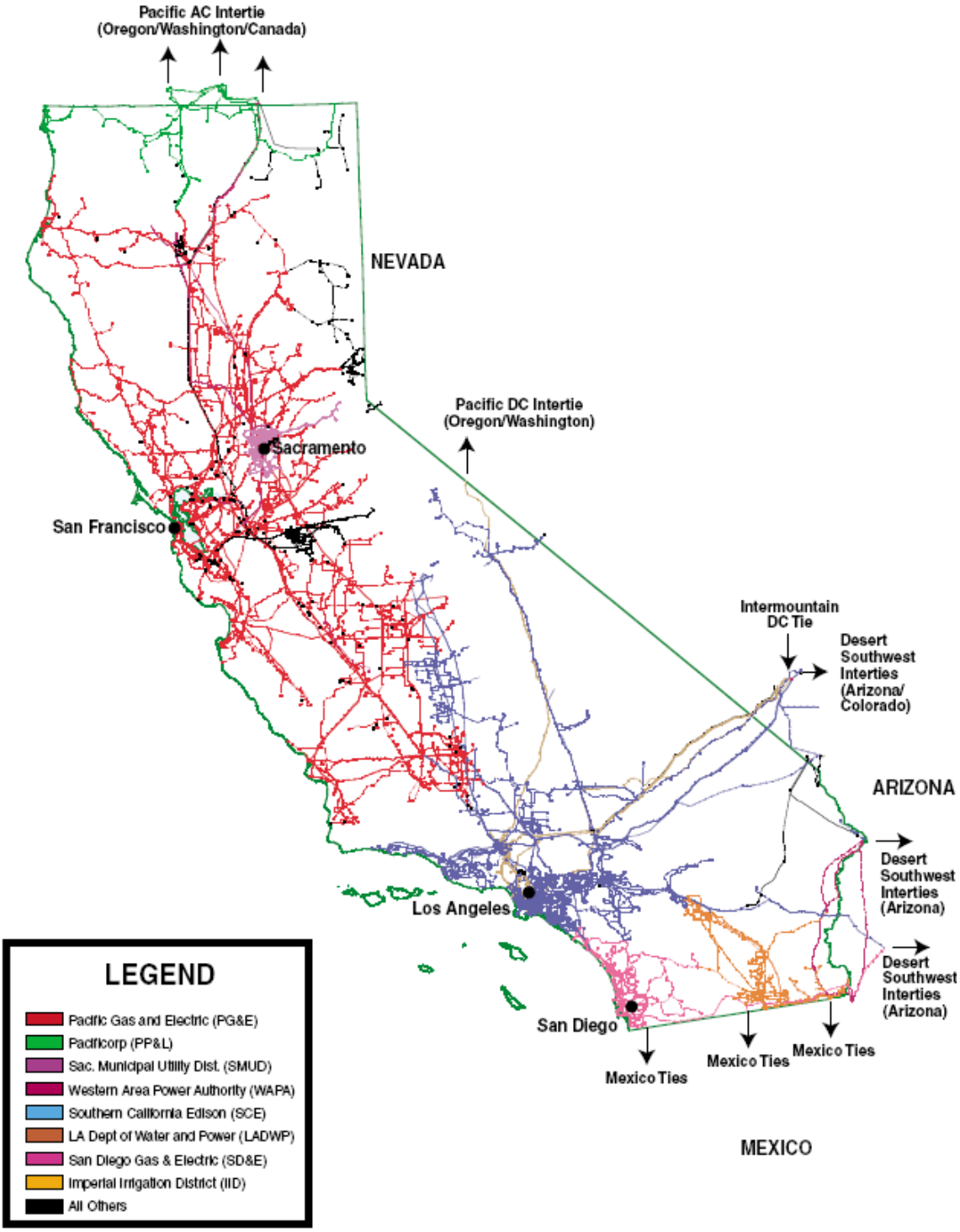
Drinking water is supplied to California residents through a myriad of governmental agencies, cities, districts, private utilities, mutual water companies, private businesses, and individually owned wells. There are over 10,000 public water suppliers in the state serving water to approximately 29 million 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

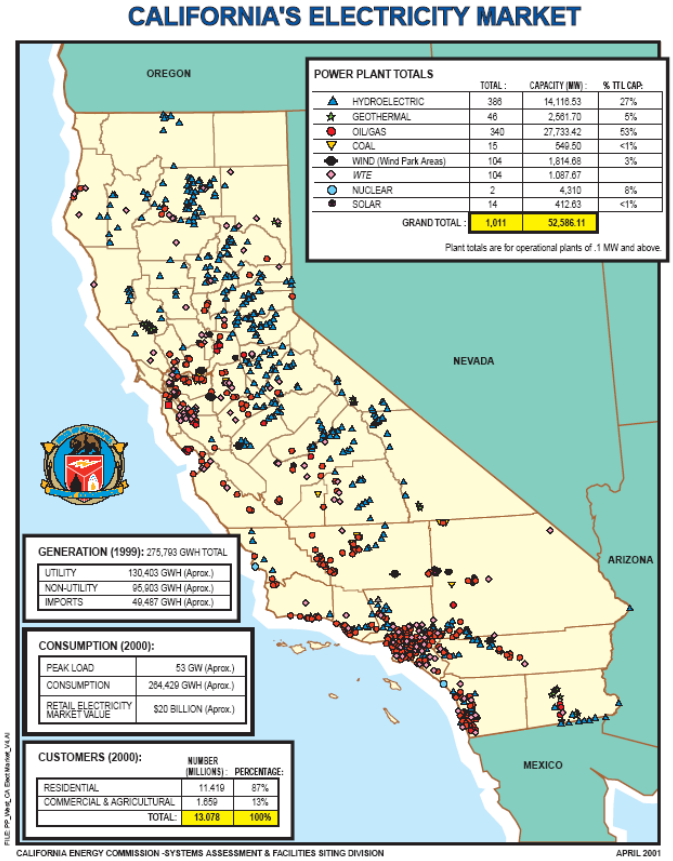


California Department of Energy

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.

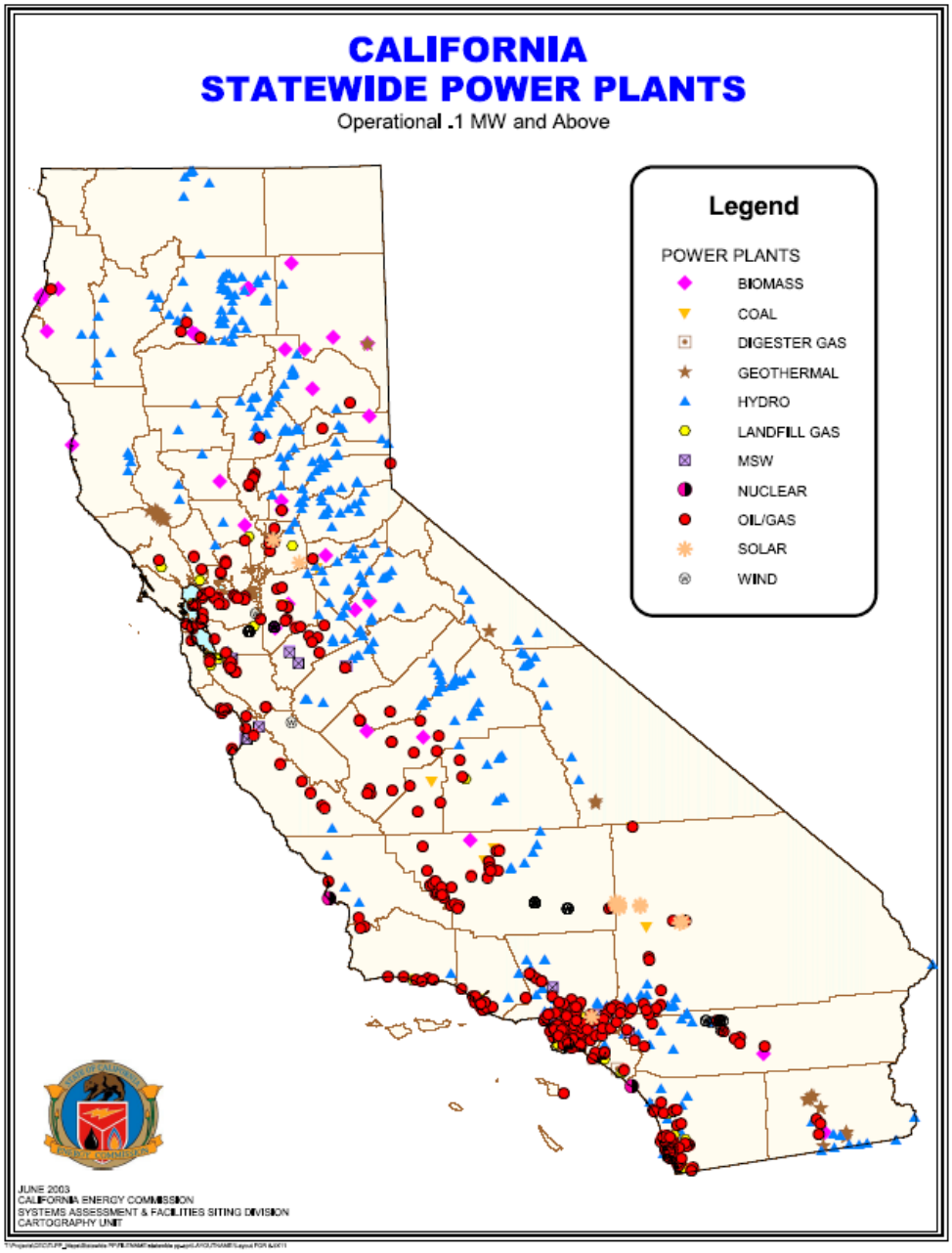


Mitigation measures available for these systems

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.

Impact of Los Angeles Office of Education

Severe or prolonged power disruptions would severely affect the critical services the Los Angeles County Office of Education provides to its clients (school districts in Los Angeles County). LACOE is the sole processing center for nearly all fiscal procurements by school districts and payrolls for all school district personnel in Los Angeles County. LACOE processes over $1 billion in payroll per month! A prolonged power disruption (72 hours or more) would essentially shut down fiscal disbursements to all school districts and school employees, causing severe economic depression throughout the county, discontinuity of business at school districts and virtual close-down of public education in Los Angeles County. Back up power is extremely limited and, as it is engineered now, would not allow LACOE to continue its support services.


CALIFORNIA
STATEWIDE POWER PLANTS
Operational .1 MW and Above
Legend
POWER PLANTS
BIOMASS
COAL
DIGESTER GAS
GEOTHERMAL
HYDRO
LANDFILL GAS
MSW
NUCLEAR
OIL/GAS
SOLAR
WIND
JUNE 2003
CALIFORNIA ENERGY COMMISSION
SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION
CARTOGRAPHY UNIT

Data/Telecommunications Loss

Data/Telecommunications Disruption was rated a HIGH PRIORITY HAZARD by Los Angeles County Office of Education.

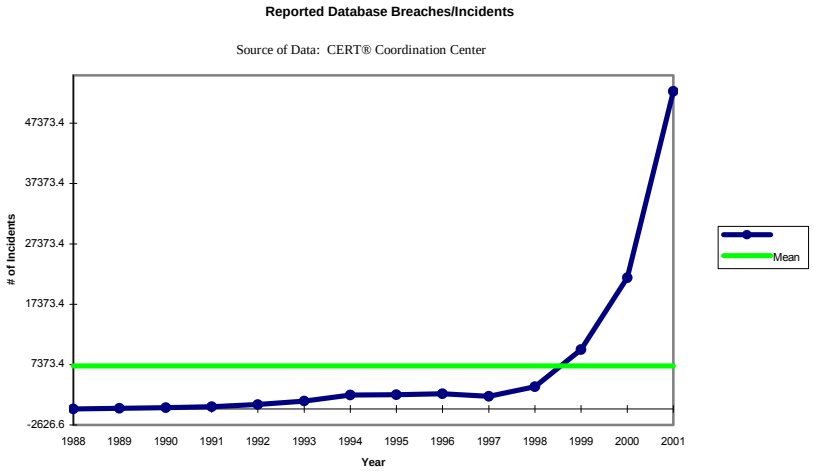
The Los Angeles County Office of Education depends upon information systems and communications networks to carry out nearly all aspects of day to day business. LACOE is responsible for processing the majority of fiscal disbursements and records for school districts and school district employees throughout Los Angeles County. 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.

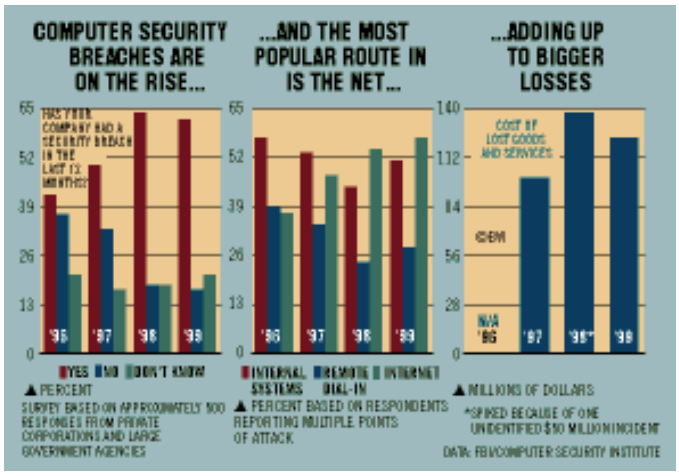
Cyber Crime

"…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, implementors, 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.

Impact on LACOE

A severe disruption in data and telecommunications could virtually shut down the public education system in Los Angeles County. Day-to-day business would cease because fiscal disbursements (a critical service provided by LACOE) could not be continued. Any disruption for more than 72 hours would severely impact the economy and public educational process in Los Angeles County.

Biological/Health Emergency

Biological/Health Emergencies were rated a HIGH PRIORITY HAZARD by Los Angeles County Office of Education.

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. Schools and their support systems are an essential part of these health and human services needs in that they are used for public shelters and gathering points for casualties and evacuation depots.

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.

Mission statements of the following Departments within Los Angeles County 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.

Health Hazards

Schools and school support systems have always been, and will continue to be, vulnerable to biological and health hazards, just by their nature as a gathering place for people from all around. Los Angeles County's population is mobile, not only locally, but globally; and the potential for introduction of disease is great. In schools, the public health system starts with teachers and parents. Schools experiencing unusual absenteeism because of a sickness or health issue must report these incidents to public health authorities. Epidemics have been averted because of early detection of a health problem in school children. On the other hand, if an epidemic or pandemic event occurs in one school, the odds are it will affect the entire area unless drastic measures are taken to quarantine or stop the event.

West Nile Virus (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 at the end of August 2004 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 last week, bringing the yearly total to 214.

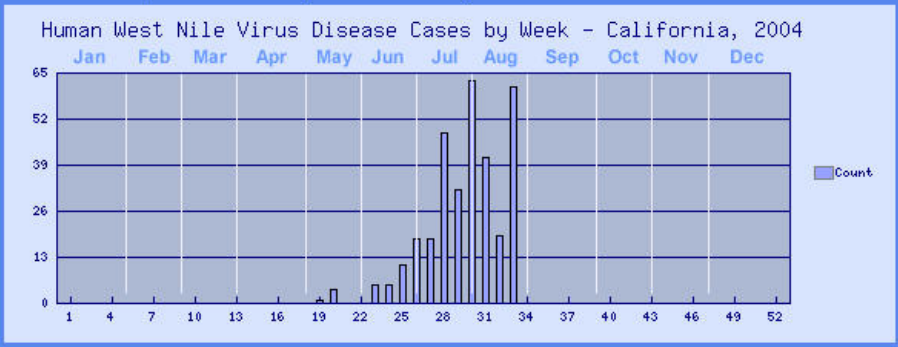
Summary of West Nile Virus Activity in California, 2004

(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**

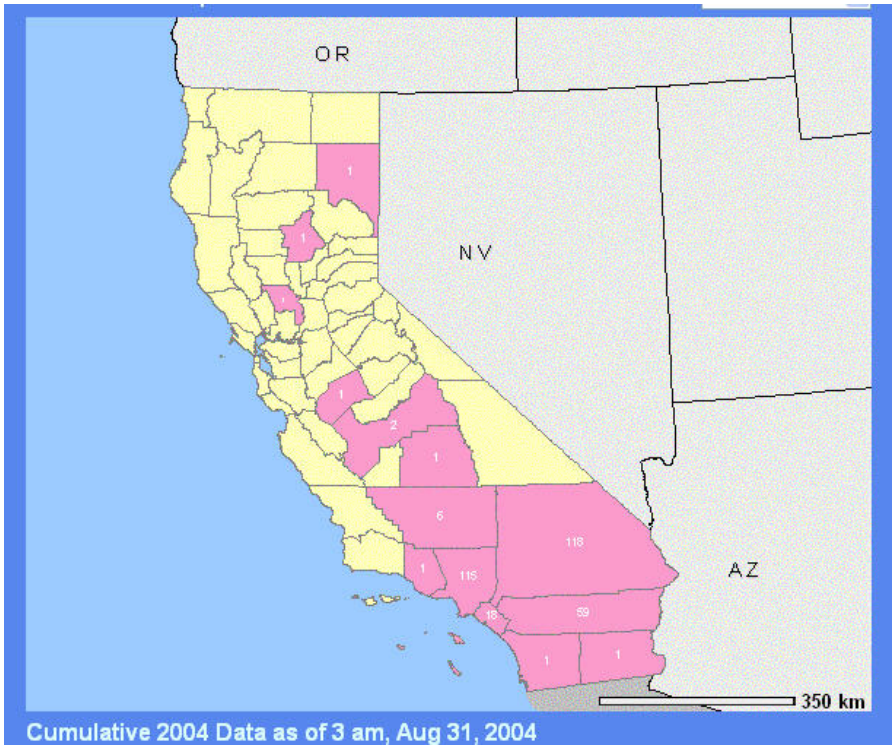
California West Nile Virus Surveillance Information Center

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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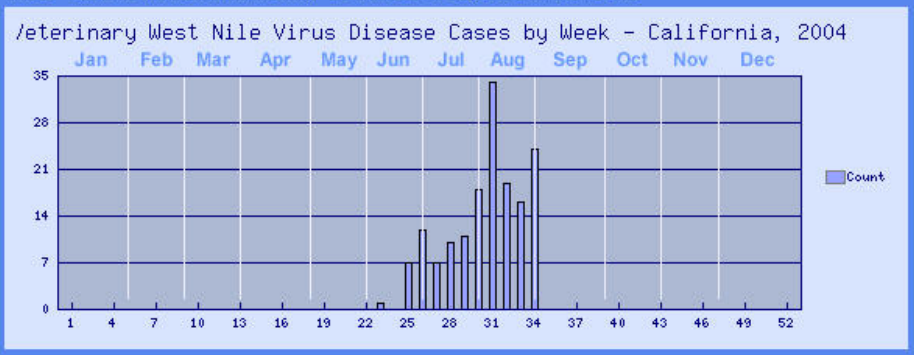
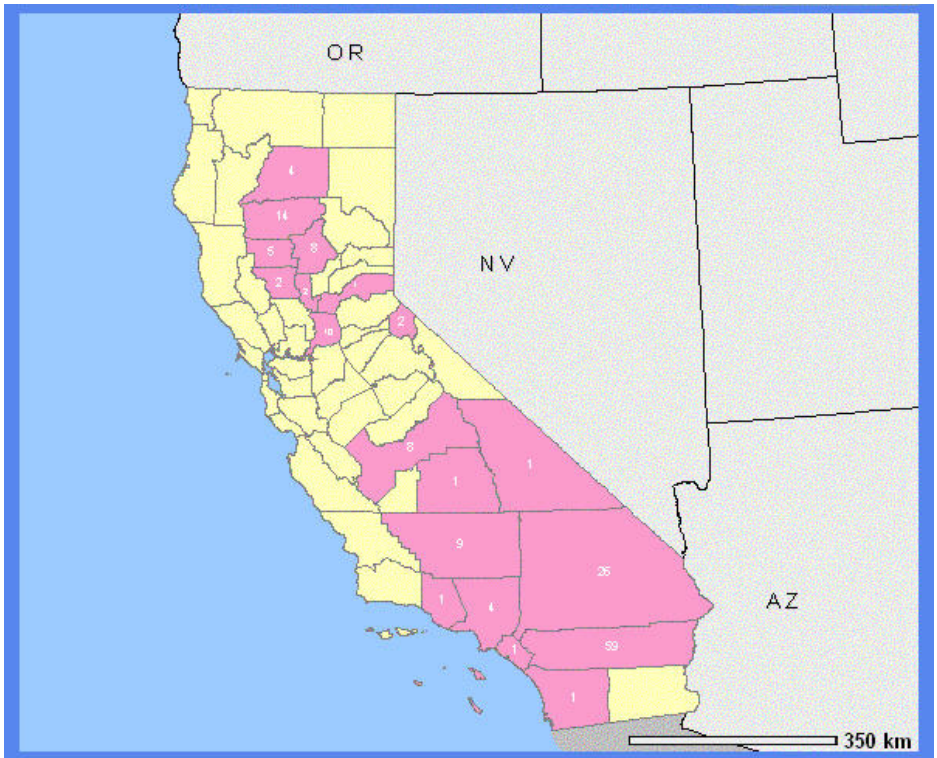


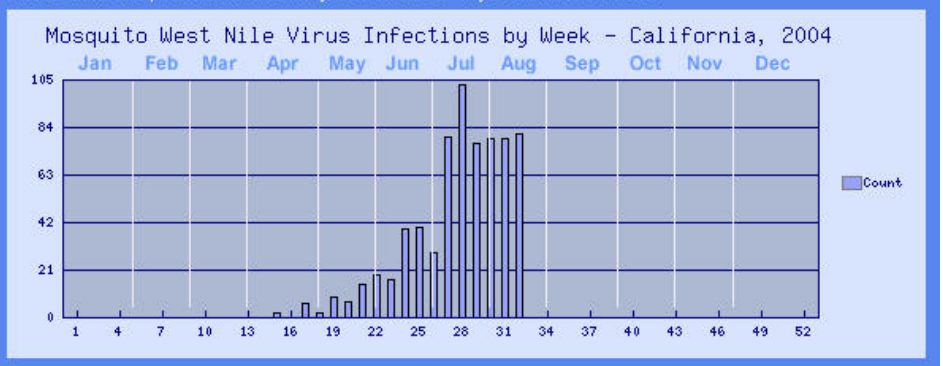
Cumulative Veterinary Disease Cases by County - California, 2004

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		



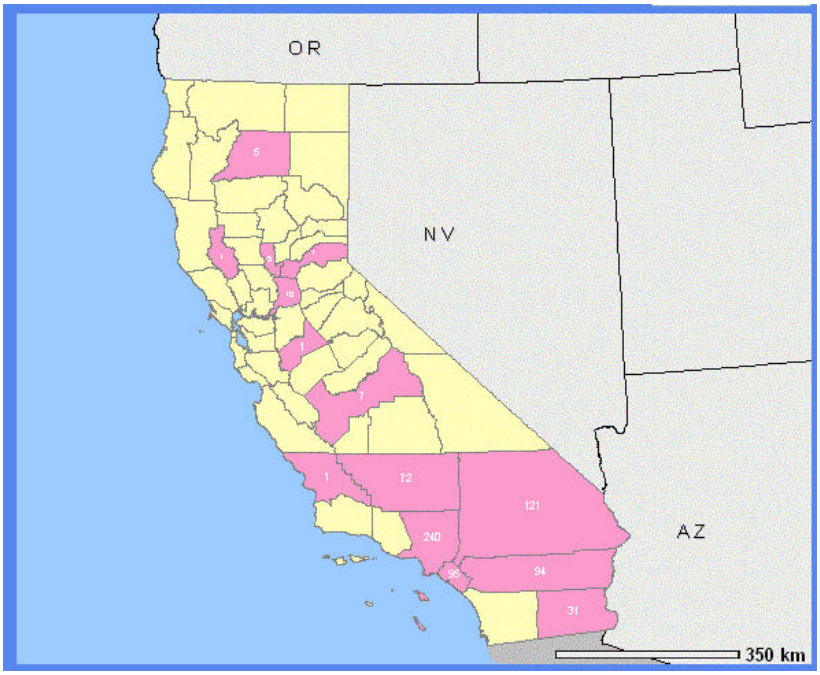
Cumulative 2004 Data as of 3 am, Aug 31, 2004

These data are provisional and may be revised or adjusted in the future.



Cumulative Mosquito Infections by County - California, 2004

Fresno County	7	Shasta County	5
Imperial County	31	Stanislaus County	1
Kern County	72	Sutter County	5
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		



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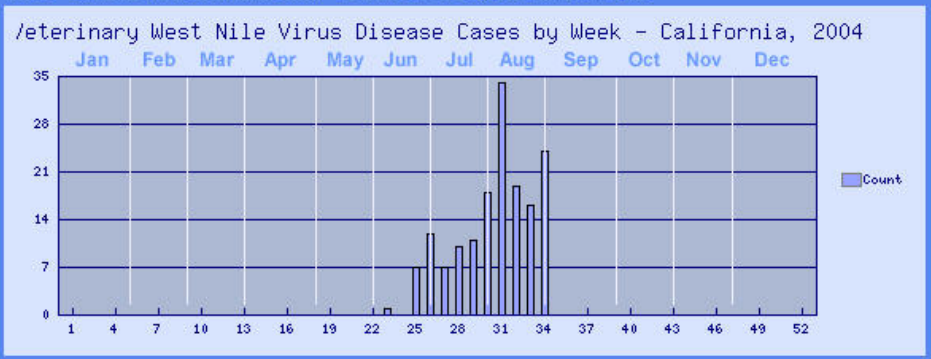
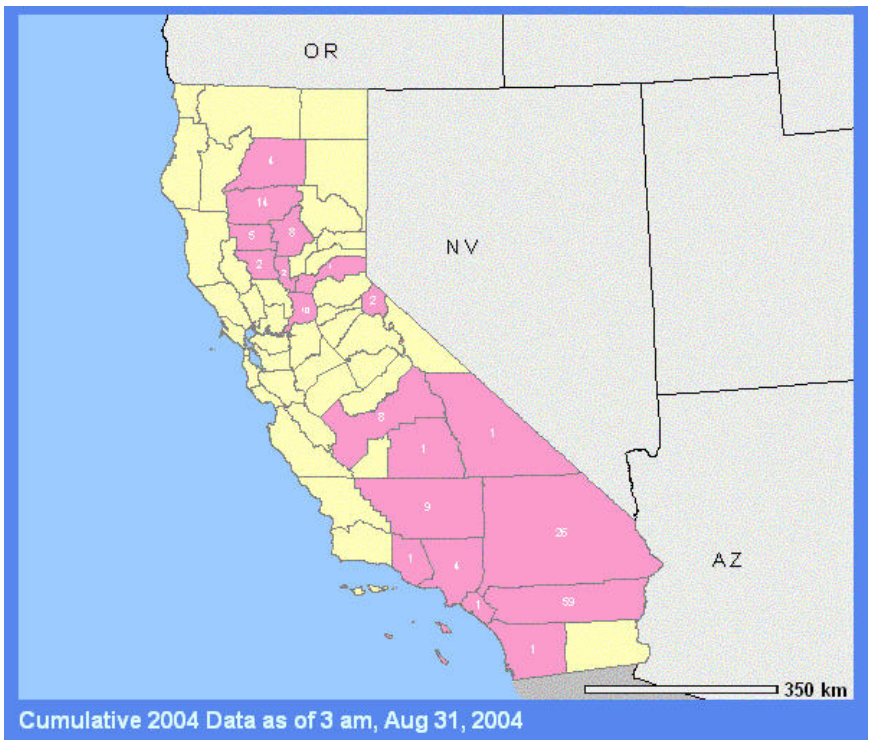


Cumulative Veterinary Disease Cases by County - California, 2004

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		



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 .

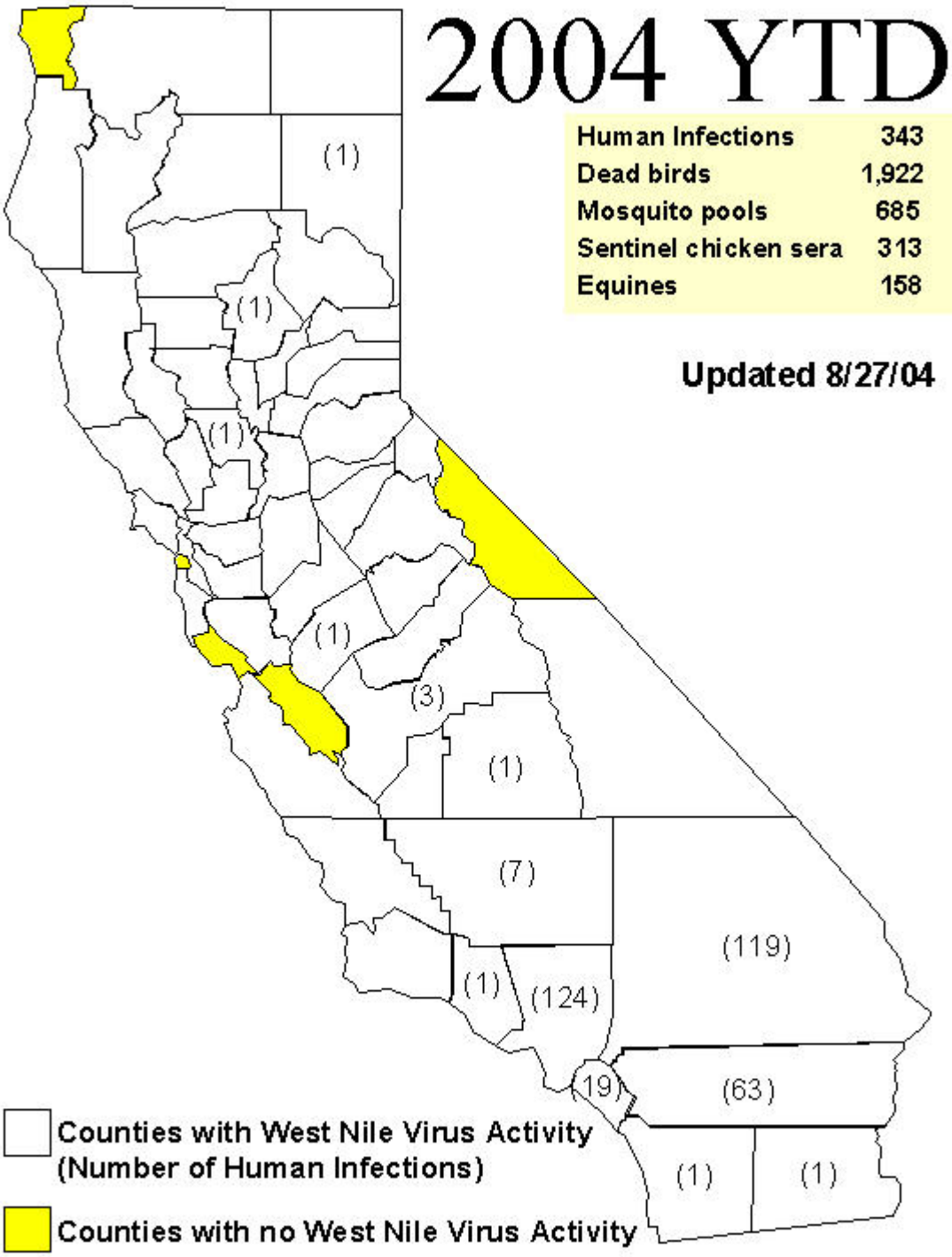
5. People usually get WNV from the bite of an infected mosquito. There is also evidence that WNV can be acquired via a blood transfusion or organ transplant from an infected donor.

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.

Areas around schools that are haven to large mosquito populations must be targeted for abatement and public education emphasizing personal protection. Further, schools housing students afflicted with medical conditions, which make them more vulnerable to the human affects of the virus, (such as many operated by LACOE) must take special precautions to protect their populations.

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.

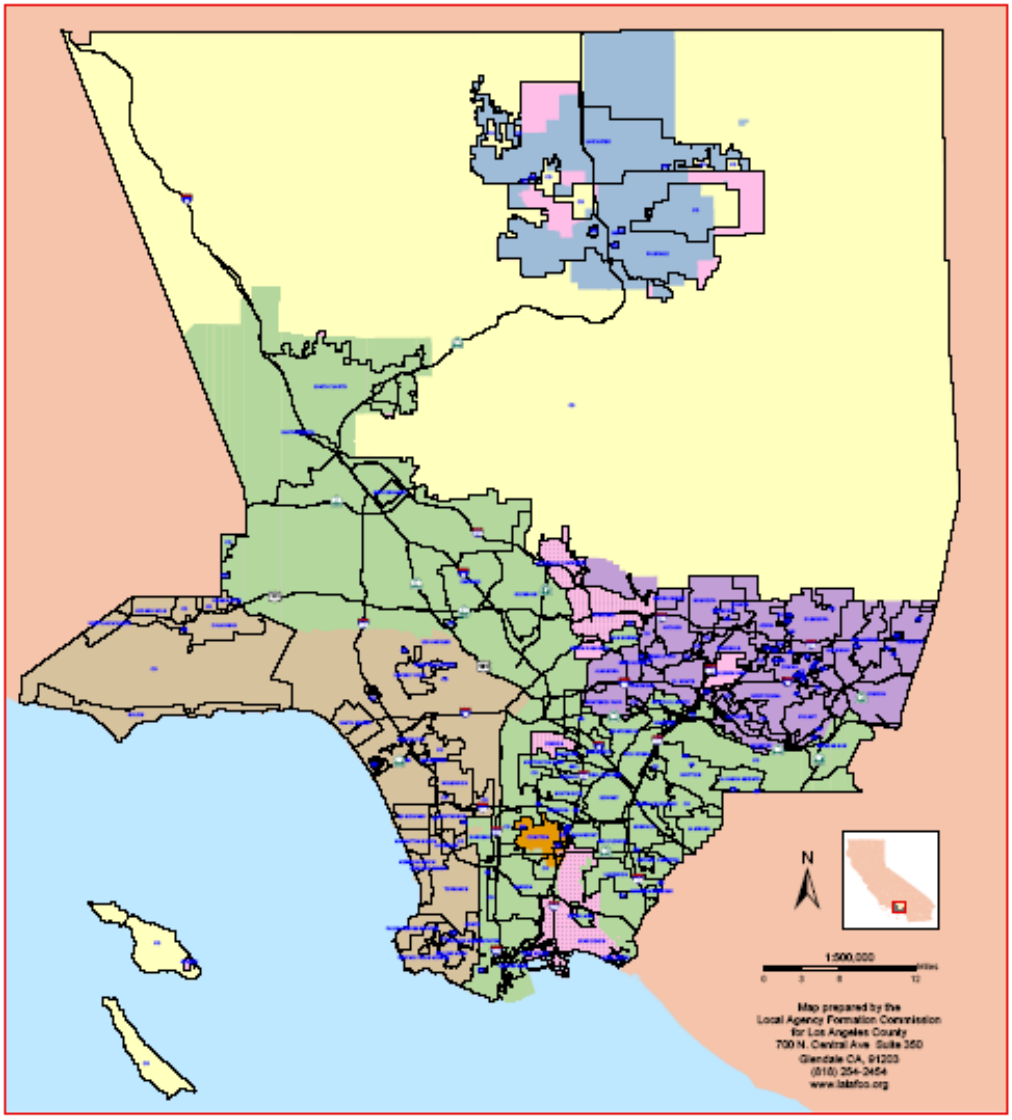
Multiple applications will likely be required to appreciably reduce Culex populations and interrupt arbovirus transmission. An emergency SLE virus response plan developed for New Orleans, Louisiana[63] indicates the need for repeated applications to control Cx.quinquefasciatus, and the need to repeatedly 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
8750 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) 790-8880
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
3634 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: 877-968-2473
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/CCU912801-07/2) 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.

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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

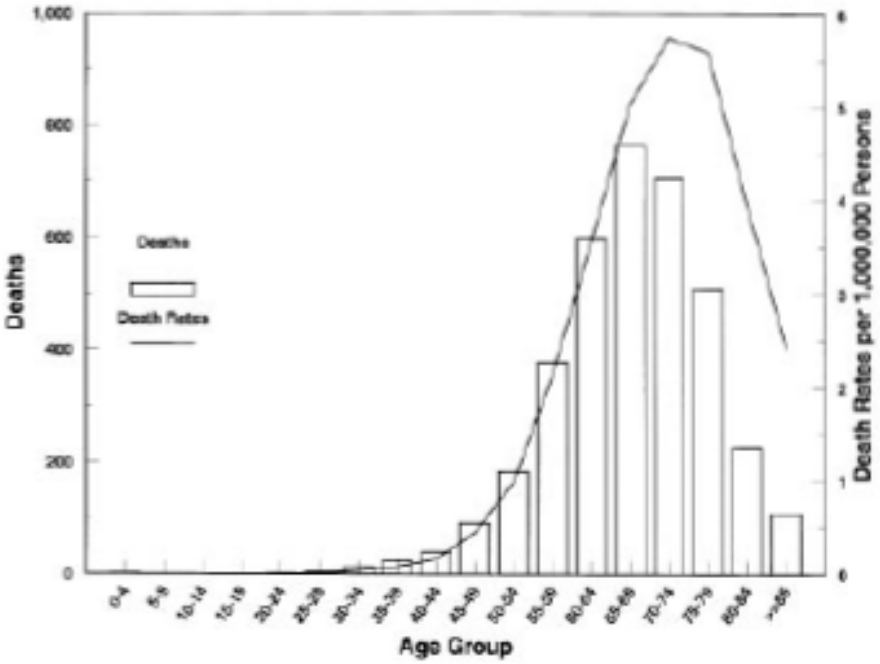
Since 1996, strong evidence has accumulated for a causal relationship between ongoing outbreaks in Europe of disease in cattle called bovine spongiform encephalopathy (BSE, or "mad cow disease") and a disease in humans originally called new variant Creutzfeldt-Jakob disease or more recently simply variant 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

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.

Flood

Flood was rated as a High Risk Priority by Los Angeles County Office of Education.

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. Several tropical storms have generated significant rainfall in the past century. 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. 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.

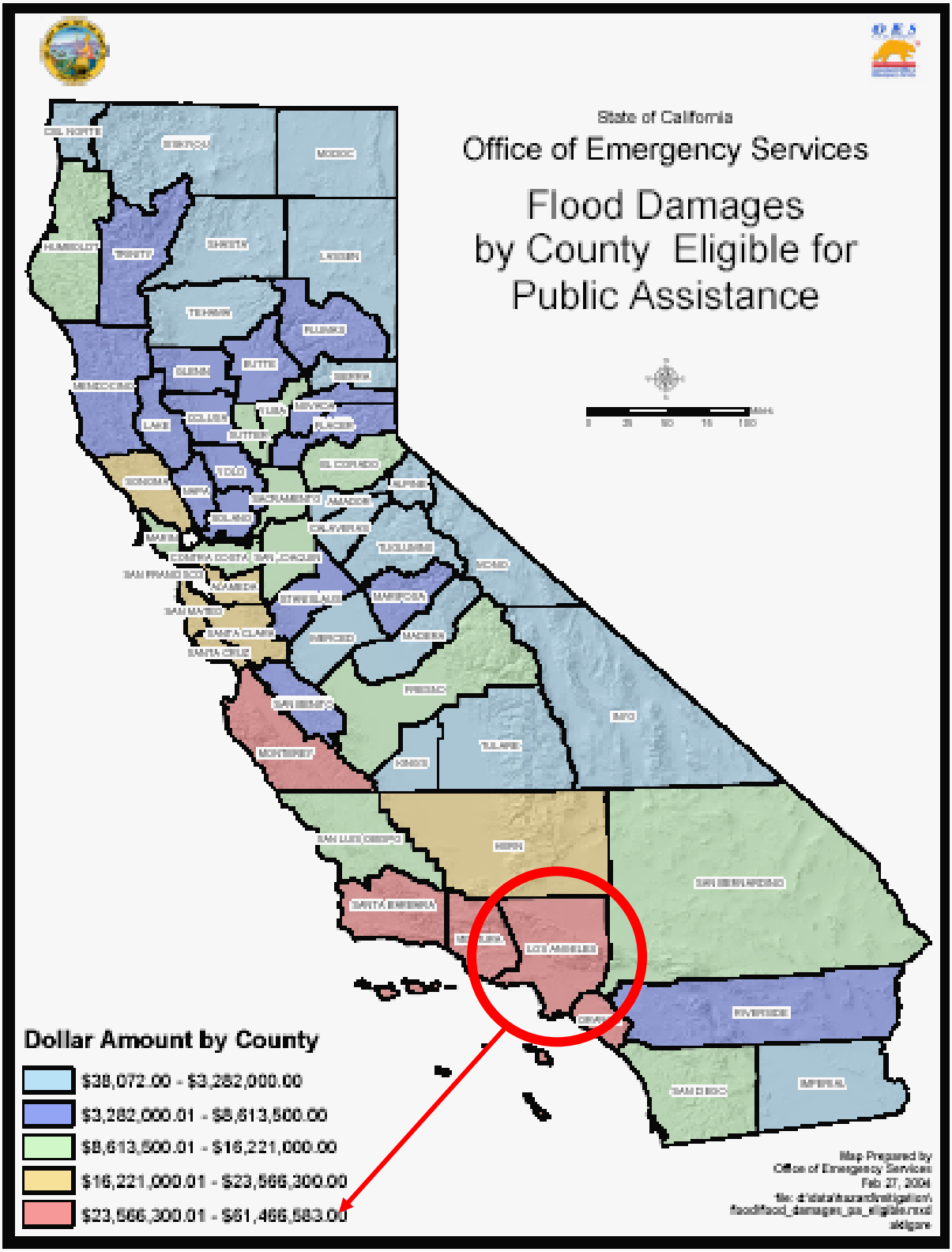
The South Coast hydrologic region extends up from the U.S.-Mexico border to the Tehachapi, San Bernardino, San Gabriel, and San Jacinto mountains. Nearly one-third of the area is coastal plain.

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

Types of Flooding in California

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

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%**

Vulnerability

Certain Los Angeles County Office of Education facilities are located in areas vulnerable to flooding and have been determined to be at risk for damage or destruction in a catastrophic flood event.

Impact

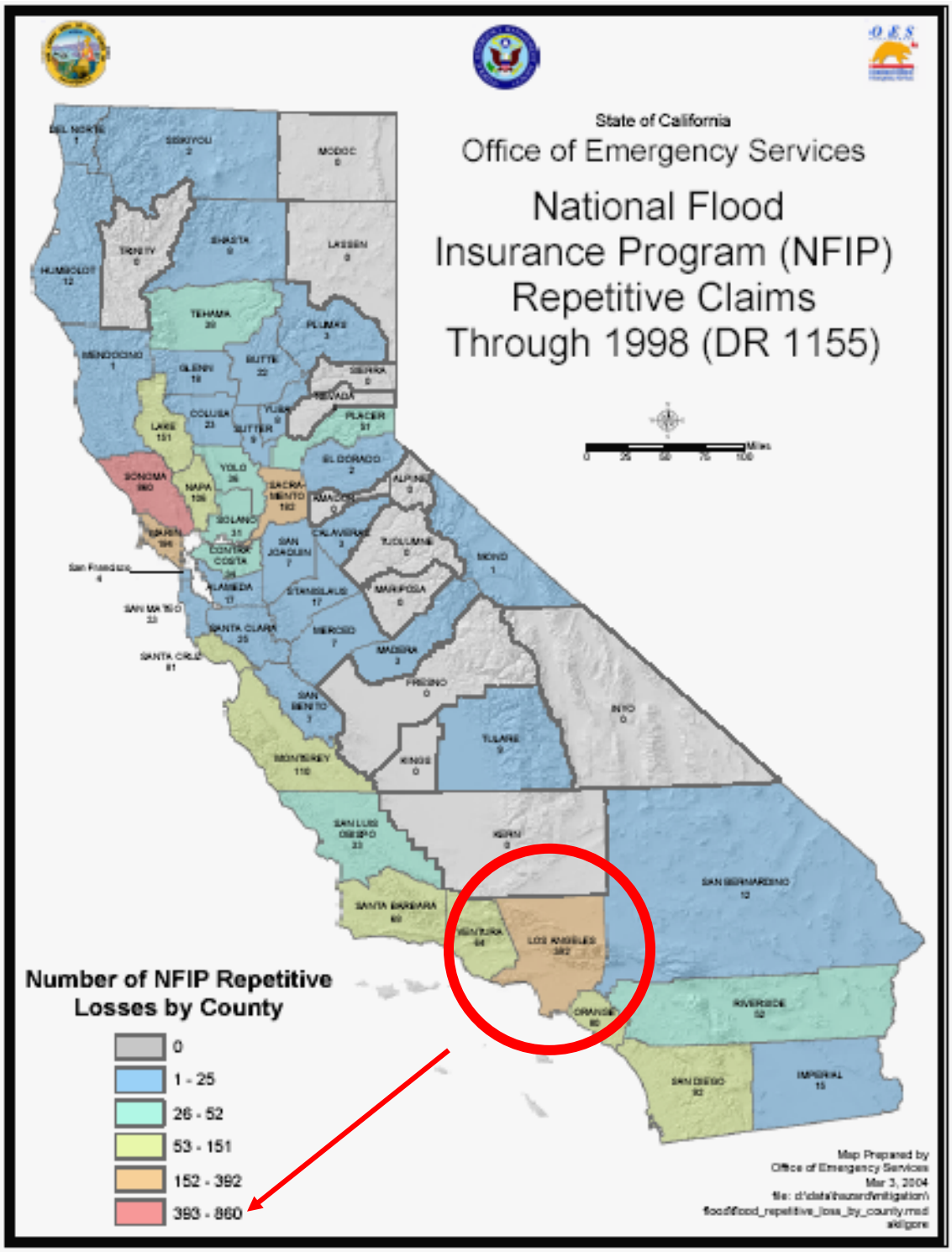
The impact on LACOE facilities and infrastructure, as a result of a catastrophic flood event, is estimated at .2% of its assets.

Repetitive Loss Properties (RLPs) in Los Angeles County

Los Angeles County has a total of 28 repetitive loss properties, none of which are schools. 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).

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

Moderate Risk Priority Hazards

Severe Weather (Destructive Winds)

Severe Weather was rated a MODERATE PRIORITY HAZARD by Los Angeles County Office of Education.

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.

Vulnerability and Impact

Los Angeles County Office of Education Facilities are located in areas subject to Severe Weather and are considered vulnerable to damage. Depending on the severity and scope of a catastrophic severe storm, it is estimated that .12% of LACOE assets would be impacted.

El Niño

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 Norte, Fresno, Glenn, Humboldt, Kern, Lake, **Los Angeles**, Marin, Mendocino, Merced, Monterey, Napa, Orange, Riverside, Sacramento, San Benito, San Bernardino, San Diego, San Francisco, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, Solano, Sonoma, Stanislaus, Sutter, Tehama, 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.

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.

Transportation Accident

Transportation Incidents were rated a MODERATE PRIORITY HAZARD by Los Angeles County Office of Education.

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. The proximity of school facilities to transportation corridors also creates a vulnerability to the people inhabiting these facilities. 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.

Aircraft Incidents

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.

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

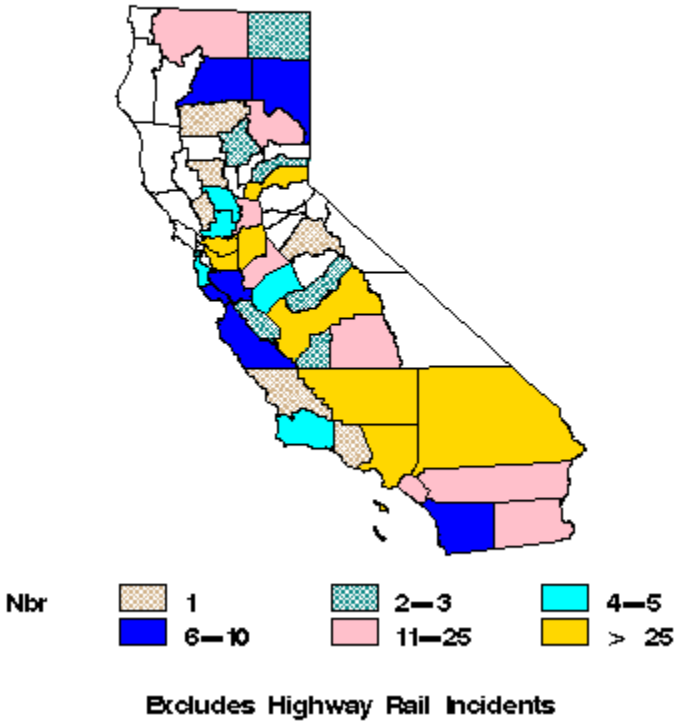
- Collisions – 9
- Derailments – 112
- Other – 27

CAUSE OF ACCIDENT

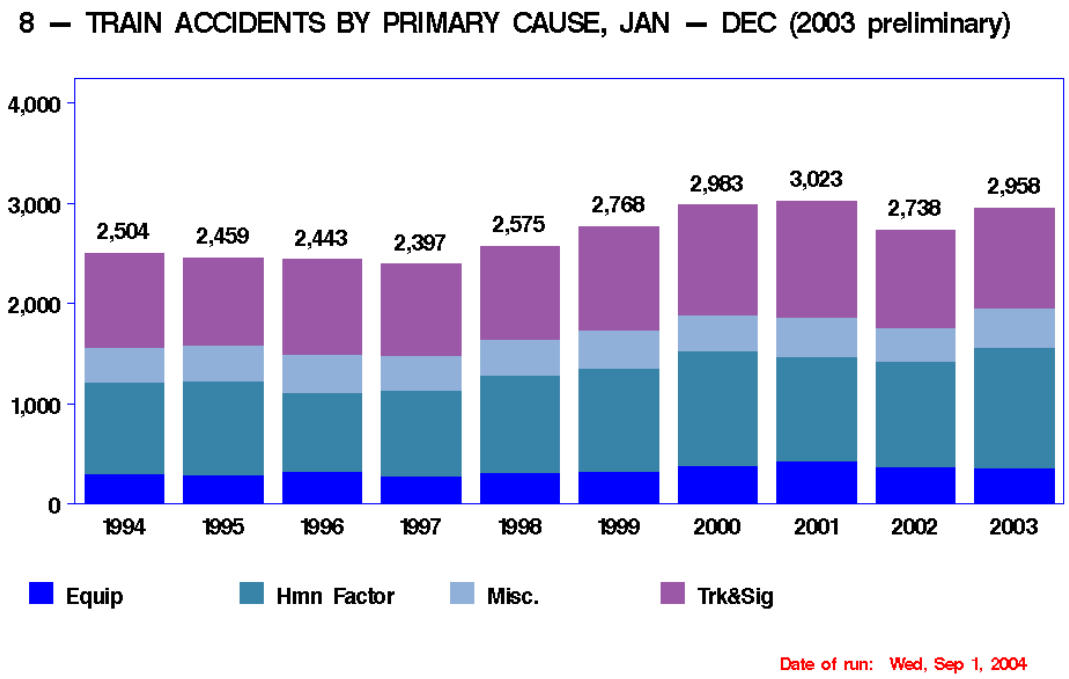
- Equipment – 1
- Human Error – 84
- Other – 13
- Signal Malfunction – 1
- Track Faulty – 49

TRAIN ACCIDENTS FOR CALIFORNIA, January 2000 TO June 2004

RAILROAD: ALL TYPE OF TRACK: All



Federal Railroad Administration, Office of Safety Analysis



Highway Incidents

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.

Maritime Incidents

There is ever-present danger of boat collisions and crashes in the crowded waters off Los Angeles County. There is also the constant potential for plane crashes in the ocean. A recent development was enforcement of FAA policy mandating disaster response plans for planes taking off over the ocean from L.A. International Airport. The U.S. Coast Guard, L.A. County Lifeguards, County Fire Department, L.A. City Fire Department, L.A. County Sheriffs, and other allied agencies have developed a response plan for airliner crashes in the Santa Monica Bay.

Part of the plan calls for personnel from L.A. County Fire Station 110, USAR1, and the Air Operations Section to fly rescue swimmers to the crash site, deploy them from helicopters with inflatable life boats, and to begin rescue operations while other agencies respond with boats and helicopters to remove people from the water. These "Blue Water Rescue" teams may also be dispatched to boating accidents in the open ocean.

U.S. ports are foreign flag vessels. Operators of shallow-draft vessels are more likely to be U.S. corporations. In many ports, there are more shallow-draft vessel movements than deep-draft arrivals. In 1993, nearly 5,200 towing vessels, 26,800 dry cargo barges, and 4,000 tank barges traveled through U.S. waterways (U.S. Army Corps of Engineers, 1993), most of them stopping at coastal ports while on canal or river voyages.

Many commercial vessels carry passengers, heightening the need for attention to safety. Ferries and specialty vessels, such as casino ships and sport fishing boats, number in the thousands and may carry several hundred passengers at once (National Research Council, 1995). The cruise industry is a growing maritime presence, with single ships carrying as many as 3,300 persons and many of the leading cruise markets in or adjacent to U.S. waters (National Research Council, 1995).

Public reaction to major ship accidents and resulting catastrophic oil spills have been the driving force behind major government initiatives to develop new or improved VTS systems in U.S. ports. In 1971, two tankers collided in the fog near the Golden Gate Bridge in San Francisco spilling about 3,000 tons of heavy oil and setting in motion legislation that led to the VTS systems now installed in San Francisco, Puget Sound, New York, and Houston. A subsequent report stated that the overriding cause of the accident was the lack of Coast Guard authority to control traffic, a situation that allowed vessels to forgo communications with traffic advisers (Office of Technology Assessment, 1975). Instead of counting on radar and radio technologies, the ships used only foghorns, which went unheard (Office of Technology Assessment, 1975).

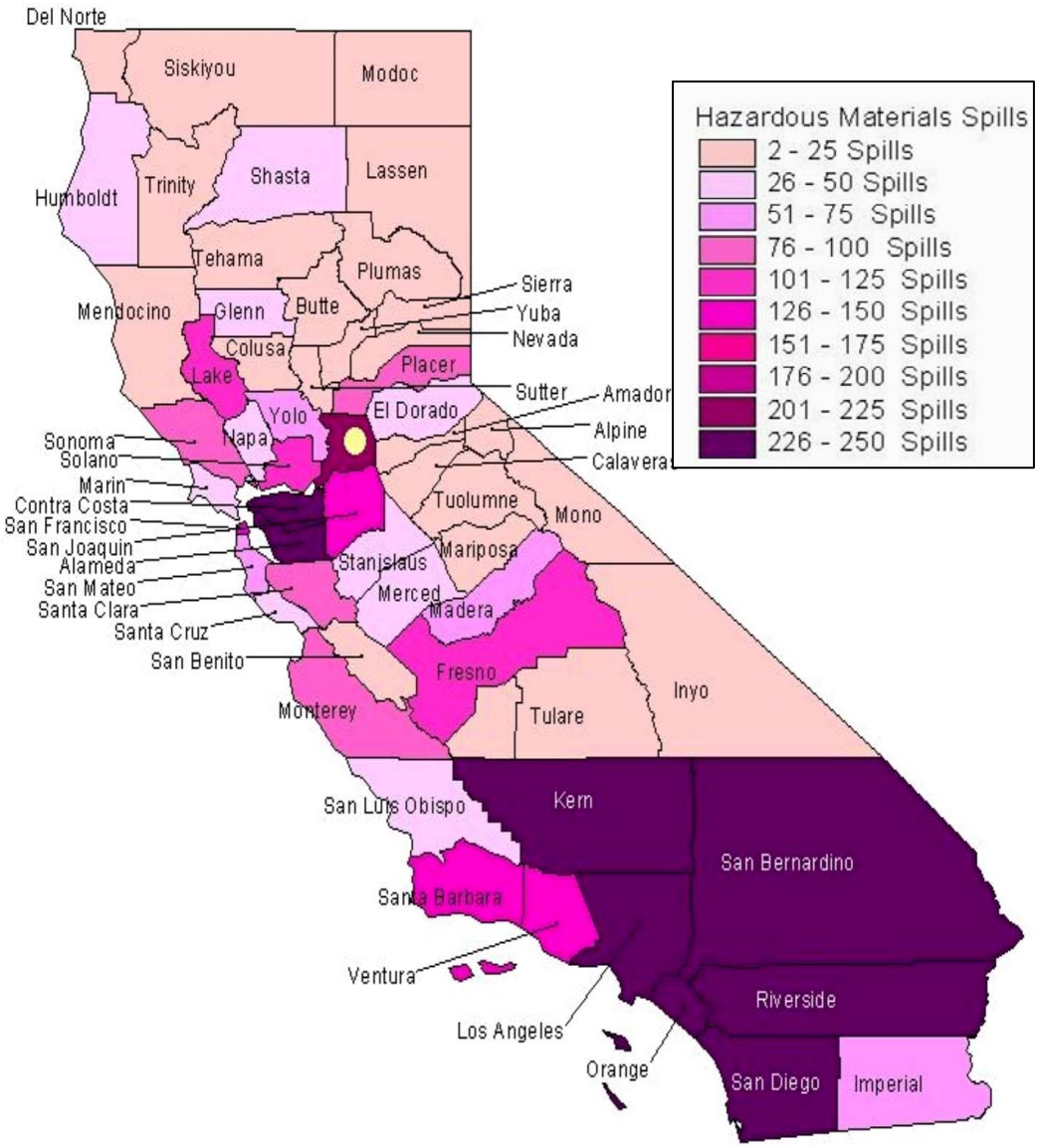
The years following that accident were marked by many maritime safety initiatives, including improvements in navigation information technologies and the deployment of VTS systems. But in 1989, when the **Exxon Valdez** ran aground outside the Prince William Sound VTS surveillance area and spilled 35,000 tons of Alaskan crude oil, the resulting damage and clean-up costs totaled several billion dollars (Office of Technology Assessment, 1990) and provoked enduring public distrust of assurances about tanker safety. This accident and its aftermath led to the congressional legislation that, in turn, resulted in the VTS-2000 program.

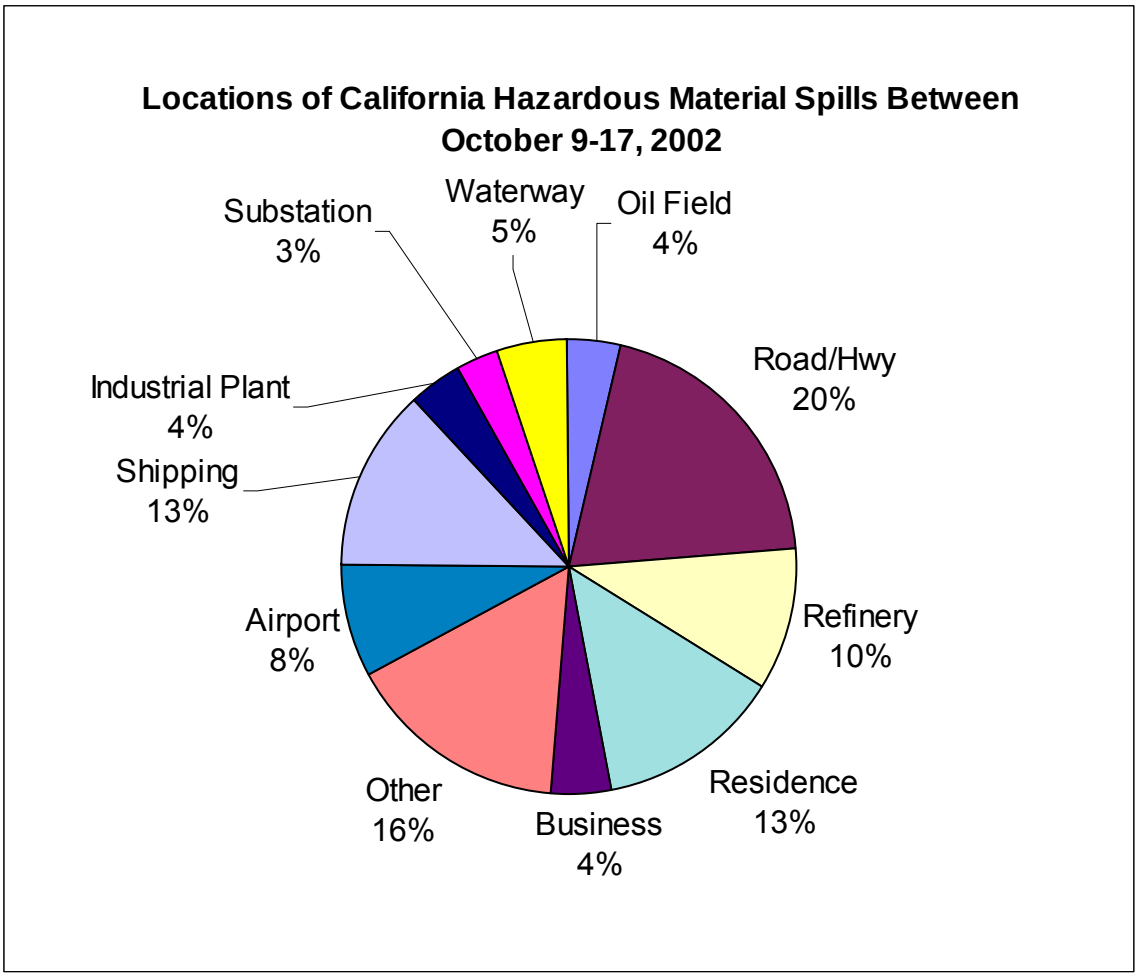
The public outcry over maritime safety tends to run in cycles, reaching a peak just after major accidents and then appearing to diminish with time. However, with major oil spills occurring around the world and spills reported regularly in the United States, the safety of U.S. ports and waterways is likely to remain a continuing concern.

Hazardous Materials Emergency

Hazardous Materials Incidents were rated a MODERATE PRIORITY HAZARD by Los Angeles County Office of Education.

Hazardous materials are everywhere, including near school and school support facilities, and are accidentally released or spilled many times during any given day. The attached chart lists the most common sites for spills in California based on an analysis of 173 reports for spills occurring between October 9 and October 17, 2002.





Regulatory Programs

Hazard analysis and risk assessments are performed by businesses at individual facilities. They are also conducted by specific industries or organizations for processes common to all operators in that industry. Transporters of hazardous materials also conduct these activities, whether the materials are moved by road, rail, water, air, or pipeline.

There are a number of legally mandated programs requiring businesses to conduct hazard analysis and risk assessment. Some of the existing requirements include:

California Accidental Release Prevention Program (Ca1ARP) required pursuant to H&SC 25531, et seq. implements the federal Accidental Release Prevention program with additional California-specific requirements. This program requires any business with more than a threshold quantity of a regulated substance in a process, unless exempted, to implement an accidental release prevention program. There are three levels for the program with businesses subject to levels two and three required to conduct a hazard assessment. Businesses may be required to prepare and implement a Risk Management Plan (RMP). A map of facilities that have prepared a Risk Management Plan or Ca1ARP Document follows this section of the Emergency Plan. This map was developed through the Environmental Protection Agency (EPA) for facilities that submitted RMP documents to EPA

by June 21, 1999. A map is provided in attachment 10, along with a list of Certified Unified Program Agency (CUPA) & Participating Agencys (PA's) in LEPC Region 1.

Air Toxics "Hot Spots" Information and Assessment Act required pursuant to H&SC 44300, et seq. requires emitters of hazardous air contaminants to conduct health risk assessments to evaluate those emissions. This program is designed to identify, assess, and control ambient levels of hazardous air pollutants. It seeks to collect and evaluate information concerning the amounts, exposures, and short- and long-term health effects of hazardous substances released into the atmosphere.

California Refinery and Chemical Plant Worker Safety Act required pursuant to California Labor Code § 7850 et. seq. Evaluates chemical process safety when dealing with the risks associated with handling or working near hazardous chemicals. It is intended to prevent or minimize the consequences of catastrophic releases of acutely hazardous, flammable, or explosive chemicals. The law requires the employer to conduct a hazard analysis for identifying, evaluating, and controlling hazards involved in a process. While focused on employee protection, a successful program will have the effect of also protecting the surrounding community.

Worker Health and Safety Regulations [federal (29 CFR 1910.120) and state (8 CCR 5192)] require employers to identify, evaluate, and control hazards employees may encounter during hazardous waste operations and emergency response.

Hazardous Materials Transportation

Federal emergency planning requirements include the formation of local emergency planning committees (LEPCs). The LEPC is required to evaluate facilities using threshold quantities of extremely hazardous substances (EHS), and determine which facilities are at risk of a release or subject to additional risk due to their proximity to another facility using EHS. The LEPC is also required to identify hazardous materials transportation routes. This requirement has led Region I LEPC to develop a specific transportation element to its plan. The following represents the Region I transportation element:

Transportation of hazardous materials by air, land, or water poses a significant need to plan and coordinate emergency resources necessary to respond to hazardous materials spills and releases. These types of incidents could affect several million Californians and are potentially hazardous to both the local community, and those traveling near the incident site. First, we will discuss the different modes of transportation and the unique challenges presented for planners and emergency responders.

Air

The southern California region has several major air transportation facilities. In some instances, there may be hazardous materials incidents involving air cargo either on the aircraft or on the ground. Initial response to these incidents would be provided by airport emergency response personnel. The need may arise for additional resources to respond. Response efforts must be coordinated to ensure all personnel are made aware of the material involved and of the potential hazards. In the event of a crash of an aircraft, the major hazardous materials concerns will be fuel from the aircraft, hydraulic fluid, and oxygen systems. The threat posed by onboard hazardous cargo will be minimal. Regulations on hazardous materials shipments by air are found in 49 CFR section 175.

Water

Two major ports serve the southern California region. These are the Port of Los Angeles and the Port of Long Beach. The prime concern for these two major ports would be releases of petroleum products from both oil tankers and other large ocean going vessels. Not only is there a significant potential from fire and explosion, the environmental effects could be catastrophic. Additionally many other types of hazardous materials may be shipped by bulk or containerized cargo. Planners must recognize potential risks associated with vessels and port facilities in their hazard assessment. Response to water related incidents is coordinated through the Coast Guard and the California Department of Fish and Game. Regulations governing transportation of hazardous materials by vessel are found in 49 CFR section 176.

Ground

Ground transportation provides the largest movement of hazardous materials and will generate the majority of incidents which will be confronted by local emergency response personnel. The three modes of ground transportation are rail, highway, and pipeline.

Rail is unique in both the quantity and types of hazardous materials which can be involved in one incident. Collisions, derailments, and mechanical failure, as well as loading and unloading, can all result in very serious hazardous materials incidents. A critical consideration for planners is a careful evaluation of the rail traffic in their jurisdiction. Rail companies as well as product manufacturers have emergency response teams available to assist local emergency responders. The United States Department of Transportation governs the transportation of hazardous materials by rail. The regulations are found in 49 CFR section 174. Additional oversight is provided in California by the Public Utilities Commission.

Highway-related hazardous materials incidents account for the vast majority of situations faced by local responders. Highway incidents range from minor releases of diesel fuel, to multiple vehicle accidents involving large quantities of multiple types of hazardous materials. A concern for planners is the fact that these incidents can occur anyplace throughout the region. Multiple agency coordination is essential for successful control and mitigation of these incidents. Section 2454 of the California Vehicle Code mandates authority for incident command at the scene of an on-highway hazardous substance incident in the appropriate law enforcement agency having primary traffic investigative authority on the highway where the incident occurs. The local governing body of the city may assign the authority to the local fire protection agency.

Pipeline incidents will typically involve compressed natural gas, or petroleum products. An important aspect for planners to consider is that pipelines are frequently out of sight and out of mind. Southern California region is honeycombed with underground pipelines ranging from a few inches to several feet in diameter. Pipelines transport products from as far away as Texas for use by local consumers. An important source of information on underground pipelines is Dig Alert. Regulation of pipeline activity is governed by the U.S. Department of Transportation and the California Public Utilities Commission.

Potential Effects of a Hazardous Materials Incident

As previously mentioned, highway accidents and incidents will constitute the majority of emergency response situations. There are two distinct facets which must be addressed in a local emergency action plan. Planners must consider the local community with fixed facilities (such as schools and school support facilities) and those individuals in transit. The following is illustrative of typical concerns which planners will encounter in addressing hazardous material occurrences.

Residential, Business and School Communities

Chemical spills on streets and highways can impact the public in one or more of the following ways:

- Shelter-in-place
- Evacuations
- Restriction or detour of local traffic
- Damage to homes, public facilities and businesses
- Injury, illness or death

Because of these potentially dangerous situations, it is necessary for emergency responders to be familiar with requirements for hazmat spill notification and to obtain and direct the resources necessary to protect public health and the environment. The following requirements address immediate spill notification:

California Health and Safety Code Section 25507 2. California Vehicle Code2453 3. California Government Code 8574.17 4. 42 U.S.C. 9602

In addition, provisions for response recovery are provided if the National Response Center is contacted (refer 40 CFR Part 310). All agencies within LEPC Region I are encouraged to report all spills and releases to the Office of Emergency Services and National Response Center when there is any significant or potential threat to the public. Additionally, public information through the news media to the public is a priority of California OES and Region I Local Emergency Planning Committee.

Commuter/Delivery Traffic

In addition to the surrounding locale, travelers going through or near transportation incidents may be impacted in several ways:

- Exposure to harmful or flammable chemicals resulting in injury or illness
- Delayed travel
- Accidents
- Vehicle damage due to chemical contact

Agencies with on highway responsibility in LEPC Region I should become familiar with shipping corridors and traffic patterns. Hazardous material transporters are also required to report incidents involving hazardous materials or wastes pursuant to the following regulations:

- Title 13 California Code of Regulations, Section 1166 2. Title 49 Code of Federal Regulations, Part 17

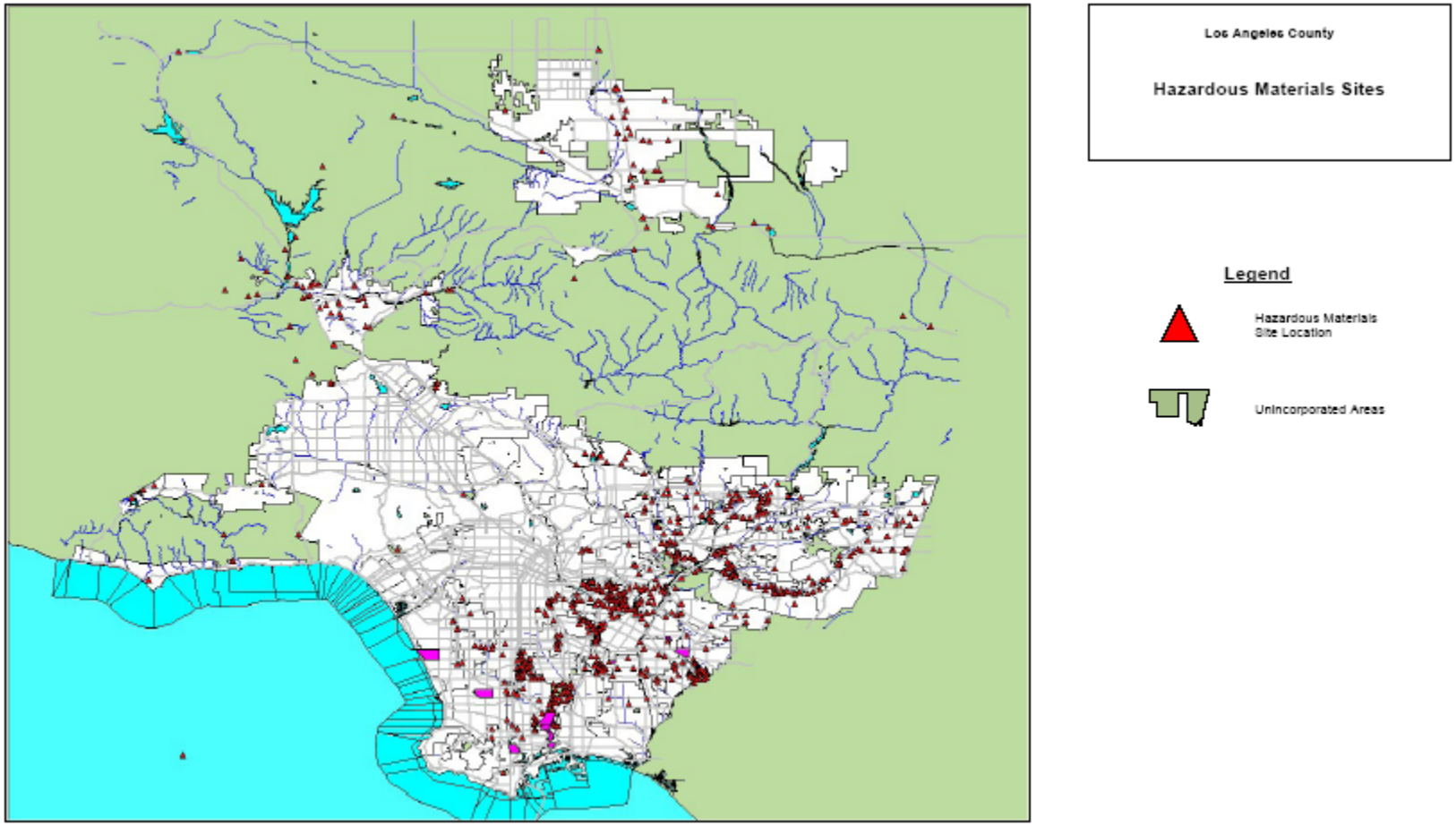
Region I Transportation Needs

Research has indicated that the majority of hazardous materials incidents occur in the transportation arena. This fact strongly suggests that the region make the following recommendations for further transportation planning assessment:

- Identify various surface transporters within the region
- Determine level of training as it relates to transportation routes and notification requirements
- Evaluate emergency response resources for both public and private hazardous materials response teams
- Prioritize response resources in areas unable to respond to proportionally higher number of incidents.
- Develop standard guidelines for evacuation of populations impacted by transportation related incidents.
- Evaluate the need to perform Transportation Risk Assessment for selected high priority areas.

Emergency planning principles and practices indicate that emergency plans include all the hazards existing within a jurisdiction. California OES has developed the Emergency Planning Guidance for Local Government to assist local government in conducting emergency planning. Information on hazard analysis is also included in this guidance document.

Map of Hazardous Materials Sites in Los Angeles County (Los Angeles County GIS Data)



Emergency Response

Los Angeles County Area Plan for Hazardous Materials

The Los Angeles County Area Plan for Hazardous Materials is established pursuant to Health and Safety Code Section 25503 and Title 19 of the California Code of Regulations commencing with Section 2720. This plan was formulated to supplement the Los Angeles County Operational Area Emergency Response Plan (LACOAERP). Addendums provide more specifics than is provided in the Los Angeles County Operational Area Emergency Response Plan. The plan is designed to incorporate information gathered from known handlers of hazardous materials prior to an emergency release with a plan of action once a release occurs. The plan also allows for pre-emergency planning and training of response personnel and for coordination of available resources.

The objectives of the plan are to: Provide procedures and protocols for emergency rescue personnel, including the safety and health of those personnel; Pre-emergency planning; Provide notification and coordination of on-site activities with State, local and federal agencies, responsible parties, and special districts; Training of appropriate personnel; On-site public safety and information; Required supplies and equipment; Access to emergency response contractors and hazardous waste disposal sites; Incident critique and follow-up.

Containment & Clean-up

The Incident Commander at a hazardous material incident is responsible to ensure that hazardous waste generated at the scene is properly disposed. Proper clean-up of hazardous waste in accordance with state and federal law is often quite costly; therefore, both state and federal funds have been set aside to aid local jurisdictions in paying for clean-up of emergency releases. In all hazardous waste clean-up efforts, the party responsible for the release has primary financial responsibility for proper removal of the waste. The person, firm or corporation responsible for an unauthorized discharge shall initiate and complete all actions necessary for cleanup. Costs associated with the cleanup shall be the responsibility of the person, firm or corporation. If however, the responsible party is unable to finance clean-up or is an unknown party, then the following state or federal funds may be accessed provided criteria specific to each funds are met. The Los Angeles County Fire Department Health Hazardous Materials Division has considerable experience and expertise in accessing these funds and is most familiar with the necessary criteria for each fund. The Los Angeles County Fire Department, Health Hazardous Materials Division is designated to provide liaison and technical expertise to the Incident Commander in accessing state and federal clean-up funds.

Funding Agencies

Local Government

In the event that state or federal funding criteria are not met at any given incident, local government should maintain a fund that is readily available for costs associated with emergency response and mitigation measures for hazardous materials incidents.

State Government

Cal Trans

Cal Trans administers a fund for clean-up on hazardous materials spills that impact state highways and right-of-way. Does not include cleanup of hazardous materials beyond the right-of-way even though it originated on a state highway.

Fish & Game (Fish and Game Code Section 12017)

Fish & Wildlife Pollution Cleanup and Abatement Account

Clean-up and abatement actions of materials threatening to pollute, contaminate, or obstruct waters of the state to the detriment of fish, plant, bird, or animal life.

Funds in the Fish and Wildlife Pollution Clean-up and Abatement Account shall be expended only if both of the following conditions exist.

The Department has made a reasonable effort to have the responsible party remove in a timely manner, or reimburse the Department for the cost of the removal, the substance causing the prohibited condition pursuant to Section 12015.

Funds are not available for disbursement from the Emergency Reserve Account of the Hazardous Substance Account in the General Fund pursuant to Section 25351 or 25354 of the Health and Safety Code.

California Environmental Protection Agency (Health & Safety Code Section 25354)

(Toxic Substances Control Account for Hazardous Materials Incidents)

Administered by the Toxics Substances Control Program. Funds may be used for payment of all costs of removal or remedial action by the State or by a local agency with the approval of the Director.

To request funding ask the OES Warning Control Officer to contact the on-call Duty Officer of the California Environmental Protection Agency Department of Toxics Substance Control Division and to inform the Duty Officer that EPA funding is requested. Give the name and telephone number of the local contact representative. The Duty Officer will contact the local government representative as soon as he/she is notified. If the incident is eligible, one of the following may occur.

Federal Government

U.S. Coast Guard

Clean Water Act Federal Pollution Fund (311k)

Primary for oil spills that affect navigable waterways

Environmental Protection Agency

Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) Hazardous Substance Response Trust Fund.

Primarily for hazardous materials spills (not oil)

Economic Disruption

Economic Disruption was rated a MODERATE PRIORITY HAZARD by Los Angeles County Office of Education.

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 and can severely effect the public education system.

"…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…."

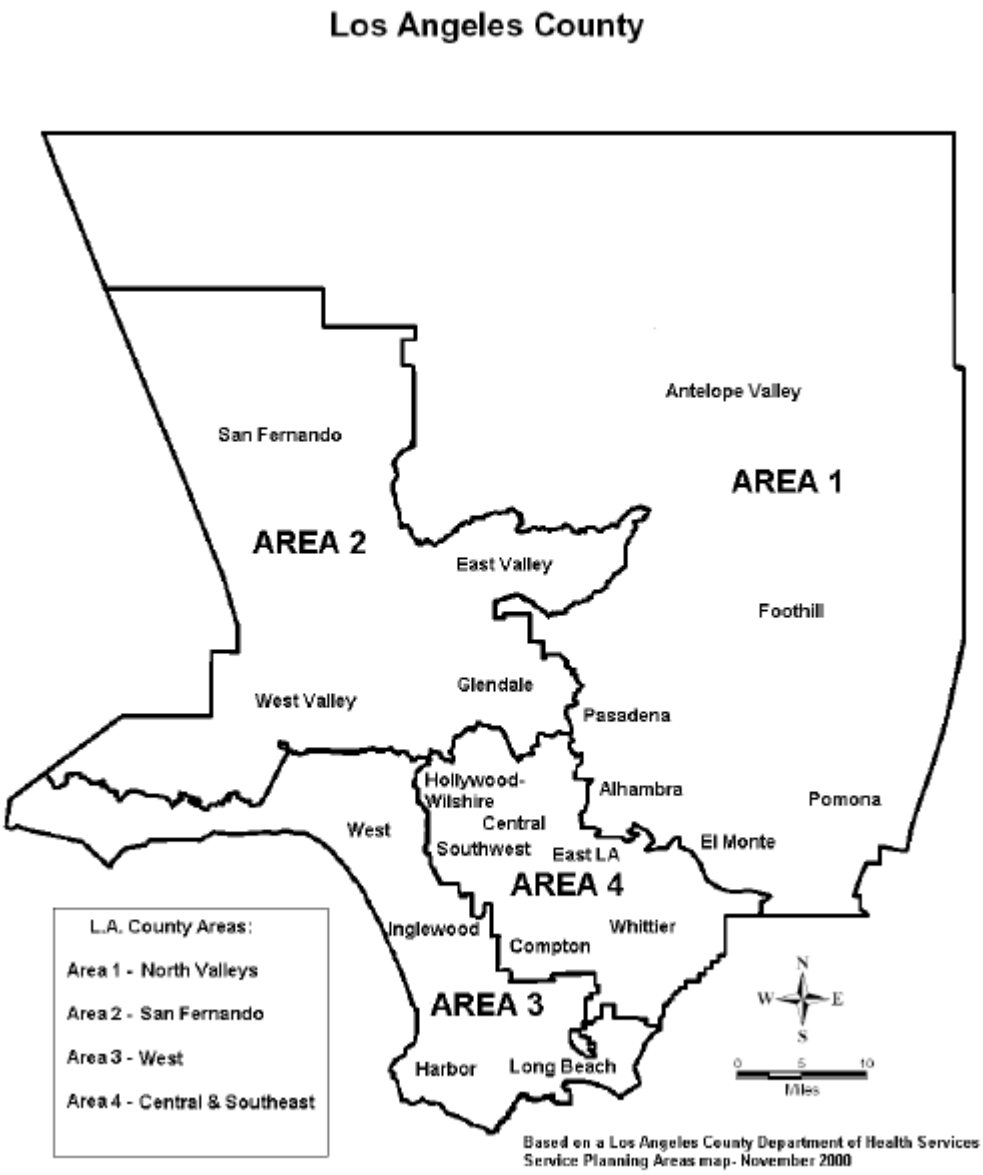
"The New Urban Studies"; Los Angeles scholars use their region and their ideas to end the dominance of the 'Chicago School'; By D.W. MILLER.

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

Water/Waste Water Disruption

Water/Waste Water Emergencies were rated a MODERATE PRIORITY HAZARD by Los Angeles County Office of Education.

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. Drinking water and waste water disposal are a special concern to schools and school support facilities, not only during times of normal operation, but when disasters convert the use of these facilities into community shelters or evacuation depots.

Every drop of water not used by a household, farm, business or public facility 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.

Far-reaching 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.

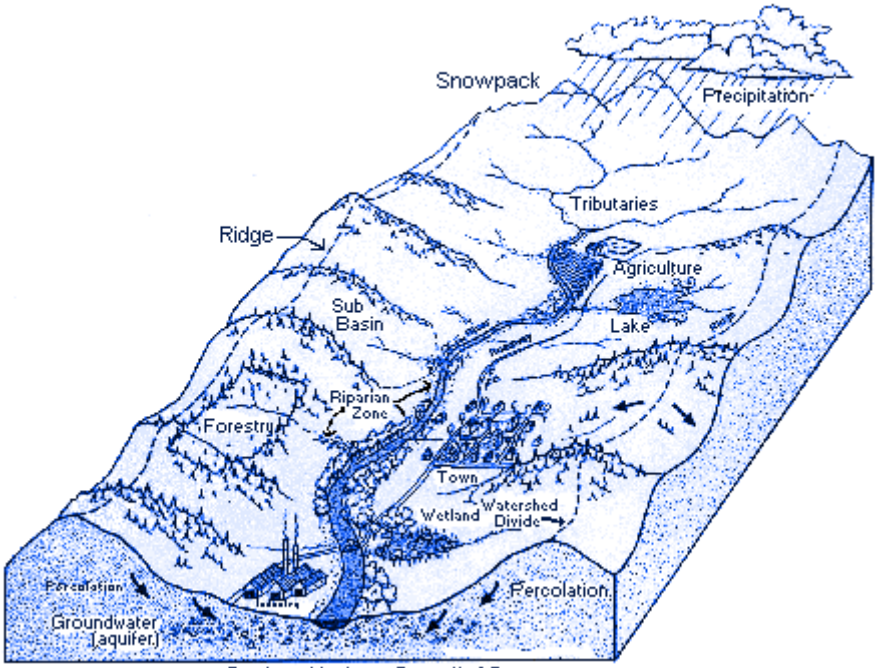
California Dept. of Water Resources, Water Education Foundation, Natural Resources Defense Council

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."

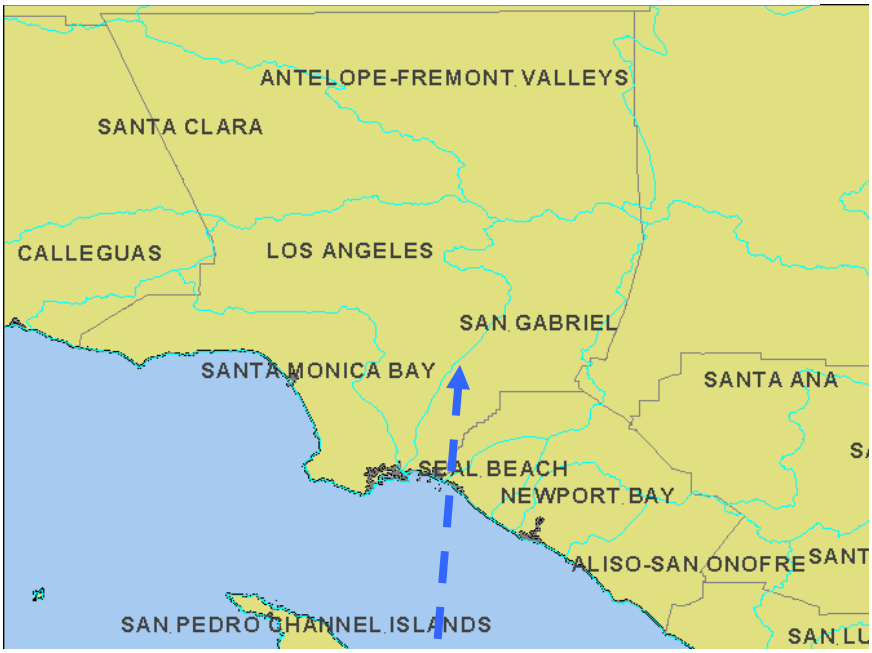
Watersheds come in all shapes and sizes. They cross county, state, and national boundaries. No matter where you are, you're in a watershed!



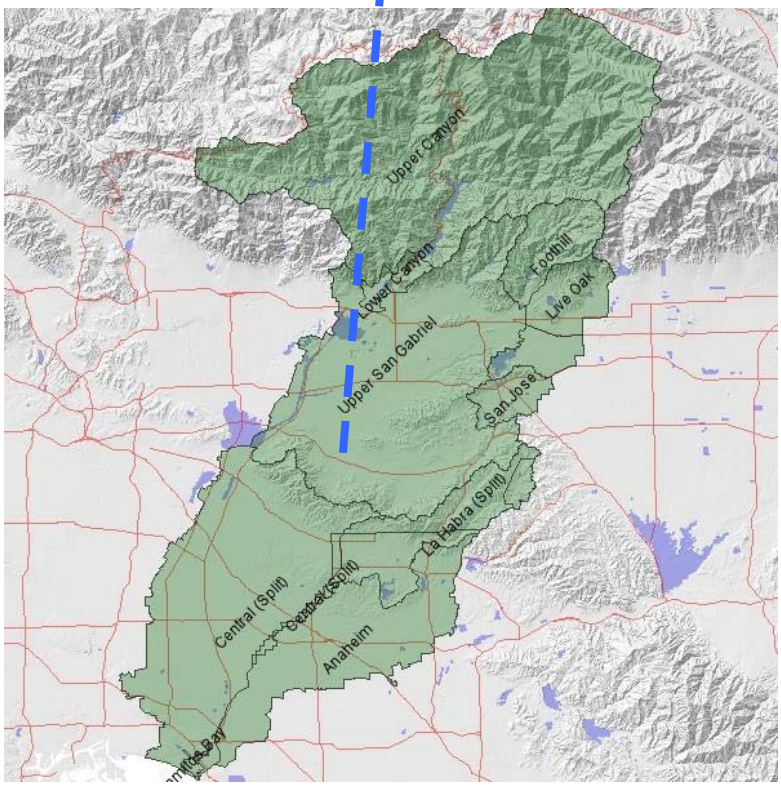
Produced by Lane Council of Governments

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 waterbody 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 waterbody'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 (wellfield) 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 waterbody (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 waterbody 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 water In 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 baseflow
- 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.

Nonpoint sources refer to widespread, seemingly insignificant amounts of pollutants which, cumulatively, threaten water quality and natural systems. Examples of nonpoint sources include septic systems, agriculture, construction, grazing, forestry, recreational activities, careless household management, lawn care, and parking lot and other urban runoff.

Nonpoint 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 nonpoint 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	

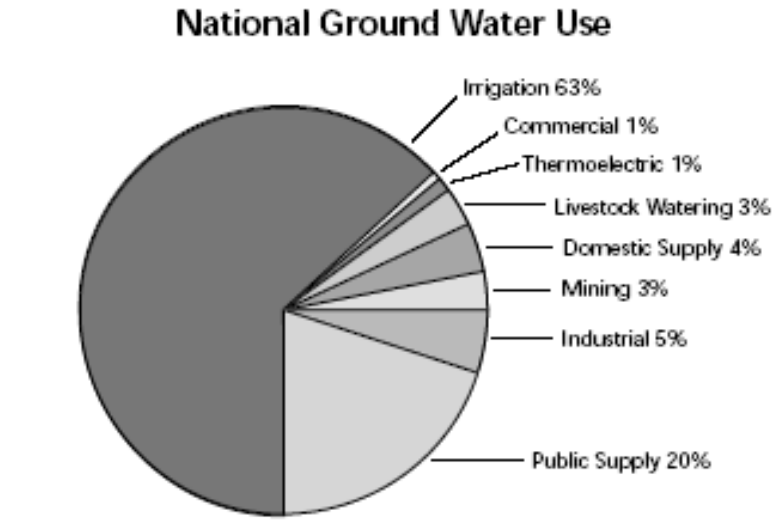
Groundwater Management Practices

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.

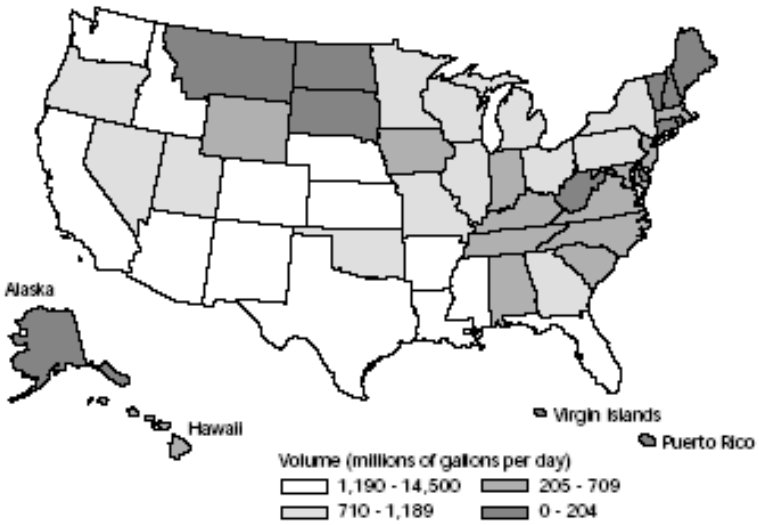
Every state uses some amount of ground water. Nineteen states obtain more than 25% of their overall water supply from ground water. Ten states obtain more than 50% of their total water supply from ground water.

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

Ground Water Withdrawals by State in 1995



Source: *Estimated Use of Water in the United States in 1995.* U.S. Geological Survey Circular 1200, 1998.

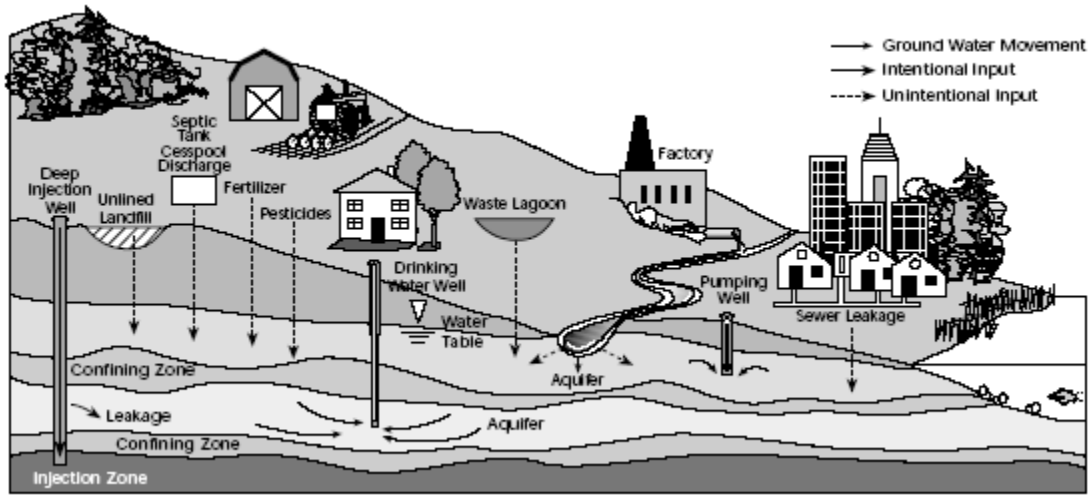
Sources of Ground Water Contamination

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.

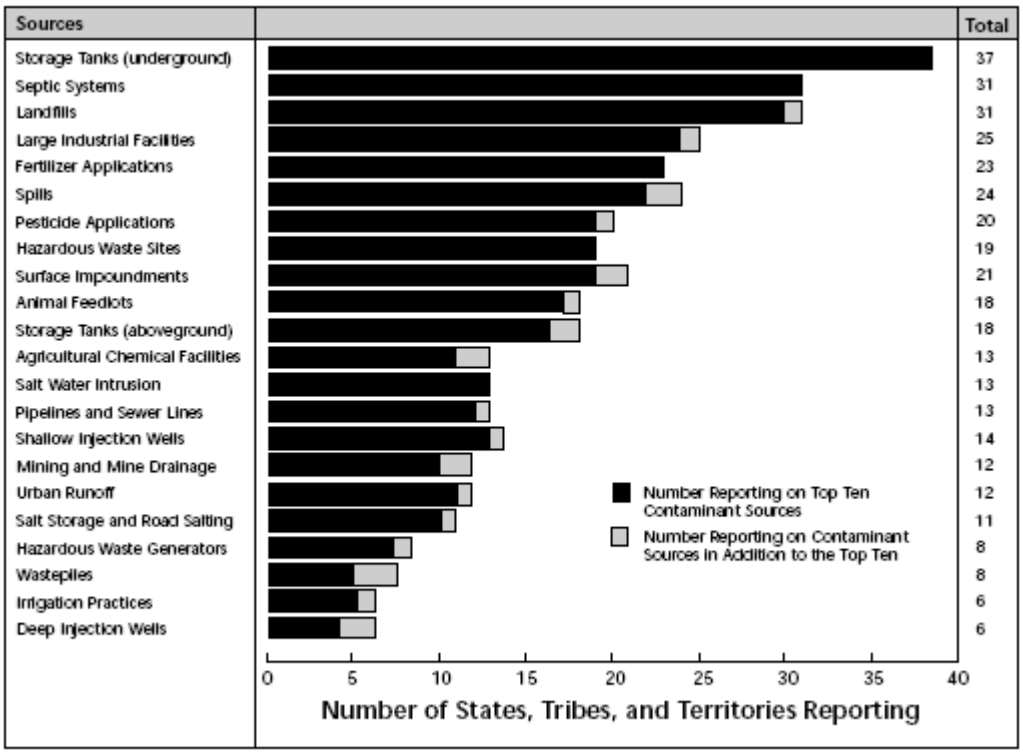
An EPA/state workgroup developed a list of potential contaminant sources and requested each state to indicate the 10 top sources that potentially threaten their ground water resources. States added sources as was necessary based on state-specific concerns. When selecting sources, states considered numerous 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
- Hydrogeologic 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.

Sources of Ground Water Contamination



Major Sources of Ground Water Contamination



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.

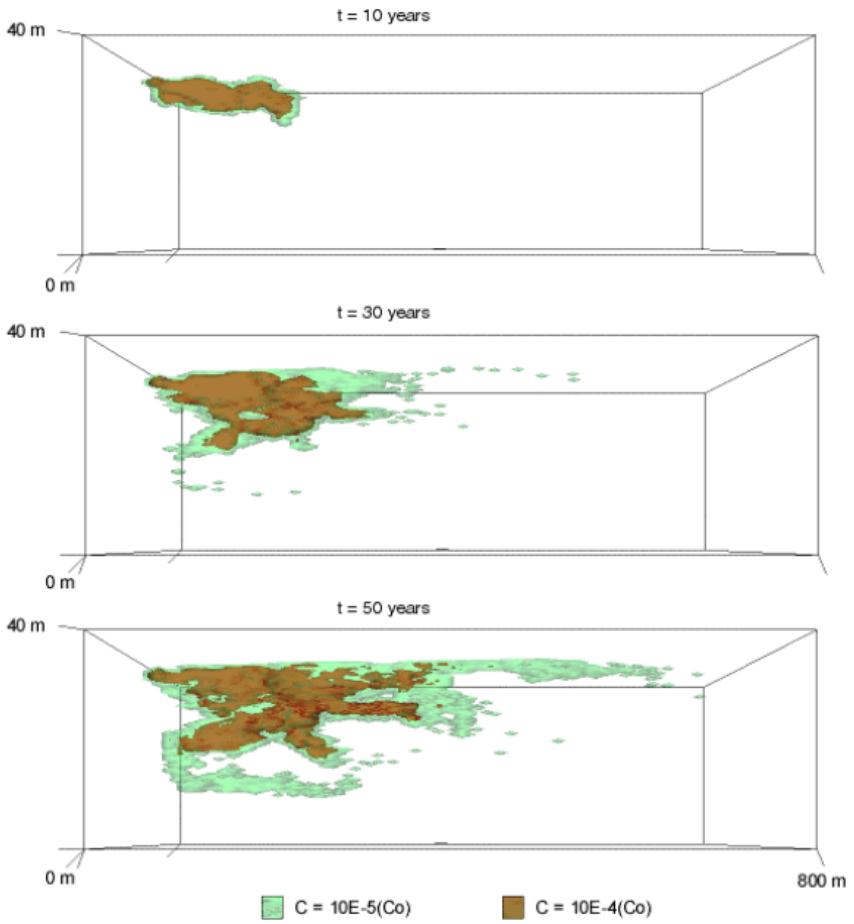
The use of MTBE in gasoline has increased steadily since it was first approved for use in gasoline by the United States Environmental Protection Agency (USEPA) in 1979. MTBE is produced from isobutene, a waste product of the petroleum refining process. In 1994, MTBE was ranked as the eighteenth most 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).

Impacts of MTBE on Groundwater



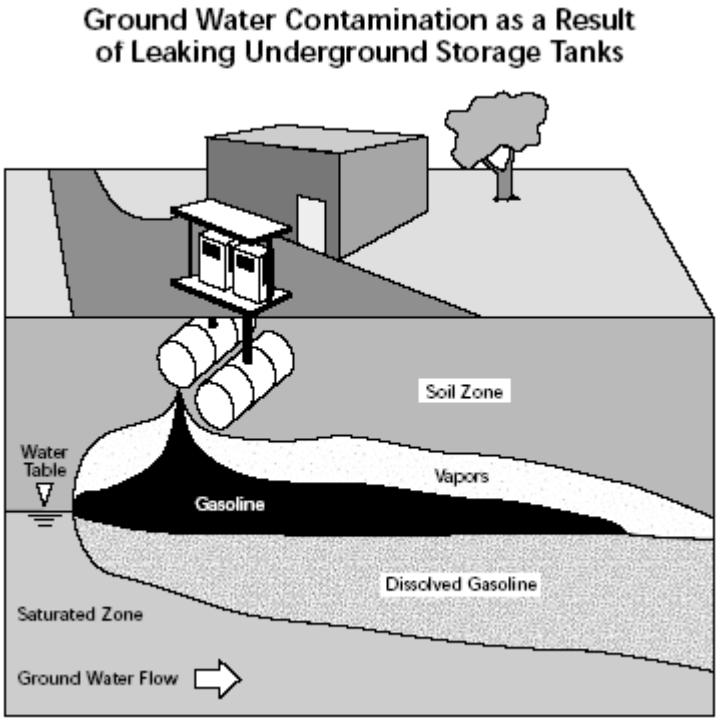
3-D simulated MTBE plume snap shots at (top to bottom) 10, 30, and 50 yr. Total thickness of the box is 40.5 m, and total length is 810 m. Regional flow is left to right. Screened interval of the pumping well is located in the center of the domain at a depth of 20 m.

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.

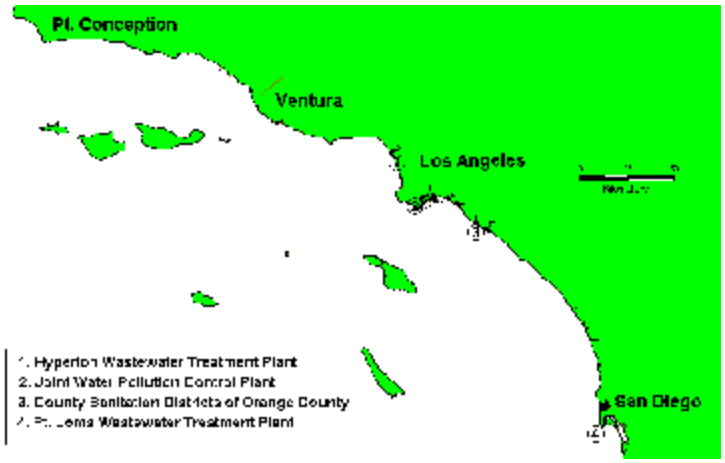
EPA, "National Water Quality Inventory"

Ground Water Protection

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.

Low Risk Priority Hazards

Explosion

Explosion was rated a LOW PRIORITY HAZARD by Los Angeles County Office of Education.

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

Explosions on or near school grounds can be especially catastrophic since the majority of inhabitants of these facilities are children.

Special Events

Special Events were rated LOW PRIORITY HAZARDS by Los Angeles County Office of Education.

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

Local Events

Because of the generally temperate and pleasant weather conditions, on any given day, it's possible to find a local special event that involves a gathering of people and/or some kind of venue. Local parks, community centers, schools and theaters all harbor local celebrations; however, the committee felt that the risk of loss was low to the critical services and facilities of LACOE in the event of a disaster affecting a special event.

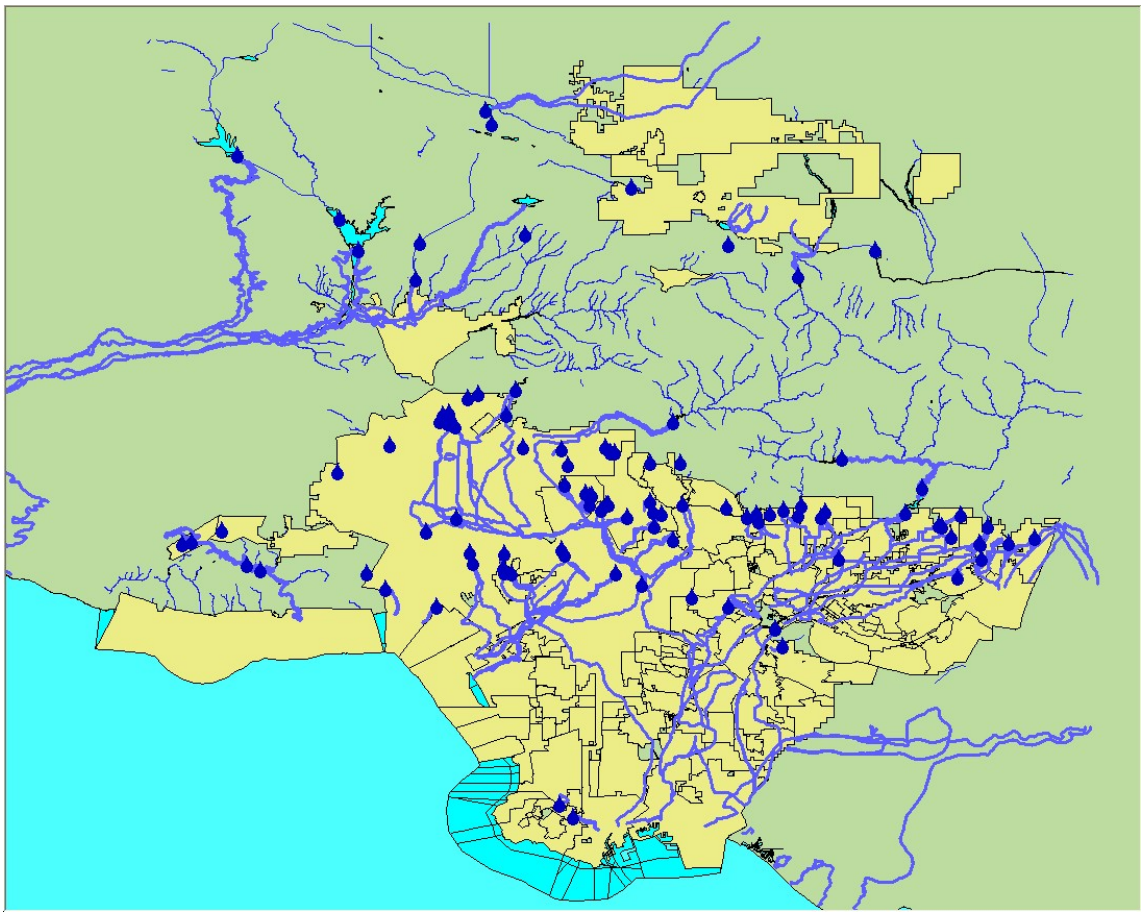
Dam Failure

Dam Failure was rated a LOW PRIORITY HAZARD by Los Angeles County Office of Education..

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.

The proximity of LACOE operated critical facilities to any catastrophic flooding posed by a failure of any of these dams is distant and it was felt by the committee that the risk of loss would be low.

Location of Dams and Reservoir Inundation Routes (Los Angeles County GIS Data)



Sink Holes / Subsidence

Sinkholes and Subsidence were rated LOW PRIORITY HAZARDS by Los Angeles County Office of Education.

Land subsidence (the vertical downward movement of the land surface) has a variety of causes, including some that are related exclusively to human activities (e.g. mining and drainage of organic soils). We have already seen that subsidence can result from isostatic adjustments and natural compaction. Now we shall examine subsidence caused by fluid withdrawal, sinkhole development, and hydro-compaction.

Deep Subsidence

Deep subsidence is the slow downward movement of land caused by the compaction of sediments that occur below the earth's surface. Deep subsidence occurs in locations where fluids under pressure are withdrawn from the subsurface. This includes groundwater taken from confined aquifers and fluids pumped from oil and gas reservoirs. The Central Valley of California: is the world's largest area of subsidence. In Long Beach, CA: up to 30 feet of subsidence occurred over an oil field.

When fluids held under pressure within the subsurface are withdrawn, the fluid pressure drops. If the formation from which fluids were taken is composed of compressible sediments, a reduction in fluid pressure can cause the overlying formations to slowly subside. In the Santa Clara Valley, groundwater levels correlate with subsidence. In Long Beach, subsidence has been halted by using injection wells

Sinkholes

There are three types of sinkholes, each of which forms in a different way. Collapse sinkholes are by far the most hazardous because of how suddenly they can form.

1. <u>SOLUTION SINKHOLES</u>

   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. <u>SUBSIDENCE SINKHOLES</u>

   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. <u>COLLAPSE SINKHOLES</u>

   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:

a. 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.

b. 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.

Impact

The absence of LACOE critical facilities in areas subject to subsidence and sink holes resulted in the committee rating the loss risk as low.

Potential Losses for Natural Hazards

Estimated Potential Losses for High & Moderate Natural Hazards

(In K for thousands, M for millions, B for Billions.)

Hazard	Estimated Daily Population at risk	Potential $ losses to Critical Facilities or Infrastructure	Potential $ losses to Other Owned Buildings	Potential Other $ losses (Environmental, Historical, Economic, Human)	Total Potential $ losses for this hazard
Totals	1,742,876 Enrollment 1486[1] Administrative Employees	$38.2M	$20.1M	$1.2B[2]	$1.258B
Earthquake*	331K 283	$7.3M	$3.8M	$2.2M	$13.3M
Flood**	3.5K >10	$76.4K	$40.2K	$2.4M	$2.52M
Severe Weather , Destructive Winds***	2.1K >10	$45.8K	$24.1K	$1.4M	$1.47M
Dam Failure	Low Risk				
Expansive Soils/Sink Holes	Low Risk				
Natural Hazards that do not pertain to Burbank	Avalanche, Coastal Erosion, Hailstorm, Hurricane, Land Subsidence, Landslide, Tornado, Tsunami, Volcanic Activity, Drought				

* 19% estimate based on LA County HAZUS Studies

** .2% estimate based on past losses within LA County

*** .12% estimated based on past losses within LA County

[1]The 1486 administrative employees work in 4 of LACOE's designated critical facilities.

[2]This figure is based on the monthly salaries and school district business transactions LACOE is mandated to process. If LACOE's data processing capability were damaged and out of service for an extended period, there would be a significant negative financial impact on Los Angeles County.

Section 5 – Hazard Mitigation Strategies

Mitigation Goals and Objectives

The information in the hazard profile and loss estimation information presented in Section 4 was used as a basis for developing mitigation goals and objectives. Mitigation goals are defined as general guidelines explaining what LACOE wants to achieve in terms of hazard and loss prevention. Goal statements are typically long-range, policy-oriented statements representing LACOE visions. Objectives are statements that detail how LACOE's goals will be achieved, and typically define strategies or implementation steps to attain identified goals. Other important inputs to the development of LACOE 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. LACOE conducted a capabilities assessment, reviewing existing local plans, policies, and regulations for any other capabilities relevant to hazard mitigation planning. An analysis of their capability to carry out these implementation measures with an eye toward hazard and loss prevention was conducted. The capabilities assessment required an inventory of LACOE's legal, administrative, fiscal and technical capacities to support hazard mitigation planning. After completion of the capabilities assessment, mitigation strategies were evaluated and prioritized. The social, technical, administrative, political, legal, economic, and environmental opportunities and constraints of implementing a particular mitigation action were considered. This step resulted in a list of acceptable and realistic actions that address the hazards identified.

A full suite of goals, objectives and action items is presented in this Plan. LACOE then identified and prioritized actions with the highest short to medium term priorities. An implementation schedule, funding sources and coordinating individuals or agencies are identified for each prioritized action item.

LACOE Identified Mitigation Constraints

The committee identified a list of issues that exist in Los Angeles County and within Los Angeles County Office of Education that can be considered **constraints** to mitigation planning implementation (perspective of the participating committee members):

- Legal Constraints
- Economic Constraints
- Budget Constraints
- Land Ownership Constraints
- State and Federal Influences
- Enormity of Population and Area Served
- Sensitivity of Information Needed to Complete the Plan.
- Building and Codes Restrictions
- Bond Issues and Voter Constraints
- Cultural Demands and Barriers
- Interpretation of Law

Strategy Matrix

All Hazard strategies cover the spectrum of the identified High Risk and Moderate Risk Priority Hazards identified by the Hazard Mitigation Steering Committee and are not shown in this matrix. In the matrix, strategies are shown to address a PRIMARY (P) hazard and RELATED (X) hazards.

STRATEGY	HIGH RISK PRIORITY HAZARDS						MODERATE RISK PRIORITY HAZARDS			
	Earthquake (EQ)	Civil Unrest (CU)	Utility Loss (UL)	Data/Telecom (DT)	Biological/Health (BL)	Flooding (FL)	Severe Weather (SW)	Hazardous Materials (HM)	Economic Disruption (ED)	Water/Waste Water (WW)
EQ1	P									
EQ2	P	X	X	X	X	X	X	X	X	X
EQ3	P	X	X	X	X	X	X	X	X	X
CU1	X	P	X	X	X	X	X	X	X	X
UL1	X	X	P	X	X	X	X	X	X	X
DT1	X	X	X	P	X	X	X	X	X	X

Benefit-cost Review

Benefit-cost review (BCR) is an abbreviated quantitative method of comparing the projected benefits to projected costs of a project or policy. It is used as a measure of cost effectiveness. A modified process called "STAPLEE" was used to methodically review the benefit as opposed to the cost of each strategy and action listed where that information was attainable. The STAPLEE process considers the following:

SOCIAL	Community Acceptance	Effect on Segment of Population			
TECHNICAL	Technical Feasibility	Long-term Solution	Secondary Impacts		
ADMINISTRATIVE	Staffing	Funding Allocated	Maintenance/Operations		
POLITICAL	Political Support	Local Champion	Public Support		
LEGAL	State Authority	Existing Local Authority	Potential Legal Challenge		
ECONOMIC	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	
ENVIRONMENTAL	Effects on Land/Water	Effect on Endangered Species	Effect on HAZMAT / Waste Sites	Consistent with Community Environmental Goals	Consistent with Federal Laws

All Hazards (AH)

Strategy AH-1

Program/Project	Communications Upgrade
Description	Procure additional 900 MHz mobile and base station radios for use by Emergency Operations Center and Transportation Units
Cost	Approximately $30,000
Timeline/Schedule	TBD
Responsibility	Transportation & Planning
Financing	Emergency Communications Budget
Constraint	Fund Availability
Goals Addressed	More effective emergency services Protect Lives & Property
Related Hazard	ALL

Strategy AH-2

Program/Project	GPS Bus Tracking
Description	Upgrade GPS Bus Tracking System from existing 10 year old system
Cost	TBD
Timeline/Schedule	TBD
Responsibility	Transportation & Planning
Financing	TBD
Constraint	Fund Availability
Goals Addressed	More effective emergency services Protect Lives and Property
Related Hazard	ALL

Strategy AH-3

Program/Project	Communications System Upgrade
Description	Expand limited coverage communications system for school-related transportation (busses) by truncating existing system to eliminate frequency use congestion problems. (800 MHz)
Cost	TBD
Timeline/Schedule	TBD
Responsibility	Transportation and Planning
Financing	TBD
Constraint	Fund Availability
Goals Addressed	Protect Lives and Property More effective emergency services
Related Hazard	ALL

Strategy AH-4

Program/Project	Communications System Upgrade
Description	Expand limited coverage communications system for school-related emergency site communications by constructing multiple repeater sites to eliminate transmission shadows. (900 MHz)
Cost	TBD
Timeline/Schedule	TBD
Responsibility	Transportation and Planning
Financing	TBD
Constraint	Fund Availability
Goals Addressed	Protect Lives and Property More effective emergency services
Related Hazard	ALL

Strategy AH-5

Program/Project	Message Centralization
Description	Establish a system with a central telephone number that can deliver a standard message through multiple access links for emergency information and personnel disaster reporting instructions.
Cost	$6,000-$10,000 annual subscription fee
Timeline/Schedule	Identify an 800 number with an easy to remember acronym by June 30, 2005
Responsibility	Administrative Services
Financing	TBD
Constraint	Fund Availability
Goals Addressed	More effective emergency services
Related Hazard	ALL

Strategy AH-6

Program/Project	Employee Emergency Handbook
Description	Design, publish and distribute an emergency handbook to all Los Angeles County Office of Education employees.
Cost	TBD
Timeline/Schedule	TBD
Responsibility	Communications
Financing	Administrative Services
Constraint	Fund Availability
Goals Addressed	Protect Lives and Property More effective emergency services
Related Hazard	ALL

Earthquake (EQ)

Strategy EQ-1

Program/Project	Seismic Upgrade Study
Description	Hire structural engineers to survey and analyze all critical facilities (Lincoln School, All Ed Center Facilities, I Poly High School, Student Records Center, Head Start Offices, etc.) to make clear recommendations for bringing all buildings to meet current seismic standards and requirements.
Cost	TBD
Timeline/Schedule	TBD
Responsibility	Facilities/Planning Division
Financing	TBD
Constraint	Fund Availability
Goals Addressed	Protect Lives and Property
Related Hazard	Earthquake

Strategy EQ-2

Program/Project	Earthquake Preparedness Training
Description	Develop and implement a program to provide all LACOE employees with earthquake and emergency preparedness training.
Cost	TBD
Timeline/Schedule	TBD
Responsibility	Administrative Services
Financing	TBD
Constraint	Fund Availability
Goals Addressed	Protect Lives and Property More effective emergency services
Related Hazard	Earthquake, ALL

Strategy EQ-3

Program/Project	Earthquake and Emergency Preparedness Measures
Description	Develop and implement a program to adopt earthquake and emergency non-structural preparedness measures (equipment and furniture "tie-down", earthquake resistant classrooms, etc.) to all LACOE sites and for all LACOE personnel.
Cost	TBD
Timeline/Schedule	TBD
Responsibility	Administrative Services
Financing	TBD
Constraint	Fund Availability
Goals Addressed	Protect Lives and Property More effective emergency services
Related Hazard	Earthquake, ALL

Civil Unrest (CU)

Strategy CU-1

Program/Project	Building Security
Description	Conduct and study and implement measures to provide for better security of Educational Center (all) facilities including the Data Center and records areas. Some measures to be studied – ✓ Place concrete pylons around critical entrances and walls that could be breached by vehicles ✓ Work with Southern California Edison to relocate the main power transformer to an underground vault at the Ed Center
Cost	TBD
Timeline/Schedule	TBD
Responsibility	Administrative Services
Financing	TBD
Constraint	Fund Availability
Goals Addressed	Protect Lives and Property More effective emergency services
Related Hazard	Civil Unrest, ALL

Utility Disruption/Loss (UL)

Strategy UL-1

Program/Project	Emergency Power Generation
Description	Survey all critical facilities to see what emergency power systems are available and usable. Procure and install an emergency power generator for the Special Education Center where 150-200 handicapped and disabled students attend public education classes daily in order to be able to provide critical health-related services to those students in the event of a power failure or disaster.
Cost	TBD
Timeline/Schedule	TBD
Responsibility	Facilities/Planning Division
Financing	TBD
Constraint	Fund Availability
Goals Addressed	Protect Lives and Property More effective emergency services
Related Hazard	Utility Loss, ALL

Data/Telecommunications Disruption (TC)

Strategy DT-1

Program/Project	Data Backup and Critical Information Storage
Description	Develop and implement a data back up and critical information storage system to protect LA County School District fiscal and payroll records as well as LACOE employee and student records from loss due to data/telecommunications failure.
Cost	TBD
Timeline/Schedule	TBD
Responsibility	Business Operations
Financing	TBD
Constraint	Fund Availability
Goals Addressed	Continue to provide critical services More effective emergency services
Related Hazard	Data/Telecommunications Disruption, ALL

Section 6 – Future Actions & Goals

Preliminary Specific Goals & Actions

Listed below are the County Office of Education's specific 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, LACOE has identified a range of specific actions to achieve the long term objective and goal.

The goals and actions were developed by considering the risk assessment findings, localized hazard identification and loss/exposure estimates, and an analysis of the jurisdiction's current Capabilities Assessment. These preliminary goals and actions were developed to represent a vision of long-term hazard reduction or enhancement of capabilities.

In addition, LACOE representatives met with the consultant staff and to specifically discuss these hazard-related goals and actions as they relate to the overall Plan. Those members are listed specifically on the minutes of the meetings.

LACOE has developed the following Long Term Goals for their Hazard Mitigation Plan Program.

Development of Specific Goals

Goal 1. Promote Disaster-resistant future expansion.

Goal 2. Increase public understanding and support for effective hazard mitigation.

Goal 3. Build and support local programs and commitments to become less vulnerable to hazards.

Enhance hazard mitigation coordination and communication with federal, state, and governments. Reduce the possibility of damage and losses to existing assets, particularly people, critical facilities/infrastructure, and LACOE-owned facilities, due to:

Goal 4. Earthquake.

Goal 5. Severe Weather.

Goal 6. Biological / Health Emergencies

Goal 7. Flood.

Goal 8.Human-Caused Hazards.

Prioritization and Implementation of Action Items

Once the specific list of LACOE goals listed above was developed, the proposed mitigation actions items were prioritized by the Planning Executive Committee. This step resulted in a list of acceptable and realistic specific actions that address the hazards identified.

The Disaster Mitigation Action 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 action items as well as an implementation strategy for each are:

Committee For Action

Action Item #1: Coordinate the development of a multi-Hazard DMA 2000 plan. Coordinating Individual/Organization: Office of Education will work together with the School Districts and County Office of Emergency Management.

- Potential Funding Source: FEMA Grants/ General Fund.
- Implementation Timeline: 1 Year

Action Item #2: .Review and update plans that would include coordination with cities, special districts and county departments.

- Coordinating Individual/Organizations: Business Services
- Potential Funding Source: General Fund / State and Federal Grants

Action Item #3: Publicize and encourage the adoption of appropriate hazard mitigation actions.

- Coordinating Individual/Organization: Administrative Services
- Potential Funding Source: General Fund/Federal or State grants.
- Implementation Timeline: 1 - 3 years

Action Item #4: Develop a Business Continuity Plan for each LACOE.

- Coordinating Individual/Organization: Business Services
- Potential Funding Source: General Fund/Federal or State Grants.
- Implementation Timeline: 1 - 3 years

Action Item #5: Encourage the employees, clients and students to prepare and maintain a 3-day preparedness kit for home and work.

- Coordinating Individual/Organization: Administrative Services
- Potential Funding Source: General Fund/Federal or State grants
- Implementation Timeline: 1 - 3 years

Long-term Goals, Objectives Actions

The Los Angeles County Office of Education developed the following broad list of objectives and actions to assist in the implementation of each of their identified long term goals.

Goal 1: Promote disaster-resistant classrooms.

Objective 1.: Facilitate the development of a program to present to teachers and school districts to promote a disaster-resistant classroom.

Action 1. Update Site Emergency Plans yearly.

Action.2 Attract and retain qualified, professional and experienced staff.

Action 3 Identify high hazard areas.

Action 4 Periodically review emergency plans and inspect office spaces and classrooms.

Objective 2: Increase public understanding, support and demand for hazard mitigation for school facilities.

Action 1 Gain public acceptance for avoidance policies in high hazard areas.

Goal 2: Increase public and client understanding & support for effective 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 and clients on the LACOE website.

Action 3 Heighten public awareness of hazards by using the LACOE Communications Office.

Action 4 Gain public and client acceptance for avoidance policies in high hazard areas.

Objective 2: Gain public and client interest by supporting already existing public programs.

Action 1. Identify hazard specific issues and needs.

Action 2 Help create demand for hazard resistant school facilities.

Objective 3: Promote partnerships between the state, counties, local and tribal governments to identify, prioritize, and implement mitigation actions for schools.

Action 1 Develop, Maintain and improve lasting partnerships.

Objective 4 Monitor and publicize the effectiveness of mitigation actions Implemented throughout LACOE.

Action 1 Use the LACOE website to publicize mitigation actions.

Action 2 Utilize existing risk data and Create awareness campaign.

Action 3 Establish budget and identify funding sources for mitigation outreach.

Objective 5: Provide education on hazardous conditions.

Action 1 Coordinate production of brochures, informational packets and other handouts.

Goal 3: Enhance hazard mitigation coordination and communication with federal, state, local and tribal governments.

Objective 1 Establish and maintain closer working relationships with state and county agencies and local governments.

Action 1 Develop multi-jurisdictional/ multi-functional training and exercises to enhance hazard mitigation.

Goal 4: 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 Maintain Buildings to reflect current earthquake standards.

Action 2 Encourage and participate in community awareness meetings.

Action 3 Distribute printed publications to the communities concerning hazards.

Objective 2: Protect existing assets with the highest relative vulnerability to the effects of earthquakes.

Action 1 Identify hazard-prone structures.

Action 2 Outfit critical facilities to ensure that they function after a major earthquake.

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 seismic risk assessment program.

Objective 4: Address identified data limitations regarding the lack of information about the relative vulnerability of assets from earthquakes.

Action 1 Encourage the public to clients, students and employees to maintain a 3-day preparedness kit for home and work for all hazards

Goal 9: 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 Identify facilities in flood-prone areas.

Action 2 Adopt policies for reducing damage to facilities 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 Work with local agencies to update storm water system plans and improve storm water facilities around high-risk facilities.

Action 3 Ensure adequate evacuation time in case of major hazard event.

Objective 3 Address identified data limitations regarding the lack of information about the relative vulnerability of assets from flooding.

Action 1 Encourage the students, clients and employees to prepare and maintain a 3-day preparedness kit for home and work.

Action 2 Maintain, develop and implement hazard awareness program.

Capabilities Assessment

The Hazard Mitigation Planning Steering Committee identified current capabilities available for implementing hazard mitigation activities. The Capability Assessment (Assessment) portion of the mitigation plan identifies administrative, technical 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 the County's fiscal capabilities that may be applicable to providing financial resources to implement identified mitigation action items.

Existing Institutions, Plans, Policies and Ordinances

Section 3 contains a summary of existing departments in the Los Angeles County Office of Education and their responsibilities related to hazard mitigation planning and implementation. The limited administrative and technical capabilities of LACOE (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 engineers trained in construction practices related to building and infrastructure, planners and engineers with an understanding of natural or human-caused hazards, and scientists familiar with hazards in the community.

Administrative and Technical Capacity

Staff/Personnel Resources	Y/N	Department/Agency and Position
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Facilities/Planning
Planners or Engineer(s) with an understanding of natural and/or human-caused hazards	Y	Facilities/Planning
Surveyors	N	
Staff with education or expertise to assess vulnerability to hazards	Y	Administrative Services, Facilities/Planning
Personnel skilled in GIS and/or HAZUS	N	
Scientists familiar with the hazards of the community	N	
Emergency manager	Y	Administrative Services
Grant writers	Y	Finance

Fiscal Resources

The table below shows specific financial and budgetary tools available to LACOE such as capital improvements project funding; 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	Accessible or Eligible to Use (Yes/No)
Capital improvements project funding	Yes
Impact fees for homebuyers or developers for new developments/homes	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax and revenue bonds	Yes
Yes Incur debt through bond issues	Yes
Withhold spending in hazard-prone areas	Yes

Section 7 – Plan Maintenance

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 county and cities will integrate public participation throughout the plan maintenance process. Finally, this section includes an explanation of how LACOE intends to incorporate the mitigation strategies outlined in this plan into existing planning mechanisms such as the, Capital Improvement Plans, and Strategic Execution Plans.

Monitoring, Evaluating & Updating

The Hazard Mitigation Steering Committee participants will be responsible for monitoring the plan annually for updates to goals, objectives, and action items. If needed, these participants will coordinate through the Superintendent to integrate these updates into the Plan. LACOE will be responsible for monitoring the overall Plan for updates on an annual basis.

Plan Evaluation

1. The Plan will be evaluated by LA County Office of Emergency Management and by the Superintendent 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.

2. The Plan will also be re-evaluated by the Hazard Mitigation Advisory Committee leads (or their select representatives) based upon the initial STAPPLEE criteria used to draft goals, objectives, and action items.

3. LACOE representatives will also review the goals and action items to determine their relevance to changing situations in the county, as well as changes in State or Federal regulations and policy.

4. LACOE representatives will also review the risk assessment portion of the Plan to determine if this information should be updated or modified, given any new available data.

5. The coordinating organizations responsible for the various action items will report on the status of their projects, the success of various implementation processes, difficulties encountered, success of coordination efforts, and which strategies should be revised.

6. Any updates or changes necessary will be forwarded for inclusion in further updates to the Plan. It is envisioned that the Hazard Mitigation Steering Committee will meet annually to discus the status of the Plan.

Plan Updates

LACOE is the responsible agency for updates to the Plan. All Hazard Mitigation Steering Committee participants will be responsible to provide updates to the Plan when/if necessary as described above. Every five years the updated plan will be submitted to State OES and FEMA for review.

Implementing Through Existing Programs

LACOE will have the opportunity to implement recommended action items through existing programs and procedures that are deemed appropriate. Upon adoption of the Plan, the participants can use the Plan as a baseline of information on the hazards that impact the LACOE. They will also be able to refer to existing institutions, plans, policies and ordinances as required.

Continued Public Involvement

LACOE is dedicated to involving the public directly in review and updates of the Plan. LACOE 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 LACOE website. In addition, copies of the plan will be catalogued and kept at Business Services. The existence and location of these copies will also be posted on the LACOE website. The site will contain contact information for members of the Hazard Mitigation Steering Committee to which people can direct their comments and concerns.

All public feedback will be forwarded to the Hazard Mitigation Steering Committee for review and incorporation (if deemed appropriate).

Glossary of Acronyms

ARC	American Red Cross
BFE	Base Flood Elevation (100 yr.)
BIA	Bureau of Indian Affairs
BICEP	Business and Industry Council for Emergency Preparedness
BLM	Bureau of Land Management
BOR	Bureau of Reclamation
CALTRANS	California Department of Transportation
CBSC	California Building Standards Commission
CCC	California Conservation Corp
CDC	Center for Disease Control
CDEC	California Data Exchange Center
CDF	California Dept. of Forestry and Fire Protection
CDFA	California Department of Food and Agriculture
CFSA	Consolidated Farm Service Agency
CFR	Code of Federal Regulations
CIS	Chemical Inventory System
CRDL	Chemical and Radiation Detection Laboratory
CLETS	California Law Enforcement Telecommunication System
COE	County Office of Education
CRS	NFIP Community Rating System
DMA 2000	Disaster Mitigation Act of 2000
DFG	California Department of Fish and Game
DOC/DMG	California Department of Conservation/Division of Mines and Geology
DoD	U.S. Department of Defense
DOT	U.S. Department of Transportation
DOE	U.S. Department of Energy
DPR	California Department of Parks and Recreation
DPW	Department of Public Works
DWR	California Department of Water Resources
EAL	Federal Emergency Action Levels
EIS	Early Implementation Strategy
EIS/EIR	Environmental Impact Statement &

	Environmental Impact Report
EPA	U.S. Environmental Protection Agency
ESA	Explosive Storage Area
EXPL	Explosives
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
GHAD	Geological Hazard Statement Districts
GIS	Geographic Information System
HMP	Hazard Mitigation Program
HMGP	Hazard Mitigation Grant Program
HUD	US Department of Housing and Urban Development
HVA	Hazard Vulnerability Analysis
IA	Individual Assistance Program
ICBO	International Congress of Building Officials
ICS	Incident Command System
IFGP	Individual Family Grant Program
IHMT	Interagency Hazard Mitigation Team
JFOC	Joint Flood Operations Center
JIC	Joint Information Center
JOC	Joint Operations Center
LACO	Los Angeles County
LACOE	Los Angeles County Office of Education
LAUSD	Los Angeles Unified School District
LPG	Liquefied Petroleum Gas
MSDS	Material Safety Data Sheet
NFIP	National Flood Insurance Program
NFPA	National Fire Protection Agency
NPDES	National Pollutant Discharge Elimination System
NOAA	National Oceanic and Atmospheric Administration
NMF	National Marine Fisheries
NPGA	National Propane Gas Association
NPS	National Park Service
NRC	U.S. Nuclear Regulatory Commission
NRCS	U.S. Natural Resource Conservation Service
NWS	National Weather Service

OEM	Office of Emergency Management
OES	Office of Emergency Services
OMB	US Office of Management and Budget
PA	FEMA Public Assistance Program
PDA	Preliminary Damage Assessment
PTA	Parent – Teachers Association
PG&E	Pacific Gas and Electric
RCD	Resource Conservation Districts
RFC	NWS River Forecast Center
SBA	U.S. Small Business Administration
SCCAG	Southern California Council of Governments
SEMS	Standard Emergency Management System
SOP	Standard Operating Procedure
SRB	State Reclamation Board
UBC	Uniform Building Code
USACE	US Army Corps of Engineers
USCG	United States Coast Guard
USD	Unified School District
USDA	United States Department of Agriculture
USDE	United States Department of Education
USFS	United States Forestry Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
USNRC	U.S. Nuclear Regulatory Commission
VOLAG	Volunteer Agencies