



*San Pasqual Reservation*  
HAZARD MITIGATION PLAN

September, 2005

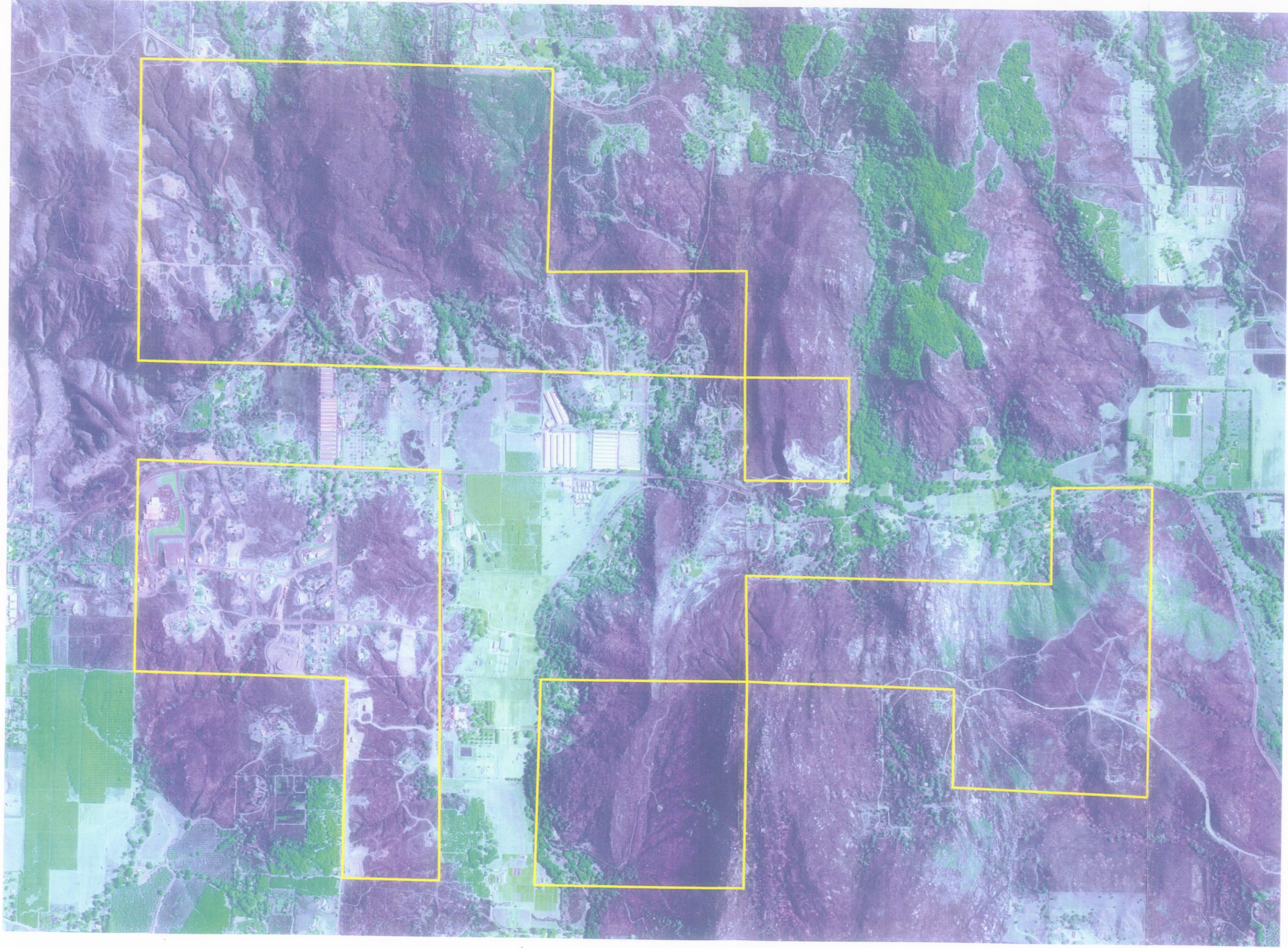
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# San Pasqual Reservation Paradise Wildfire

Photo - November, 2003

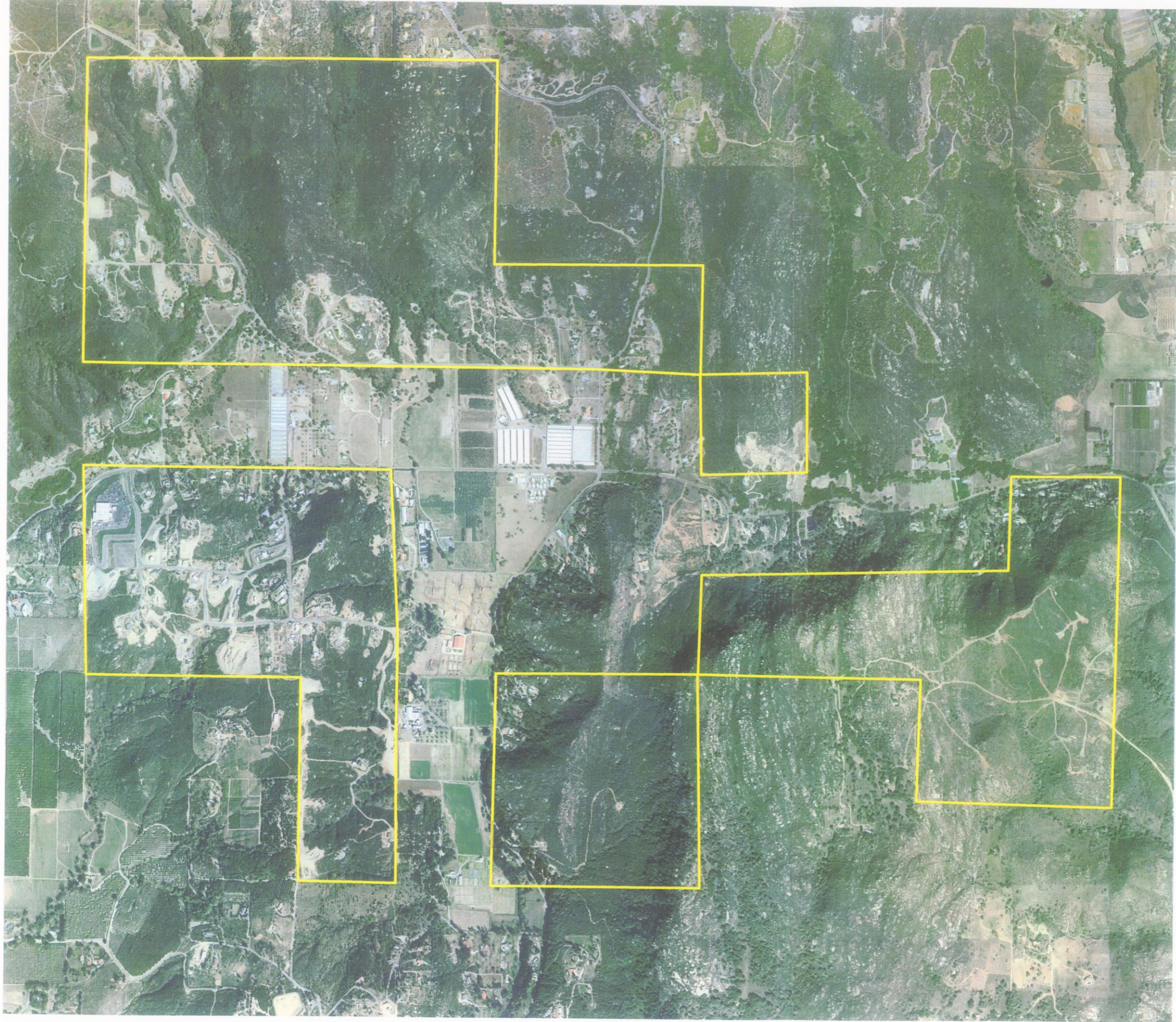
Infrared photography -

Colors adjusted to approximate bands.



0.25 0 0.25 0.5 Miles

Yellow lines are Reservation Boundaries



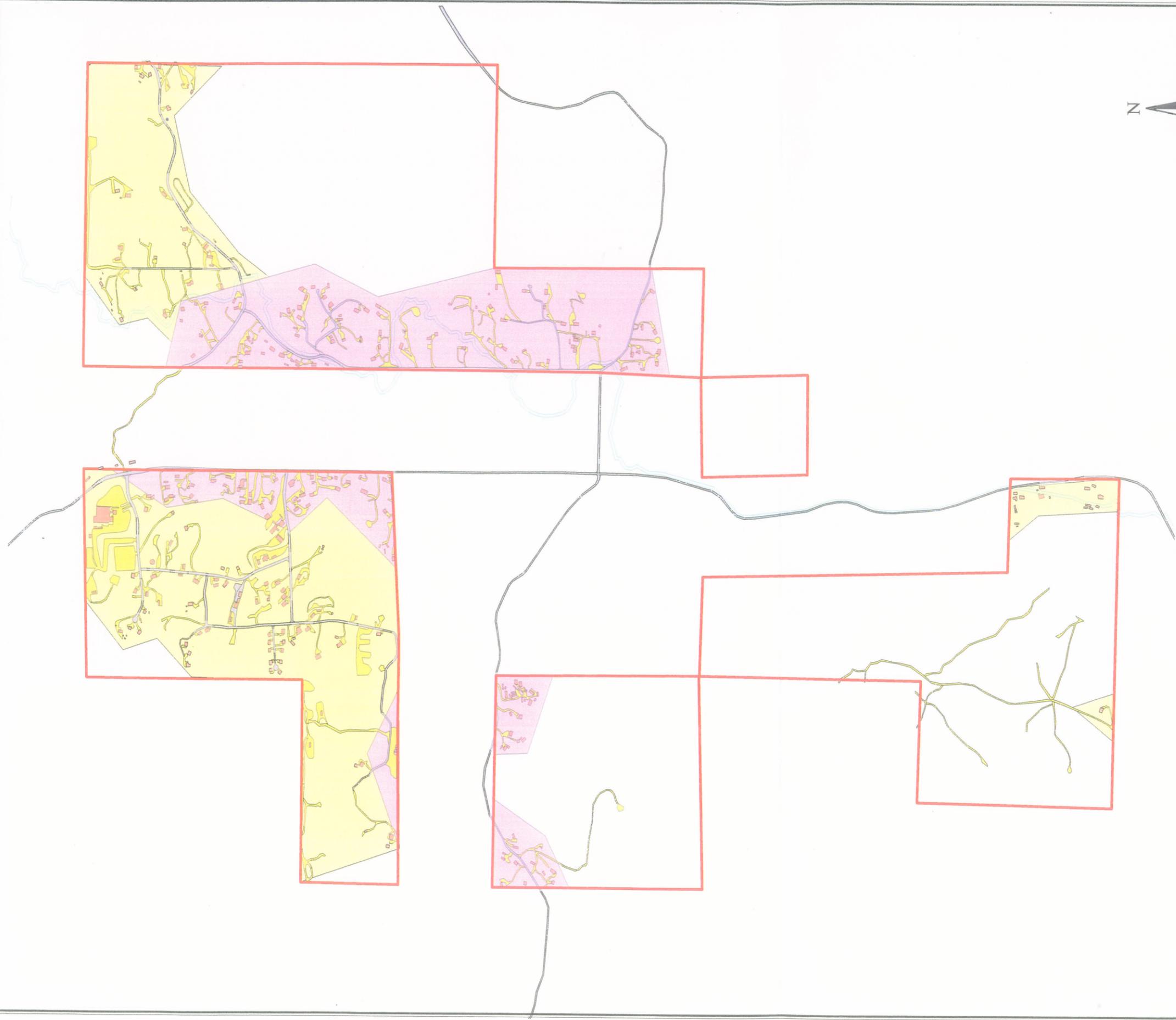
# San Pasqual Reservation



Photo - April, 2002  
Visible spectrum - true colors



Yellow lines are Reservation Boundaries



# San Pasqual Reservation

## FLASHFLOOD & LANDSLIDE RISK AREAS

All Roads and Structures Shown  
 Pink shaded area = Severe flashflood & Mudslide risk  
 Yellow shaded area = Moderate flashflood & Mudslide risk

Red lines are Reservation Boundaries  
 Blue lines are Escondido Canal  
 Other lines are roads

## IDENTIFICATION OF ASSETS AT RISK

Since the San Pasqual Reservation is a relatively small community, virtually all of the developed assets were inventoried in the risk assessment. All of the existing buildings and roads were assessed visually with the use of worksheets developed for that purpose. Please refer to the Worksheets Section of this Plan for detailed information.

Site visits were made to verify risks and to seek details about construction characteristics of buildings. During the course of the site visits, informal discussions were held with community members to gather their recollections of past events, as well as their ideas for preparedness.

A summary of the assets at risk is presented here:

SAN PASQUAL RESERVATION ASSETS SUMMARY			
CATEGORY	SQUARE FEET	REPLACEMENT VALUE	CONTENTS VALUE
		THOUSANDS	THOUSANDS
Government Services	27,500	\$3,575	\$5,363
Public Utilities*	3,500	\$10,000	\$10,000
Economic Development	75,000	\$40,000	\$40,000
Residential	70,000	\$5,390	\$2,695
Roads at Risk**	32,000	\$1,280	n.a.
TOTAL	208,000	\$60,245	\$58,058
		\$118,303	

\* Square Footage of buildings, does not include tanks, towers, distribution facilities, etc.

\*\* Only includes roads at points where flooding has been identified as a hazard.

Once alternative mitigation actions were selected and analyzed, a meeting was held with community leaders and concerned individuals to further analyze and prioritize the mitigation actions for this plan.

An attempt has been made to assure that this plan is logical and complete, as well as simplified enough to be understandable by all community members.

## METHODOLOGY USED IN PLANNING FOR HAZARD MITIGATION

The how-to guide, *State and Local Mitigation Planning*<sup>4</sup>, published by FEMA, was used as a guide to preparation of this plan. The guide contains a number of worksheets which helped organize the work. The worksheets can be seen in Appendix 1.

The San Pasqual Tribal Business Committee was consulted to establish the goals and objectives of hazard mitigation planning. Recent experience with the Paradise wildfire accentuated the importance of taking actions before disaster strikes to reduce the damages inflicted, and to aid in emergency management actions. The Tribe's Emergency Response Plan<sup>5</sup> was helpful at this meeting.

Various sites on the World Wide Web (Internet) were consulted as well. Although the bulk of the Plan was prepared by a consultant, many others contributed to the data collected, and the goals adopted. The San Pasqual Reservation Fire Department was the lead agency in preparation of this plan. Consultation was made with other Tribal Departments, and with neighboring fire protection jurisdictions with which SPRFD maintains mutual aid agreements.

Additional references were obtained from the Tribe's library of planning documents. The San Pasqual Comprehensive Land Use Plan (Mooney, 2004), the San Pasqual Emergency Response Plan (Hofmann, 2003) and the San Pasqual Comprehensive Economic Development Plan (Hofmann, 2004) were reviewed in the making of this HMP.

Since the San Pasqual Reservation is a relatively small community, virtually all of the developed assets were inventoried in the risk assessment. All of the existing buildings and roads were assessed visually with the use of worksheets developed for that purpose. Site visits were made to verify risks and to seek details about construction characteristics of buildings. During the course of the site visits, informal discussions were held with community members to gather their recollections of past events, as well as their ideas for preparedness.

Aerial photographs were made available to facilitate the process by identifying structures left after the Paradise Wildfire. A Geographic Information System was used to map roads, structures, and hazard sites.

Regional standard values were used to estimate the potential costs of damages which could result from natural disasters. Interviews with Architects, government officials, and enterprise executives were made to help determine the potential losses from catastrophic events. These interviews also were used to assess the capabilities of local agencies to cope with disaster, and to mitigate hazards.

## EXECUTIVE SUMMARY

The Paradise Fire of October 27, 2003 burned approximately 90% of the land and destroyed over 60 homes out of a total of 230 on the San Pasqual Reservation. This disaster highlighted the importance of hazard mitigation planning and projects to help prevent damages to life and property. The year 2004 yielded little rainfall, and the vegetation has not regenerated significantly. It is likely that fuel loads will increase a little in the 2005 and 2006 seasons, and begin to be a renewed hazard in 2007, 2008, and beyond. Fuel reduction and clearing around structures will be needed then.

With nearly all of the protective vegetation burned off the steep slopes, there is a clear and present vulnerability to flash flooding and mudslides. There is an immediate need to mitigate the hazard presented by this threat. Fourteen houses and 20 road segments have been identified as being in the path of water and debris that would inevitably result from heavy rains. Inadequate drainage facilities may exacerbate the threat.

Southern California is well known for earthquake susceptibility. The San Pasqual Reservation is no exception to this, however the nearest fault, the Elsinore-Julian fault is located 7.6 miles away, and could produce an earthquake of Richter Magnitude 7.1 intensity on the Modified Mercalli Scale<sup>3</sup>. Nevertheless, many mobile structures on the San Pasqual Reservation have been identified to be lacking in seismic bracing anchors for earthquake protection. Mitigation for earthquake hazards must include the installation of bracing for those structures.

Public utilities identified in this plan have proven to be sound and resistant to the existing hazards resulting from natural causes.

The San Pasqual Tribal Government, as a result of this planning effort, now realizes that an effective building and safety code should be adopted and enforced. This means putting into effect a permitting process for grading, construction, landscaping, and other activities. All new construction must be shown to meet the 1997 Uniform Building Code standards for Earthquake Zone 4. Furthermore, fuel loads in the urban-wildland interface must be kept at a safe distance, and road access must allow quick and efficient ingress-egress by emergency vehicles to well marked and mapped homes.

vegetation types, and very vulnerable to wildfire. By the time the band members began to move onto the Reservation, white settlers had homesteaded the better land in the valley floors. The band members were left with the less desirable land.

PARCEL	SIZE & STATUS	DATE ACQUIRED
District A1	400 Ac. Reservation Trust	1911
District A2	41 Ac. Reservation Trust	1911
District B	330 Ac. Reservation Trust	1911
District C1	280 Ac. Reservation Trust	1911
District C2	165 Ac. Reservation Trust	1911
District A1 annex	165 Ac. Reservation Trust	1972
189-051-02	9.58 Ac. Fee Simple Land	1998
L. Wohlford Ranch	533 Ac. Fee Simple Land	1998
190-040-02	3.31 Ac. Fee Simple Land	2003

The last three parcels in the above table are properties which are not held in trust by the Federal Government. The Band is currently developing a fee-to-trust application to be submitted to the U. S. Department of the Interior to take these parcels of land into trust status in the near future:

The Tribe owns 533 acres of fee land near Lake Wohlford, contiguous to District C of the Reservation, known as Lake Wohlford Ranch. This property was acquired as part of the economic development project “Casino Facilities” to provide additional space for recreational facilities related to the casino project. Even though plans for construction of the project have been tabled, this property has great potential for recreation, cultural uses, conservation and housing.

The Tribe also owns a 9.58 acre parcel at the southwest corner of the intersection of Valley Center Road and North Lake Wohlford Road. This property has potential for community commercial uses due to its flat topography, excellent location at a major local intersection, and visibility.

More recently, the Tribe purchased 3.31 acres on Lake Wohlford Road. This property was purchased for the purpose of gaining access to District A2, a forty acre parcel of the Reservation which has been landlocked since acquisition in 1911. During the 92 years since then, District A2 was not accessible to band members by road or by any easement. This made any kind of development virtually impossible. The acquisition of this 3.31 acres has resolved this problem, providing a route to build a road to gain access from Lake Wohlford Road.

Besides wildfires, other natural disaster threats in the vicinity are flash-floods and mudslides, and of course, earthquakes, which are common in Southern California.

## **INTRODUCTION**

The preparation of the Hazard Mitigation Plan is an on-going and evolving process. This document represents the tribe's hazard mitigation strategy for the Years 2005 – 2010. The purpose of the Plan is to provide a rational basis, and a strategic framework for implementing the hazard mitigation projects of the San Pasqual Band of Mission Indians. This planning process involves careful analysis of the risks and of the Tribe's assets and constraints, a review of the resources available to the Tribe, an analysis of alternative project costs and a timeframe for implementing Hazard Mitigation projects. This revised version attempts to consider all assets on the San Pasqual Reservation.

### **Tribal History<sup>1</sup>**

The San Pasqual Band of Mission Indians is a Kumeyaay tribal community with close cultural and historic ties to the 13 Kumeyaay tribes of south and southeast San Diego County, and those of Imperial County and Baja California Norte, Mexico. The ancestors of the San Pasqual Band referred to themselves as "Ipai", which means "the people" in the Kumeyaay language.

During the California Mission era, which started at Mission San Diego in 1769, the name "Digueño" was what natives of this region were referred to as. The San Pasqual Band of Mission Indians was recognized under the act of the United States Congress January 12, 1891 (26 Stat. 712-714 c.65). The Band is listed in the Federal Register (Vol. 65, No. 49, pg. 13301) as the "San Pasqual Band of Digueño Mission Indians of California". Now, the Band identifies itself as "San Pasqual Band of Mission Indians".

### **The San Pasqual Indian Reservation**

The ancestral homeland of the San Pasqual Band was located in the San Pasqual Valley, about 10 miles due South of their present location. Due to a U. S. Government error in the survey or recording of the Reservation land in 1892, the San Pasqual Reservation was located one township to the North of the original tribal village<sup>2</sup>. This resulted in a forced relocation of the Tribe, and some confusion among the band members, many of whom moved to other reservations and cities in the region when they were displaced from their homeland in the San Pasqual Valley.

The present San Pasqual Indian Reservation was established July 1, 1910, and Executive Order of April 15, 1911, under the authority of the original Act. The present San Pasqual Reservation is located in the unincorporated area of San Diego County known as Valley Center, about 11 miles northeast of Escondido. It encompasses 1,380 acres consisting of five separate parcels in a semi-checkerboard configuration (see Map Section). The Reservation consists of hilly, steep land slopes; less than 15 percent of the property is considered developable. Most of the land is covered by the Chaparral Scrub

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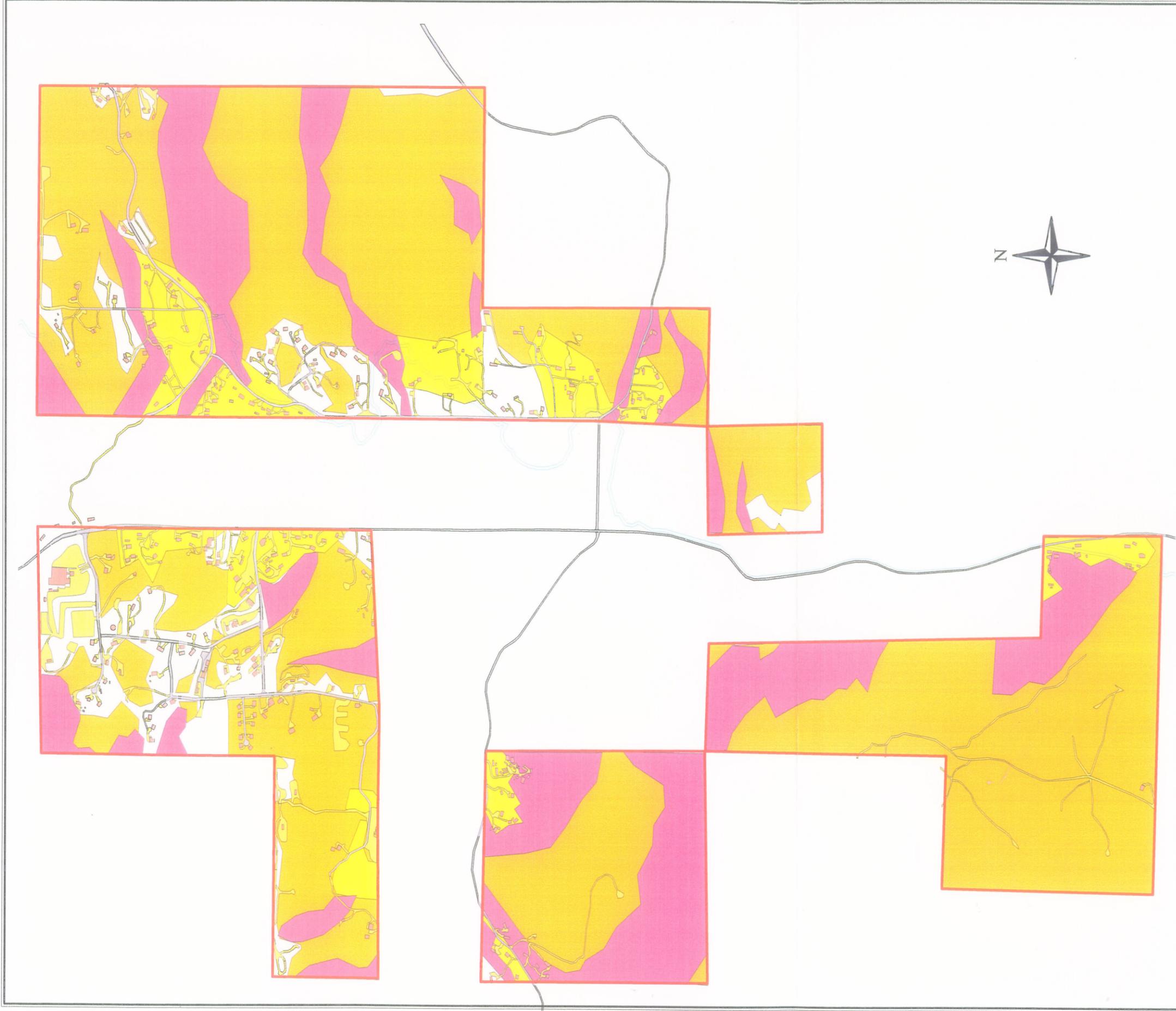
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## MAP SECTION

- Reservation Locator Map
- Landslide and Flashflood Susceptibility Map
- San Pasqual Reservation – April 2002
- San Pasqual Reservation – Paradise Wildfire – November, 2003
- Fuel Model Map



# San Pasqual Reservation

## FUEL MODEL MAP

### LEGEND

-  Spir.shp
  -  Structures
  -  Escondido Canal
  -  Fuel Model B
  -  Fuel Model A
  -  Fuel Model T
  -  Paved Roads
  -  Water Storage Tanks
- Other lines are unpaved roads



October, 2004

## **HAZARD PROFILES – ANALYSIS OF POTENTIAL LOSSES**

### **EARTHQUAKES**

The San Pasqual Reservation, being located in Southern California, is completely susceptible to earthquake events. However, since the nearest fault is 7.6 miles away<sup>6</sup>, the next is 11.5 miles away, and the remainder are all more than 20 miles away, the likelihood of a catastrophic earthquake is lessened. The Peak Site Acceleration is 0.311 g.

Most permanent construction on the San Pasqual Reservation is built to withstand this, conforming to Uniform Building Code Seismic Zone 4. However, many mobile homes have been placed on the Reservation, as an inexpensive and quick means of providing housing. Few of these mobile homes meet the seismic code, and thus have increased risk of damage in an event producing PSA from 0.18 to 0.311 g.

There are approximately 100 mobile homes lacking seismic structural supports. At an average size of 800 square feet, the value of those homes is \$4,160,000. Seismic tie-downs cost \$75 each, the average mobile home needs a minimum of 8 such tie-downs. The cost to protect these at-risk homes is \$60,000.

### **DEBRIS FLOWS AND FLASH FLOODS**

The San Pasqual Reservation lies at the crest between three distinct watersheds. Nearly all of the land is over 5% slope, half is over 20%, and some areas are very steeply inclined. This situation lends itself to small scale flash floods and debris flows. The potential for large scale flooding is negligible.

Much of the protective mulch covering on the hillsides was burnt away in the wildfire disaster of October, 2003. Until the native vegetation recuperates sufficiently to replace the mulch layer, danger of flash floods and debris flows is greatly increased on the Reservation. Looking at the flood risk map, 170 homes and structures are located in the “severe risk” areas, and 130 homes and structures are located in “moderate risk” areas. The sum of these two is nearly the totality of structures on the Reservation, therefore, all structures are subject to some risk from flash floods and debris flows.

Roads are subject to risk of damage from flash floods and debris flows as well. Engineering analysis of the extent of areas drained, culvert sizes, and road construction should be carried out to determine the need for preventative actions.

## **WILDFIRES**

The Paradise Wildfire of October, 2003 destroyed 67 homes on the San Pasqual Reservation. It burned 90% of the Tribe's territory. (See Map Section)

Since the Paradise Fire consumed nearly all of the available fuel on the Reservation, fire risk for years 2004 and 2005 is greatly reduced. However, from 2006 onward, fuel will increase, increasing the risk of new wildfire disasters. Therefore, mitigation actions, such as fuel reduction will need to be performed. Other mitigation actions, such as emergency vehicle access to all areas, road signage, and house numbering, and fire code establishment and enforcement, can be carried out sooner.

Looking at the Fuel Model Map, it can be seen that approximately 250 structures are within fuel model areas "B" , "A", and "T", representing moderate to extreme risk.

## **HAZARD MITIGATION GOALS AND OBJECTIVES**

### **GOAL No. 1:**

By the year 2006, all structures on the San Pasqual Reservation are safe and compliant to the Uniform Building Code Seismic Zone 4.

### **OBJECTIVES:**

- Implement a Construction Permitting and Inspection system for all new construction on the Reservation.
- Upgrade structures, where possible, to 1997 UBC seismic standards for Zone 4.

### **ACTIVITIES:**

- Adopt a Tribal Ordinance to regulate building and permitting on the Reservation.
- Delegate authority to the San Pasqual Housing & Community Development Department to require submission of plans and descriptions of projects for all new construction.
- Designate staff and resources for inspections and approval of projects.
- Upgrade mobile structures to Seismic Standards, with approved system tie-down anchors.

### **GOAL No. 2:**

All roads on the San Pasqual Reservation are adequate and serviceable in the event of a natural disaster.

### **OBJECTIVES:**

- By the end of year 2005, all roads are named and have signs at intersections.
- By the end of year 2005, all buildings are identifiable by house number, visible from the street or beginning of driveway.
- By the end of year 2006, all dead-end roads and driveways have turn-around spaces for emergency vehicles.
- By the end of year 2006, all drainage paths are directed away from roadways, and culverts are of sufficient size to allow for 100-year flood.

### **ACTIVITIES:**

- Name unnamed roads and provide signage for all roads by the end of year 2005.

- Provide fire resistant house number signs for all buildings, according to a logical grid numbering system by the end of year 2005.
- Construct turn-around areas for emergency vehicles where needed by the year 2006.
- Channelize drainage around vulnerable roads, and install adequate culverts where needed, by the end of year 2005.

**GOAL No. 3**

By the year 2006, all structures on the San Pasqual Reservation are protected from wildfire danger.

**OBJECTIVES:**

- By the end of year 2005, all new construction on the Reservation will conform to fire resistance standards.
- By the year 2006, adopt a Reservation-wide fire code.
- By the year 2007, excessively dangerous combustible materials are not found near any structures on the San Pasqual Reservation.
- By the year 2009, fire-protection water supplies are available near all structures on the Reservation.

**ACTIVITIES:**

- By the end of year 2005, adopt and enforce a Reservation building and fire code.
- Educate citizens and provide incentives to make their homes fire safe.
- Review fire hydrant placement, and assist homeowners not within 1500 ft. of hydrants to provide fire protection water storage.

## ALTERNATIVE MITIGATION ACTIONS

The following actions (in no particular order) were discussed with the community and determined to be the most effective measures to be taken in order to mitigate loss of life and assets on the San Pasqual Reservation:

- Adopt a Tribal Ordinance to regulate building and permitting on the Reservation.
- Delegate authority to the San Pasqual Housing & Community Development Department to require submission of plans and descriptions of all new construction projects for approval.
- Designate staff and resources for inspections and approval of projects.
- Upgrade mobile structures to Seismic Standards, with approved and engineered seismic tie-down anchors.
- Name unnamed roads and provide signage for all roads by the end of year 2005.
- Provide fire resistant, house number signs for all buildings, visible at night from the road, and according to a logical grid numbering system by the end of year 2005.
- Produce a Reservation Emergency Response Map & distribute it to Emergency Services Organizations. This map should show all structures, with labels clearly identifying the house number and roads.
- Construct turn-around areas for emergency vehicles where needed by the year 2006.
- Channelize drainage around vulnerable roads, and install adequate culverts where needed, by the end of year 2005.
- Acquire and install an Emergency Response Radio Repeater on the Reservation for use by the Fire Department and Tribal Government.
- Acquire needed fire truck(s) for the Fire Department.
- By the end of year 2005, adopt and enforce a Reservation fire code.
- Educate citizens and provide incentives to make their homes fire safe.
- Review fire hydrant placement, and assist homeowners not within 1500 ft. of hydrants to provide fire protection water storage.

## **LOCAL MITIGATION CAPABILITIES**

The San Pasqual Band of Mission Indians has several agencies in place which can implement the activities outlined in the previous section:

### **Tribal Government**

#### **General Council – All voting members**

The General Council of the San Pasqual Band of Mission Indians is the highest authority of the Tribe. It usually meets quarterly, but can meet more often as the need arises.

#### **Tribal Business Committee – 5 elected members**

The Business Committee is elected every 2 years to conduct the business affairs of the Tribe. It meets on a weekly basis.

#### **Land & Housing Committee – 5 elected members**

The Land & Housing Committee is also elected every 2 years, meets as needed, and regulates land use and housing issues on the Reservation.

#### **Economic Development Board – 5 elected members**

The Economic Development Board meets as needed to regulate the Economic Development Projects of the Tribe.

#### **Tribal Administration – 12 Staff members**

The administrative arm of Tribal Government can procure the formulation of codes and ordinances needed to mitigate hazards on the Reservation. It is up to the Business Committee of Tribal Government to review the codes and ordinances, and make recommendations to the General Council for their adoption.

Administrative personnel can also procure funding sources for mitigation actions, grant writing, and budgeting of general welfare funds towards mitigation actions.

#### **Tribal Education Department – 15 Staff members.**

Although the Education Department works primarily with youth on the Reservation, education goals can be expanded to educate all citizens in disaster preparedness and individual mitigation actions. With a modest budget, this department can reproduce and distribute educational fliers and pamphlets to all households on the Reservation.

#### **Reservation Fire Department – 12 Staff members**

The Fire Chief is an ideal position to seat authority for identification of hazards, and to provide for mitigation projects. With codes in place and delegation of authority for their enforcement, fire department personnel can review and approve plans, as well as visit all structures on the reservation to determine their compliance with applicable standards.

The Fire Chief and, to a lesser degree, the three Fire Captains have experience in code enforcement, especially fire codes.

### **Housing & Community Development Department – 5 Staff members**

H&CD has experience in all aspects of construction projects, from planning and funding to actual construction of residential and government facilities. H&CD is directly responsible for the administration of 75 HUD homes on the Reservation. Building code enforcement could easily be added to the scope of this department.

### **Tribal Environmental Program – 6 Staff Members**

The Environmental program could be instrumental in mitigation of hazards related to wildfire, such as fuel reduction, and homeowner education. This branch operates the community domestic water systems on the Reservation, and could be delegated to assess fire suppression water capacity, as well as make recommendations for improvements.

### **Non Tribal Organizations**

#### **Operating Engineers Training Trust – 3 Staff Members, 8-15 trainees**

This group operates in a uniquely beneficial relationship to Tribal Government. They have numerous pieces of heavy equipment, including bulldozers, motor graders, back-hoes, cranes, trucks and others. They carry out their training objectives on Reservation land, and provide grading, road construction, trenching, maintenance and other services to Tribal Government. Once road improvements are identified in the Hazard Mitigation Projects, much of the work could be completed by this group at minimal cost to the Tribe.

#### **Tribal Telecom Towers, LLC**

This company owns and operates a communications tower on land leased from the Tribe. The lease provisions allow the Tribal Government to install radio communications equipment at the site, on the tower and in the equipment building. The availability of this infrastructure makes a project to improve emergency radio communications more easily accomplished.

## **PRIORITIZATION OF MITIGATION ACTIONS**

Below, the actions identified in previous sections are listed in order of priority as identified at the meeting held on September 11, 2004.

1. Educate citizens and provide incentives to make their homes fire safe.
2. Name unnamed roads and provide signage for all roads by the end of year 2005.
3. Provide fire resistant house number signs for all buildings, according to a logical grid numbering system by the end of year 2005.
4. Produce a Reservation Emergency Response Map & distribute it to Emergency Services Organizations. This map should show all structures, with labels clearly identifying the house number and roads.
5. Acquire and install an Emergency Response Radio Repeater on the Reservation for use by the Fire Department and Tribal Government.
6. Acquire needed fire truck(s) for the Fire Department.
7. Channelize drainage around vulnerable roads, and install adequate culverts where needed, by the end of year 2005.
8. Construct turn-around areas for emergency vehicles where needed by the year 2006.
9. By the end of year 2005, adopt and enforce a Reservation fire code.
10. Adopt a Tribal Ordinance to regulate building and permitting on the Reservation.
11. Delegate authority to the San Pasqual Housing & Community Development Department to require submission of plans and descriptions of projects for all new construction.
12. Designate staff and resources for inspections and approval of projects.
13. Upgrade mobile structures to Seismic Standards, with Acumen System Tie-down anchors.
14. Review fire hydrant placement, and assist homeowners not within 1500 ft. of hydrants to provide fire protection water storage.

## IMPLEMENTATION STRATEGY

Each prioritized action is listed here, with the strategy for its implementation:

1. *Educate citizens and provide incentives to make their homes fire safe.*

Funding exists now to reproduce and distribute educational materials to this end. Incentives, as needed could be developed and funded through existing General Welfare funds. Small grants could be obtained to reinforce these efforts.

2. *Name unnamed roads and provide signage for all roads by the end of year 2005.*

The Tribal Administrator shall determine which unnamed roads shall be named, and submit a plan to the Business Committee for approval. General Welfare funds and/or small grants may contribute to implementation of signage for all roads by competitive contract.

3. *Provide fire resistant house number signs for all buildings, according to a logical grid numbering system by the end of year 2005.*

The Reservation Fire Department shall be given the task of providing permanent, fire-resistant, and fully visible house numbers to all buildings on the Reservation. General Welfare funds and/or small grants may contribute to implementation of this action.

4. *Produce a Reservation Emergency Response Map & distribute it to Emergency Services Organizations. This map should show all structures, with labels clearly identifying the house number and roads. A uniform house-number grid shall be placed over the map.*

This activity is the culmination of the proceeding two. A GIS consultant should be involved in this activity to produce the maps. General Welfare funds and/or small grants may contribute to implementation of this action.

5. *Acquire and install an Emergency Response Radio Repeater on the Reservation for use by the Fire Department and Tribal Government.*

The Fire Chief shall seek funds to formulate and implement this project. Possible sources are FEMA and HUD.

6. *Channelize drainage around vulnerable roads, and install adequate culverts where needed, by the end of year 2005.*

The Tribe will seek Hazard Mitigation Project Funding from FEMA for the purpose of further identifying the needs, costs and for construction labor and materials for these actions. The Operating Engineers Training Trust may be called upon to provide grading and trenching where needed.

7. *Construct turn-around areas for emergency vehicles where needed by the year 2006.*

The Reservation Fire Department will indicate where turn-around areas are needed, and direct the Operating Engineers Training Trust to provide

grading needed. If pavement or gravel is needed, H&CD will coordinate the use of General Welfare and/or grant funds for that purpose.

8. *By the end of year 2005, adopt and enforce a Reservation fire code.*

The Tribal Administrator, through the Fire Chief, will procure the formulation of a Fire Code specifically covering the conditions encountered on the San Pasqual Reservation. Once formulated, the Administrator will review it and pass along recommendations to the Business Committee for adoption. Enforcement will be through the Reservation Fire Department and the Land and Housing Committee. Some of the enforcement authority can be delegated to the Housing Magistrate, once implemented. General Welfare funds and/or small grants may contribute to implementation of this activity.

9. *Adopt a Tribal Ordinance to regulate building and permitting on the Reservation.*

The Housing & Community Development Department shall procure the drafting of a Tribal Ordinance regarding building and permitting on the Reservation. It shall be reviewed and observations made by the Land and Housing Committee before being submitted to the Business Committee, then the General Council for adoption. H&CD shall propose a funding mechanism to allow that department to enforce the codes.

10. *Delegate an authority to require submission of plans and descriptions of projects for all new construction as well as to inspect projects for compliance..*

H&CD shall compose a Tribal Resolution to be reviewed by the Land and Housing Committee, then the Business Committee for final review, prior to adoption by the General Council, delegating such authority.

11. *Designate staff or a consultant firm, and resources for inspections and approval of projects.*

The Tribal Administrator, upon approval of the Business Committee, shall implement this action.

12. *Upgrade mobile structures to Seismic Standards, with engineered and approved tie-down anchors.*

H&CD shall develop the scope of work and specifications for this project, and with assistance from the Tribal Procurement Officer, obtain competitive bids for the work. A grant proposal shall be prepared and submitted to the FEMA Hazard Mitigation Projects and/or other agencies for funding.

13. *Review fire hydrant placement, and assist homeowners beyond 1500 ft. of hydrants to provide fire protection water storage.*

The San Pasqual Reservation Fire Department shall develop the scope of work and specifications for this project, and with assistance from the Tribal Procurement Officer, obtain competitive bids for the work. A grant proposal shall be prepared and submitted to the FEMA Hazard Mitigation Projects and/or other agencies for funding

## **HAZARD MITIGATION PLAN MAINTENANCE PROCESS**

The San Pasqual Hazard Mitigation Plan shall be amended in compliance with 44 CFR 13.11 to reflect changes in Tribal and Federal laws and statutes. The San Pasqual Reservation Fire Department has assumed responsibility for the annual review of this plan, monitoring the progress of its implementation, and informing the Tribe and FEMA on the progress of the mitigation activities contained herein.

The Tribal Administrator and the Fire Chief shall provide that applications are made to appropriate agencies for assistance in funding and technical matters required for the implementation of the mitigation activities proposed by the plan.

In January of each year, the Fire Chief, with assistance of the Fire Captains and other Tribal Government Staff shall assemble to carry out the review, monitoring and evaluation process. They shall decide at that time if an update or revision of the Plan is needed, and continue to do so if necessary. The same group shall review any projects undertaken for implementation of this plan or which may support it in some way.

Revisions shall be done using similar methodology to that used in the creation of this plan (See Methodology Section). SPRFD shall collect Hazard Mitigation Plans from other Tribes and nearby jurisdictions for reference purposes to obtain broader insight into the hazards which may present themselves here, and the means to mitigate them.

Each time this HMP is revised, it shall be presented to the Tribal Council for adoption, then submitted to the Federal Emergency Management Agency, Region IX for approval.

The San Pasqual Hazard Mitigation Plan shall be considered as a "public document" and as such, an effort will be made to disseminate it to Tribal Government Staff, interested community members, nearby Tribes, and other jurisdictions.

## BIBLIOGRAPHY AND ENDNOTES

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<sup>1</sup> From: San Pasqual Band of Mission Indians, *Comprehensive Economic Development Strategy: 2003 – 2008*, Curtis Hofmann, August, 2003.

<sup>2</sup> For more on the Tribe's history, see *Comprehensive Plan for the San Pasqual Indian Reservation*, Mooney & Associates, August, 2003.

<sup>3</sup> Geotechnical Exploration Report, *Proposed Expansion of Valley View Casino*, Professional Service Industries, July, 2004.

<sup>4</sup> State and Local Mitigation Planning, *how-to guides*, Federal Emergency Management Agency, Washington, D. C. August 2001, September 2002, and August 2003.

<sup>5</sup> *Emergency Response Plan*, San Pasqual Indian Reservation Tribal Government Facilities, San Pasqual Band of Mission Indians, San Pasqual Reservation Fire Department, Curtis Hofmann, September, 2003.

<sup>6</sup> See Seismic Analysis Section in Appendix 2

## APPENDIX 1 – WORKSHEETS AND JOBAIDS USED

Date:

What kinds of natural hazards can affect you?

**Task A. List the hazards that may occur.**

1. Research newspapers and other historical records.
2. Review existing plans and reports.
3. Talk to the experts in your community, state, or region.
4. Gather information on Internet Websites.
5. Next to the hazard list below, put a check mark in the Task A boxes beside all hazards that may occur in your community or state.

**Task B. Focus on the most prevalent hazards in your community or state.**

1. Go to hazard Websites.
2. Locate your community or state on the Website map.
3. Determine whether you are in a high-risk area. Get more localized information if necessary.
4. Next to the hazard list below, put a check mark in the Task B boxes beside all hazards that pose a significant threat.

	Task A	Task B
Avalanche	<input type="checkbox"/>	<input type="checkbox"/>
Coastal Erosion	<input type="checkbox"/>	<input type="checkbox"/>
Coastal Storm	<input type="checkbox"/>	<input type="checkbox"/>
Dam Failure	<input type="checkbox"/>	<input type="checkbox"/>
Drought	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Earthquake	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Expansive Soils	<input type="checkbox"/>	<input type="checkbox"/>
Extreme Heat	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Flood	<input type="checkbox"/>	<input type="checkbox"/>
Hailstorm	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Hurricane	<input type="checkbox"/>	<input type="checkbox"/>
Land Subsidence	<input type="checkbox"/>	<input type="checkbox"/>
Flash Flood / Landslide	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Severe Winter Storm	<input type="checkbox"/>	<input type="checkbox"/>
Tornado	<input type="checkbox"/>	<input type="checkbox"/>
Tsunami	<input type="checkbox"/>	<input type="checkbox"/>
Volcano	<input type="checkbox"/>	<input type="checkbox"/>
Wildfire	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Windstorm	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other Terrorist attack	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other _____	<input type="checkbox"/>	<input type="checkbox"/>
Other _____	<input type="checkbox"/>	<input type="checkbox"/>

Use this space to record information you find for each of the hazards you will be researching. Attach additional pages as necessary.

Hazard or Event Description (type of hazard, date of event, number of injuries, cost and types of damage, etc.)	Source of Information	Map Available for this Hazard?	Scale of Map
Earthquake	Geological Investigation Reports	yes	1"=10mi
Flash FLOOD / LANDSLIDE	DOE / BAER	yes Aerial Photo	Var.
Wildfire	DOE BAER	yes Aerial Photo	Var.
WINDSTORM	INTERNET	yes	?
Terrorist Attack (not a natural hazard)	DHS	NO	N/A

Note: **Bolded** hazards are addressed in this How-To Guide.

# Worksheet #2

# Profile Hazard Events

Date: 10/04

How Bad Can It Get?

### Task A. Obtain or create a base map.

You can use existing maps from:

- Road maps
- USGS topographic maps or Digital Orthophoto Quarter Quads (DOQQ)
- Topographic and/or planimetric maps from other agencies
- Aerial topographic and/or planimetric maps

OR you can create a base map using:

- Field surveys
- GIS software
- CADD software
- Digitized paper maps

o Aerial Photographs

Title of Map	Scale	Date
Aerial Photo 2001	1/2x	2001
" " 2003	1/2x	2/2003
" " 2003	1/2x	11/2003
Faults of So Cal		

 Flood	<input type="checkbox"/> 1. Get a copy of your FIRM. _____ <input type="checkbox"/> 2. Verify the FIRM is up-to-date and complete. _____	<input type="checkbox"/> 1. Transfer the boundaries from your FIRM onto your base map (floodway, 100-yr flood, 500-yr flood). <input type="checkbox"/> 2. Transfer the BFEs onto your base map.
 Earthquake	<input checked="" type="checkbox"/> 1. Go to the <a href="http://geohazards.cr.usgs.gov">http://geohazards.cr.usgs.gov</a> Website. <input checked="" type="checkbox"/> 2. Locate your planning area on the map. <input checked="" type="checkbox"/> 3. Determine your PGA.	<input checked="" type="checkbox"/> 1. Record your PGA: _____ <input checked="" type="checkbox"/> 2. If you have more than one PGA print, download or order your PGA map.
 Tsunami	<input type="checkbox"/> 1. Get a copy of your tsunami inundation zone map. _____	<input type="checkbox"/> 1. Copy the boundary of your tsunami inundation zone onto your base map.
 Tornado	<input type="checkbox"/> 1. Find your design wind speed. _____	<input type="checkbox"/> 1. Record your design wind speed: _____ <input type="checkbox"/> 2. If you have more than one design wind speed, print, download, or copy your design wind speed zones, copy the boundary of your design wind speed zones on your base map, then record the design wind speed zones on your base map.
 Coastal Storm	<input type="checkbox"/> 1. Get a copy of your FIRM. _____ <input type="checkbox"/> 2. Verify that the FIRM is up-to-date and complete. _____ <input type="checkbox"/> 3. Determine the annual rate of coastal erosion. _____ <input type="checkbox"/> 4. Find your design wind speed. _____	<input type="checkbox"/> 1. Transfer the boundaries of your coastal storm hazard areas onto your base map. <input type="checkbox"/> 2. Transfer the BFEs onto your base map. <input type="checkbox"/> 3. Record the erosion rates on your base map: _____ <input type="checkbox"/> 4. Record the design wind speed here and on your base map: _____
 Landslide	<input checked="" type="checkbox"/> 1. Map location of previous landslides. _____ <input checked="" type="checkbox"/> 2. Map the topography. _____ <input checked="" type="checkbox"/> 3. Map the geology. _____ <input checked="" type="checkbox"/> 4. Identify the high-hazard areas on your map. _____	<input checked="" type="checkbox"/> 1. Mark the areas susceptible to landslides onto your base map.
 Wildfire	<input checked="" type="checkbox"/> 1. Map the fuel models located within the urban-wildland interface areas. _____ <input checked="" type="checkbox"/> 2. Map the topography. _____ <input checked="" type="checkbox"/> 3. Determine your critical fire weather frequency. <u>JUNE → NOVEMBER</u> <input checked="" type="checkbox"/> 4. Determine your fire hazard severity. <u>LOW 2005 MOD 2006-7 HIGH 2008</u>	<input type="checkbox"/> 1. Draw the boundaries of your wildfire hazard areas onto your base map.
Other	<input checked="" type="checkbox"/> 1. Map the hazard. <u>Heat-Drought - Regional</u>	<input checked="" type="checkbox"/> 1. Record hazard event info on your base map.

Date: 10/04

What will be affected by the hazard event?

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard Earthquake, Wildfire

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	225	225	100%	\$18M	\$18M	100	750	750	100
Commercial	1	1	100	\$60M	\$60M	100	1000	1000	
Industrial	0	0	n.a.	n.a.	n.a.	n2	n2	n2	n2
Agricultural	0	0	n.a.	n.a.	n.a.	n2	n2	n2	n2
Religious/ Non-profit	1	1	100	\$30K	\$30K	100	15 av.	15	100
Government	6	6	100	\$2.1M	\$2M	100	85	85	100
Education	3	3	100	\$1M	\$1M	100	100	100	100
Utilities	6	6	100	\$1.5M	\$1.5M	100	0	0	n2
<b>Total</b>	<b>242</b>	<b>242</b>	<b>100</b>	<b>\$83.8M</b>	<b>\$83.8M</b>	<b>100</b>	<b>1950</b>	<b>1950</b>	<b>100</b>

Task B. Determine whether (and where) you want to collect additional inventory data.

	Y	N
1. Do you know where your greatest damages may occur in your hazard areas?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Do you know whether your critical facilities will be operational after a hazard event?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Is there enough data to determine which assets are subject to the greatest potential damages?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5 HCD  
 5 ComCen  
 2 Adm.  
 1 FIN  
 1 ENV  
 1 FD  
 2M

24  
 225  
 80  
 18,000,000

Worksheet #3b

Inventory Assets

step 3

Date: 10/04

What will be affected by the hazard event?

Task C. Compile a detailed inventory of what can be damaged by a hazard event.

Inventory the assets (critical facilities, businesses, historic, cultural, and natural resource areas, and areas of special consideration), that can be damaged by a hazard event.

Hazard Earthquake, wildfire?

Name or Description of Asset	Sources of Information	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Size of Building (sq ft) x1000	Replacement Value (\$M)	Contents Value (\$M)	Function Use or Value (\$M)	Displacement Cost (\$ per day) M	Occupancy or Capacity (#)	Other Hazard Specific Information
Community Center	ARCH. Young						4K	0.5M	0.15M	0.15	UNK	250	VBC Zone 4
Road MAINT	ARCH young	✓			✓		1.8K	0.5M	0.2M	0.2		8	"
HCD	"						3.7	0.6M	0.2M	0.1			"
SPRFD	"	✓					3.5	0.6	2	3		10	"
ED CTR	"						4	0.5	.18	.2		35	"
HED CTR	"						2.7	0.5	.14	.2		35	"
Hd. Strt.	"		✓				2.6	0.15	0.1	0.1		35	mob
FIN	GOV	✓					2.6	0.15	.08			8	mob
ENV	ENV						2.6	0.15	.06			6	MOB
OP ENG 3	OP ENG						2.6	0.15	.04			20	MOB
Agua Vida	AV					✓					∅	-	
Comm Tower 5 bldg	T3	✓		✓	✓		1.2	.8	.5	4	.1		337g
Water tank A	Springer	✓					n2	.2	n2	.2	.02		
Water tank B	ENV	✓					n2	.15	n2	.2	.02		
Stewart well	ENV	✓					200	.1	.08	.1	.01		
Pump Sta	ENV	✓					300	.08	.1	.4	.05		
WELL 4	ENV	✓					500	.25	.1	.4	.05		
Roads	RTA	✓						Repairs	n2	5	.08	n2	

3.5  
225  
337

VVC VVC ✓ ✓ ✓ 70 60 20 .1 .33  
 225 houses HCD ✓ ✓ 337 18 225 .23 675 1K2

Worksheet #4

Estimate Losses

step 4

Date: 10/04

How will these hazards affect you?

Hazard Earthquake, Wildfire

Structure Loss (Task A.1.)					Contents Loss (Task A.2.)					
Name/ Description of Structure	Structure Replacement Value (Step 3) (\$)	x	Percent Damage (Step 4) (%)	=	Loss to Structure (\$)	Replacement Value of Contents (Step 3) (\$)	x	Percent Damage (Step 4) (%)	=	Loss to Contents (\$)
Casino	60M	x	100	=	40M	20M	x	100	=	20M
	60M	x	50	=	20M	20M	x	50	=	10M
		x		=			x		=	
		x		=			x		=	
		x		=			x		=	
		x		=			x		=	
		x		=			x		=	
		x		=			x		=	
<b>Total Loss to Structure</b>					<b>Total Loss to Contents</b>					

Structure Use and Function Loss (Task A.3.)								Structure Loss + Content Loss + Function Loss (\$)	
Name/ Description of Structure	Average Daily Operating Budget (Step 3) (\$)	x	Functional Downtime (Step 4) (# of days)	+	Displacement Cost per Day (Step 3) (\$)	x	Displacement Time (Step 4) (\$)		=
Casino	0.3M	x	90+	+	N/A	x	N/A	=	27M
	0.3M	x	90	+	N/A	x	N/A	=	27M
		x		+		x		=	
		x		+		x		=	
		x		+		x		=	
		x		+		x		=	
		x		+		x		=	
<b>Total Loss to Structure Use &amp; Function</b>									
								<b>Total Loss for Hazard Event (Task B.2.)</b>	

**Worksheet Job Aid #1: Alternative Mitigation Actions by Hazard**

You can use this job aid when filling out Worksheet #1. This job aid shows you at a quick glance the type of actions that can address the selected seven hazards. A description of each action is included in the glossary in Appendix A.

Alternative Mitigation Actions	Prevention										
	Building codes	Coastal zone management regulations	Density controls	Design review standards	Easements	Environmental review standards	Floodplain development regulations	Floodplain zoning	Forest fire fuel reduction	Hillside development regulations	Open space preservation
Floods	■	■	■	■	■	■	■	■			■
Earthquakes	■		■	■	■	■				■	■
Tsunamis	■	■	■	■		■					■
Tornadoes	■			■		■					
Coastal Storms	■	■	■	■	■	■	■				■
Landslides	■		■	■	■	■			■	■	■
Wildfires	■		■	■	■	■			■	■	■

Alternative Mitigation Actions	Continued										
	Performance standards	Shoreline setback regulations	Special use permits	Stormwater management regulations	Subdivision and development regulations	Transfer of development rights					
Floods	■	■	■	■	■	■					
Earthquakes	■		■		■	■					
Tsunamis	■	■	■		■	■					
Tornadoes	■				■						
Coastal Storms	■	■	■		■	■					
Landslides	■	■	■		■	■					
Wildfires	■		■		■	■					

Alternative Mitigation Actions	Property Protection		Property Protection						Public Education and Awareness			
	Acquisition of hazard-prone structures	Construction of barriers around structures	Elevation of structures	Relocation out of hazard areas	Structural retrofits (e.g., reinforcement, floodproofing, storm shutters, bracing, etc.)	Hazard information centers	Public education and outreach programs	Real estate disclosure	Public Education and Awareness	Hazard information centers	Public education and outreach programs	Real estate disclosure
Floods	■	■	■	■	■	■	■	■	■	■	■	■
Earthquakes	■	■	■	■	■	■	■	■	■	■	■	■
Tsunamis	■	■	■	■	■	■	■	■	■	■	■	■
Tornadoes	■	■	■	■	■	■	■	■	■	■	■	■
Coastal Storms	■	■	■	■	■	■	■	■	■	■	■	■
Landslides	■	■	■	■	■	■	■	■	■	■	■	■
Wildfires	■	■	■	■	■	■	■	■	■	■	■	■

Alternative Mitigation Actions	Natural Resource Protection		Natural Resource Protection													
	Best Management Practices (BMPs)	Dune and beach restoration	Forest and vegetation management	Sediment and erosion control regulations	Stream corridor restoration	Stream dumping regulations	Urban forestry and landscape management	Wetlands development regulations	Best Management Practices (BMPs)	Dune and beach restoration	Forest and vegetation management	Sediment and erosion control regulations	Stream corridor restoration	Stream dumping regulations	Urban forestry and landscape management	Wetlands development regulations
Floods	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Earthquakes	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Tsunamis	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Tornadoes	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Coastal Storms	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Landslides	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Wildfires	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Alternative Mitigation Actions	Emergency Services		Critical facilities protection	Emergency response services	Hazard threat recognition	Hazard warning systems (community sirens, NOAA weather radio)	Health and safety maintenance	Post-disaster mitigation
	Emergency Services	Services						
Floods			■	■	■	■	■	■
Earthquakes			■	■	■	■	■	■
Tsunamis			■	■	■	■	■	■
Tornadoes			■	■	■	■	■	■
Coastal Storms			■	■	■	■	■	■
Landslides			■	■	■	■	■	■
Wildfires			■	■	■	■	■	■

Alternative Mitigation Actions	Structural Projects		Channel maintenance	Dams/Reservoirs	Levees and floodwalls	Safe room/shelter	Seawalls/bulk-heads
	Structural Projects	Projects					
Floods			■	■	■		
Earthquakes							
Tsunamis					■		■
Tornadoes						■	
Coastal Storms			■		■	■	■
Landslides							
Wildfires							

## Worksheet Job Aid #2: Local Hazard Mitigation Capabilities

This job aid will assist the planning team in identifying the various capabilities and capacities in your jurisdiction when completing Worksheet #3. Many of the terms below are defined in Appendix A.

Legal authority and administrative, technical, and fiscal capabilities and capacities in states and local jurisdictions vary greatly throughout the country. You should first use the results of your evaluation of state capabilities to identify any financial or technical assistance the state may be able to provide to local jurisdictions for mitigation purposes. Some states have tasked regional planning agencies with supporting local hazard mitigation planning initiatives. Discuss state and local capabilities with your State Hazard Mitigation Officer (SHMO) to identify outside resources that may be able to assist in plan implementation.

### Section 1: Legal and Regulatory Capability

The following section encourages the planning team to think about the legal authorities available to your community and/or enabling legislation at the state level affecting all types of planning and land management tools that can support local hazard mitigation planning efforts in your community.

The following planning and land management tools are typically used by states and local and tribal jurisdictions to implement hazard mitigation activities. Which of the following does your jurisdiction have? If the jurisdiction does not have this capability or authority, does another entity/jurisdiction have this authority at a higher level of government (county, parish, or regional political entity), or does the state prohibit the local jurisdictions from having this authority? You should include this information in the second column on Worksheet #3.

Regulatory Tools (ordinances, codes, plans)	Local Authority (Y/N)	Does State Prohibit? (Y/N)	Higher Level Jurisdiction Authority (Y/N)	Comments
a. Building code	N	n.a.		USE UBC
b. Zoning ordinance	N	n.a.		LAND USE Plan
c. Subdivision ordinance or regulations	Y	-	BIA	assignment ORD.
d. Special purpose ordinances (floodplain management, stormwater management, hillside or steep slope ordinances, wildfire ordinances, hazard setback requirements)	N	N	FED	EPA F+W BIA etc.
e. Growth management ordinances (also called "smart growth" or anti-sprawl programs)	N	N		assignment ORD
f. Site plan review requirements	N	N		needed
g. General or comprehensive plan	Y	N		2003
h. A capital improvements plan	Y	N		CEDS

Regulatory Tools (ordinances, codes, plans)	Local Authority (Y/N)	Does State Prohibit? (Y/N)	Higher Level Jurisdiction Authority (Y/N)	Comments
i. An economic development plan	Y	N	—	2003 - 2008
j. An emergency response plan	Y	N	—	2003
k. A post-disaster recovery plan	N	N	FED	
l. A post-disaster recovery ordinance	N	N	FED	
m. Real estate disclosure requirements	N	na	—	TRUST LAND
n. Other <u>Comp LAND USE PLAN</u>	Y	N	—	2003

**Section 2: Administrative and Technical Capacity**

The following section encourages the planning team to inventory existing personnel and technical resources that can be used for mitigation planning and implementation of specific mitigation actions. Think about the types of personnel employed by your jurisdiction and the public and private sector resources that may be accessed to implement hazard mitigation activities in your community.

For smaller jurisdictions with limited capacities, no local staff resources may be available for many of the categories noted below. If so, the planning team should identify public resources at the next higher level of government that may be able to provide technical assistance to the community. For example, a small town may be able to turn to county planners or engineers to support its mitigation planning efforts or a regional planning agency may be able to provide assistance. For some hazard mitigation actions, consider federal agencies that provide technical assistance, such as the U.S. Department of Agriculture (USDA) Cooperative Extension Service, which has offices in most counties. The planning team in rural communities must be creative in identifying outside resources to augment limited local capabilities. For larger or more urban jurisdictions, this inventory task may involve targeting specific staff in various departments that have the expertise and may be used to support hazard mitigation initiatives.

You will need this information when completing **Worksheet #4: Evaluate Alternative Mitigation Actions** and when preparing your mitigation strategy in Step Three.

Identify the personnel resources responsible for activities related to hazard mitigation/loss prevention within your jurisdiction. Does your jurisdiction have:

Staff/Personnel Resources	✓	Department/Agency and Position
a. Planner(s) or engineer(s) with knowledge of land development and land management practices	✓	CONSULTANT
b. Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	✓	H&CD DIRECTOR
c. Planners or Engineer(s) with an understanding of natural and/or human-caused hazards	✓	CONSULTANT / FIRE CHIEF

Staff/Personnel Resources	✓	Department/Agency and Position
d. Floodplain manager		
e. Surveyors	✓	Land & Housing Committee
f. Staff with education or expertise to assess the community's vulnerability to hazards	✓	consultants
g. Personnel skilled in GIS and/or HAZUS	✓	Hiring
h. Scientists familiar with the hazards of the community	✓	PSI
i. Emergency manager	✓	FIRE Dept. CHIEF
j. Grant writers	✓	Consultants

**Section 3. Fiscal Capability**

Identify whether your jurisdiction has access to or is eligible to use the following financial resources for hazard mitigation. Use this information to fill in the second column on Worksheet #3 and when preparing your mitigation strategy in Step Three.

Financial Resources	Accessible or Eligible to Use (Yes/No/Don't Know)
a. Community Development Block Grants (CDBG)	yes
b. Capital improvements project funding	Don't Know
c. Authority to levy taxes for specific purposes	no
d. Fees for water, sewer, gas, or electric service	Some
e. Impact fees for homebuyers or developers for new developments/homes	no
f. Incur debt through general obligation bonds	Don't Know
g. Incur debt through special tax and revenue bonds	no
h. Incur debt through private activity bonds	yes
i. Withhold spending in hazard-prone areas	no
j. Other IABG, Environmental, E.D FUNDS	yes

## APPENDIX 2 – SEISMIC ANALYSIS – COMPUTER OUTPUT

VVCASINO.OUT

```
*****  
*  
*   E Q F A U L T   *  
*  
*   Version 3.00   *  
*  
*****
```

DETERMINISTIC ESTIMATION OF  
PEAK ACCELERATION FROM DIGITIZED FAULTS

JOB NUMBER: 056-45046

DATE: 07-14-2004

JOB NAME: Valley View Casino

CALCULATION NAME: Test Run Analysis

FAULT-DATA-FILE NAME: CDMGFLTE.DAT

SITE COORDINATES:

SITE LATITUDE: 33.2162  
SITE LONGITUDE: 116.9714

SEARCH RADIUS: 100 mi

ATTENUATION RELATION: 16) Campbell & Bozorgnia (1997 Rev.) - Hard Rock  
UNCERTAINTY (M=Median, S=Sigma): M            Number of Sigmas: 0.0  
DISTANCE MEASURE: cdist  
SCOND: 0  
Basement Depth: 5.00 km      Campbell SSR: 0      Campbell SHR: 1  
COMPUTE PEAK HORIZONTAL ACCELERATION

FAULT-DATA FILE USED: CDMGFLTE.DAT

MINIMUM DEPTH VALUE (km): 3.0

## EQFAULT SUMMARY

## DETERMINISTIC SITE PARAMETERS

Page 1

ABBREVIATED FAULT NAME	APPROXIMATE DISTANCE mi (km)	ESTIMATED MAX. EARTHQUAKE EVENT		
		MAXIMUM EARTHQUAKE MAG.(Mw)	PEAK SITE ACCEL. g	EST. SITE INTENSITY MOD.MERC.
ELSINORE-JULIAN	7.6( 12.3)	7.1	0.311	IX
ELSINORE-TEMECULA	11.5( 18.5)	6.8	0.179	VIII
EARTHQUAKE VALLEY	22.7( 36.6)	6.5	0.057	VI
ROSE CANYON	24.7( 39.7)	6.9	0.071	VI
NEWPORT-INGLEWOOD (Offshore)	26.8( 43.2)	6.9	0.063	VI
SAN JACINTO-ANZA	30.0( 48.2)	7.2	0.069	VI
SAN JACINTO-COYOTE CREEK	31.6( 50.8)	6.8	0.046	VI
SAN JACINTO-SAN JACINTO VALLEY	36.4( 58.5)	6.9	0.040	V
ELSINORE-GLEN IVY	36.7( 59.1)	6.8	0.037	V
ELSINORE-COYOTE MOUNTAIN	39.3( 63.3)	6.8	0.033	V
CORONADO BANK	39.5( 63.5)	7.4	0.055	VI
SAN JACINTO - BORREGO	45.0( 72.4)	6.6	0.023	IV
SAN ANDREAS - San Bernardino	54.2( 87.2)	7.3	0.032	V
SAN ANDREAS - Southern	54.2( 87.2)	7.4	0.034	V
CHINO-CENTRAL AVE. (Elsinore)	54.6( 87.9)	6.7	0.018	IV
PALOS VERDES	56.1( 90.3)	7.1	0.025	V
SAN ANDREAS - Coachella	56.6( 91.1)	7.1	0.025	V
SAN JACINTO-SAN BERNARDINO	57.5( 92.5)	6.7	0.017	IV
WHITTIER	58.5( 94.2)	6.8	0.018	IV
PINTO MOUNTAIN	60.0( 96.5)	7.0	0.021	IV
BURNT MTN.	61.0( 98.2)	6.4	0.012	III
NEWPORT-INGLEWOOD (L.A.Basin)	61.4( 98.8)	6.9	0.018	IV
SUPERSTITION MTN. (San Jacinto)	62.6( 100.8)	6.6	0.014	III
EUREKA PEAK	63.6( 102.4)	6.4	0.011	III
ELMORE RANCH	65.9( 106.0)	6.6	0.013	III
SUPERSTITION HILLS (San Jacinto)	67.0( 107.9)	6.6	0.012	III
ELYSIAN PARK THRUST	70.2( 113.0)	6.7	0.012	III
NORTH FRONTAL FAULT ZONE (East)	70.6( 113.7)	6.7	0.012	III
COMPTON THRUST	70.7( 113.8)	6.8	0.013	III
NORTH FRONTAL FAULT ZONE (west)	71.5( 115.1)	7.0	0.015	IV
LAGUNA SALADA	71.6( 115.2)	7.0	0.016	IV
LANDERS	72.9( 117.3)	7.3	0.020	IV
BRAWLEY SEISMIC ZONE	73.7( 118.6)	6.4	0.009	III
CUCAMONGA	73.9( 118.9)	7.0	0.014	IV
SAN JOSE	74.9( 120.5)	6.5	0.009	III
CLEGHORN	74.9( 120.6)	6.5	0.009	III
SIERRA MADRE	77.9( 125.4)	7.0	0.013	III
EMERSON So. - COPPER MTN.	79.5( 127.9)	6.9	0.012	III
HELENDALE - S. LOCKHARDT	80.0( 128.8)	7.1	0.015	IV
LENWOOD-LOCKHART-OLD WOMAN SPRGS	81.0( 130.3)	7.3	0.017	IV

Page 2

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 DETERMINISTIC SITE PARAMETERS  
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Page 2

ABBREVIATED FAULT NAME	APPROXIMATE DISTANCE mi (km)	ESTIMATED MAX. EARTHQUAKE EVENT		
		MAXIMUM EARTHQUAKE MAG. (Mw)	PEAK SITE ACCEL. g	EST. SITE INTENSITY MOD. MERC.
JOHNSON VALLEY (Northern)	82.0( 131.9)	6.7	0.010	III
SAN ANDREAS - 1857 Rupture	82.2( 132.3)	7.8	0.026	V
SAN ANDREAS - Mojave	82.2( 132.3)	7.1	0.014	IV
IMPERIAL	83.8( 134.9)	7.0	0.012	III
PISGAH-BULLION MTN.-MESQUITE LK	84.7( 136.3)	7.1	0.013	III
CLAMSHELL-SAWPIT	88.8( 142.9)	6.5	0.007	II
CALICO - HIDALGO	88.9( 143.1)	7.1	0.012	III
RAYMOND	89.3( 143.7)	6.5	0.007	II
VERDUGO	93.5( 150.4)	6.7	0.007	II
HOLLYWOOD	96.4( 155.1)	6.4	0.006	II

\*\*\*\*\*  
 -END OF SEARCH- 50 FAULTS FOUND WITHIN THE SPECIFIED SEARCH RADIUS.

THE ELSINORE-JULIAN FAULT IS CLOSEST TO THE SITE.  
 IT IS ABOUT 7.6 MILES (12.3 km) AWAY.

LARGEST MAXIMUM-EARTHQUAKE SITE ACCELERATION: 0.3106 g

\*\*\*\*\*  
 \* EQ FAULT \*  
 \* Version 3.00 \*  
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DETERMINISTIC ESTIMATION OF  
 PEAK ACCELERATION FROM DIGITIZED FAULTS

JOB NUMBER: 056-45046

DATE: 07-14-2004

JOB NAME: Valley View Casino

CALCULATION NAME: Test Run Analysis

FAULT-DATA-FILE NAME: CDMGFLTE.DAT

SITE COORDINATES:

SITE LATITUDE: 33.2162

SITE LONGITUDE: 116.9714

SEARCH RADIUS: 100 mi

ATTENUATION RELATION: 16) Campbell & Bozorgnia (1997 Rev.) - Hard Rock  
 UNCERTAINTY (M=Median, S=Sigma): S Number of Sigmas: 1.0

VVCASINO.OUT  
 DISTANCE MEASURE: cdist  
 SCOND: 0  
 Basement Depth: 5.00 km      Campbell SSR: 0      Campbell SHR: 1  
 COMPUTE PEAK HORIZONTAL ACCELERATION

FAULT-DATA FILE USED: CDMGFLTE.DAT

MINIMUM DEPTH VALUE (km): 3.0

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 EQFAULT SUMMARY  
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 DETERMINISTIC SITE PARAMETERS  
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Page 1

ABBREVIATED FAULT NAME	APPROXIMATE DISTANCE mi (km)	ESTIMATED MAX. EARTHQUAKE EVENT		
		MAXIMUM EARTHQUAKE MAG. (Mw)	PEAK SITE ACCEL. g	EST. SITE INTENSITY MOD. MERC.
ELSINORE-JULIAN	7.6( 12.3)	7.1	0.459	X
ELSINORE-TEMECULA	11.5( 18.5)	6.8	0.271	IX
EARTHQUAKE VALLEY	22.7( 36.6)	6.5	0.099	VII
ROSE CANYON	24.7( 39.7)	6.9	0.123	VII
NEWPORT-INGLEWOOD (offshore)	26.8( 43.2)	6.9	0.109	VII
SAN JACINTO-ANZA	30.0( 48.2)	7.2	0.119	VII
SAN JACINTO-COYOTE CREEK	31.6( 50.8)	6.8	0.079	VII
SAN JACINTO-SAN JACINTO VALLEY	36.4( 58.5)	6.9	0.070	VI
ELSINORE-GLEN IVY	36.7( 59.1)	6.8	0.063	VI
ELSINORE-COYOTE MOUNTAIN	39.3( 63.3)	6.8	0.057	VI
CORONADO BANK	39.5( 63.5)	7.4	0.095	VII
SAN JACINTO - BORREGO	45.0( 72.4)	6.6	0.039	V

VVCASINO.OUT

SAN ANDREAS - San Bernardino	54.2( 87.2)	7.3	0.055	VI
SAN ANDREAS - Southern	54.2( 87.2)	7.4	0.060	VI
CHINO-CENTRAL AVE. (Elsinore)	54.6( 87.9)	6.7	0.031	V
PALOS VERDES	56.1( 90.3)	7.1	0.043	VI
SAN ANDREAS - Coachella	56.6( 91.1)	7.1	0.043	VI
SAN JACINTO-SAN BERNARDINO	57.5( 92.5)	6.7	0.029	V
WHITTIER	58.5( 94.2)	6.8	0.031	V
PINTO MOUNTAIN	60.0( 96.5)	7.0	0.036	V
BURNT MTN.	61.0( 98.2)	6.4	0.021	IV
NEWPORT-INGLEWOOD (L.A.Basin)	61.4( 98.8)	6.9	0.032	V
SUPERSTITION MTN. (San Jacinto)	62.6( 100.8)	6.6	0.024	IV
EUREKA PEAK	63.6( 102.4)	6.4	0.019	IV
ELMORE RANCH	65.9( 106.0)	6.6	0.022	IV
SUPERSTITION HILLS (San Jacinto)	67.0( 107.9)	6.6	0.021	IV
ELYSIAN PARK THRUST	70.2( 113.0)	6.7	0.021	IV
NORTH FRONTAL FAULT ZONE (East)	70.6( 113.7)	6.7	0.020	IV
COMPTON THRUST	70.7( 113.8)	6.8	0.022	IV
NORTH FRONTAL FAULT ZONE (West)	71.5( 115.1)	7.0	0.025	V
LAGUNA SALADA	71.6( 115.2)	7.0	0.027	V
LANDERS	72.9( 117.3)	7.3	0.035	V
BRAWLEY SEISMIC ZONE	73.7( 118.6)	6.4	0.015	IV
CUCAMONGA	73.9( 118.9)	7.0	0.024	V
SAN JOSE	74.9( 120.5)	6.5	0.016	IV
CLEGHORN	74.9( 120.6)	6.5	0.016	IV
SIERRA MADRE	77.9( 125.4)	7.0	0.022	IV
EMERSON So. - COPPER MTN.	79.5( 127.9)	6.9	0.021	IV
HELENDALE - S. LOCKHARDT	80.0( 128.8)	7.1	0.025	V
LENWOOD-LOCKHART-OLD WOMAN SPRGS	81.0( 130.3)	7.3	0.030	V

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 DETERMINISTIC SITE PARAMETERS  
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Page 2

ABBREVIATED FAULT NAME	APPROXIMATE DISTANCE mi (km)	ESTIMATED MAX. EARTHQUAKE EVENT		
		MAXIMUM EARTHQUAKE MAG. (Mw)	PEAK SITE ACCEL. g	EST. SITE INTENSITY MOD.MERC.
JOHNSON VALLEY (Northern)	82.0( 131.9)	6.7	0.017	IV
SAN ANDREAS - 1857 Rupture	82.2( 132.3)	7.8	0.045	VI
SAN ANDREAS - Mojave	82.2( 132.3)	7.1	0.024	V
IMPERIAL	83.8( 134.9)	7.0	0.022	IV
PISGAH-BULLION MTN.-MESQUITE LK	84.7( 136.3)	7.1	0.023	IV
CLAMSHELL-SAWPIT	88.8( 142.9)	6.5	0.012	III
CALICO - HIDALGO	88.9( 143.1)	7.1	0.022	IV
RAYMOND	89.3( 143.7)	6.5	0.012	III
VERDUGO	93.5( 150.4)	6.7	0.013	III
HOLLYWOOD	96.4( 155.1)	6.4	0.010	III

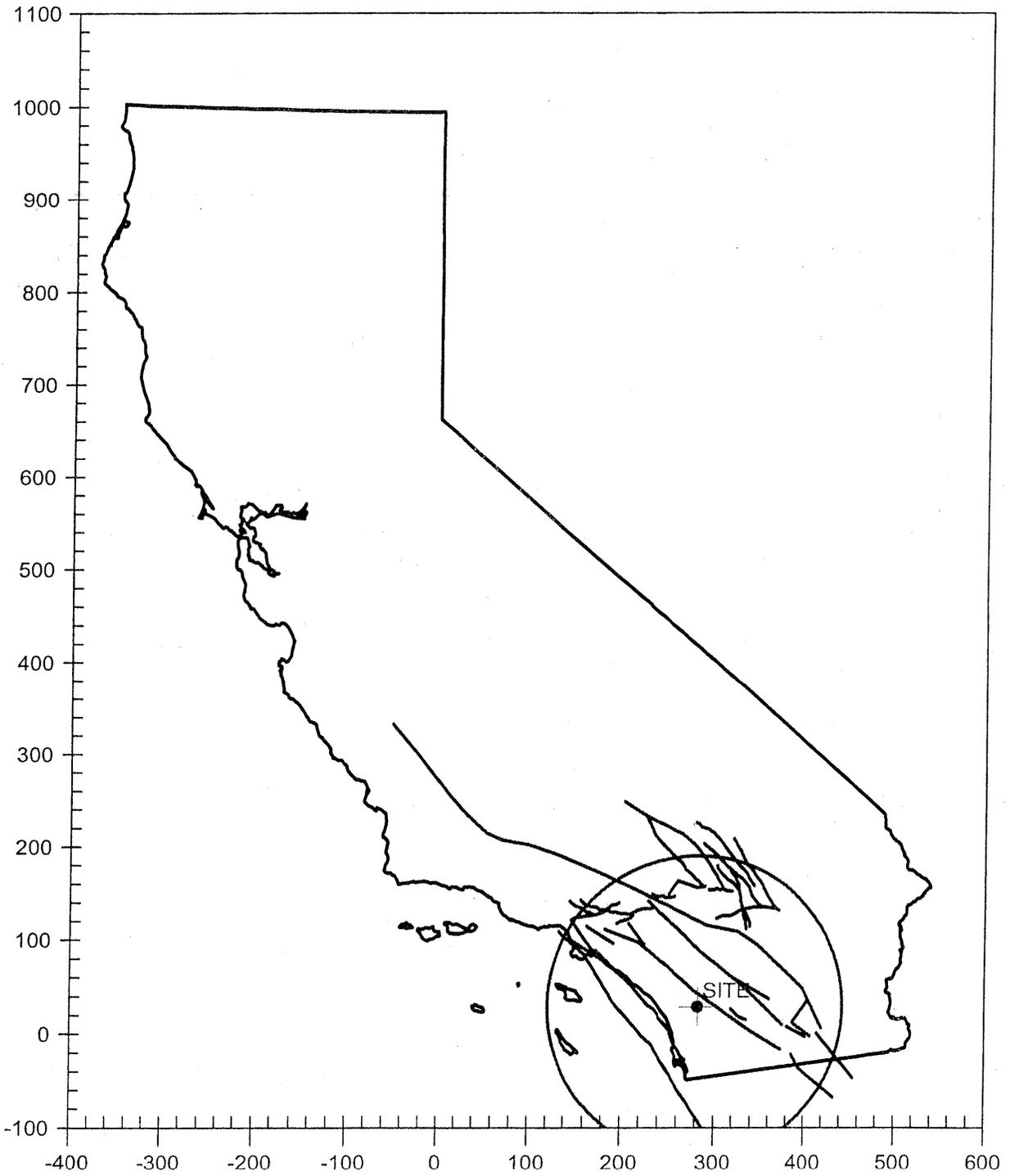
\*\*\*\*\*  
 -END OF SEARCH- 50 FAULTS FOUND WITHIN THE SPECIFIED SEARCH RADIUS.

THE ELSINORE-JULIAN FAULT IS CLOSEST TO THE SITE.  
 IT IS ABOUT 7.6 MILES (12.3 km) AWAY.

LARGEST MAXIMUM-EARTHQUAKE SITE ACCELERATION: 0.4588 g

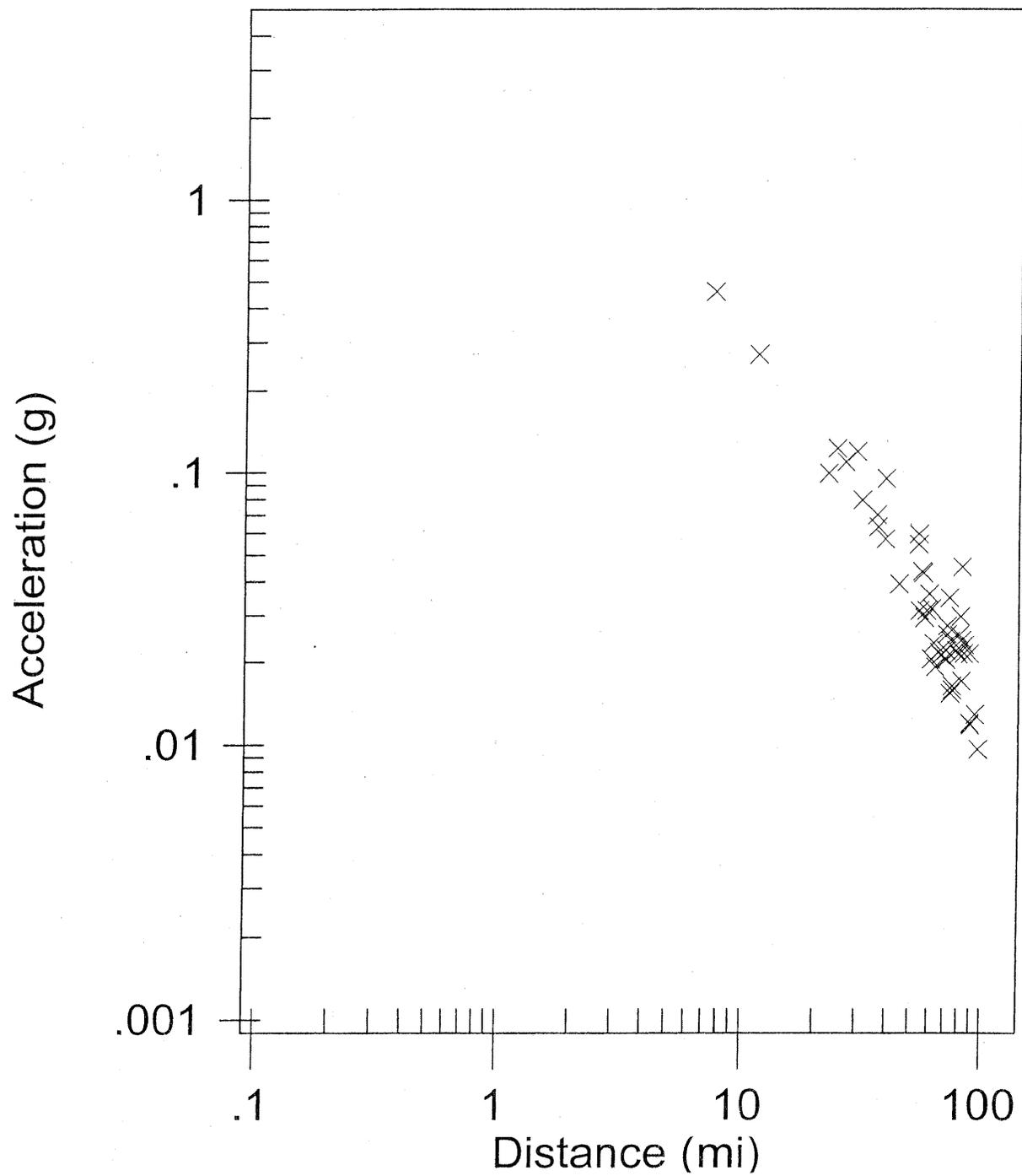
# CALIFORNIA FAULT MAP

Valley View Casino



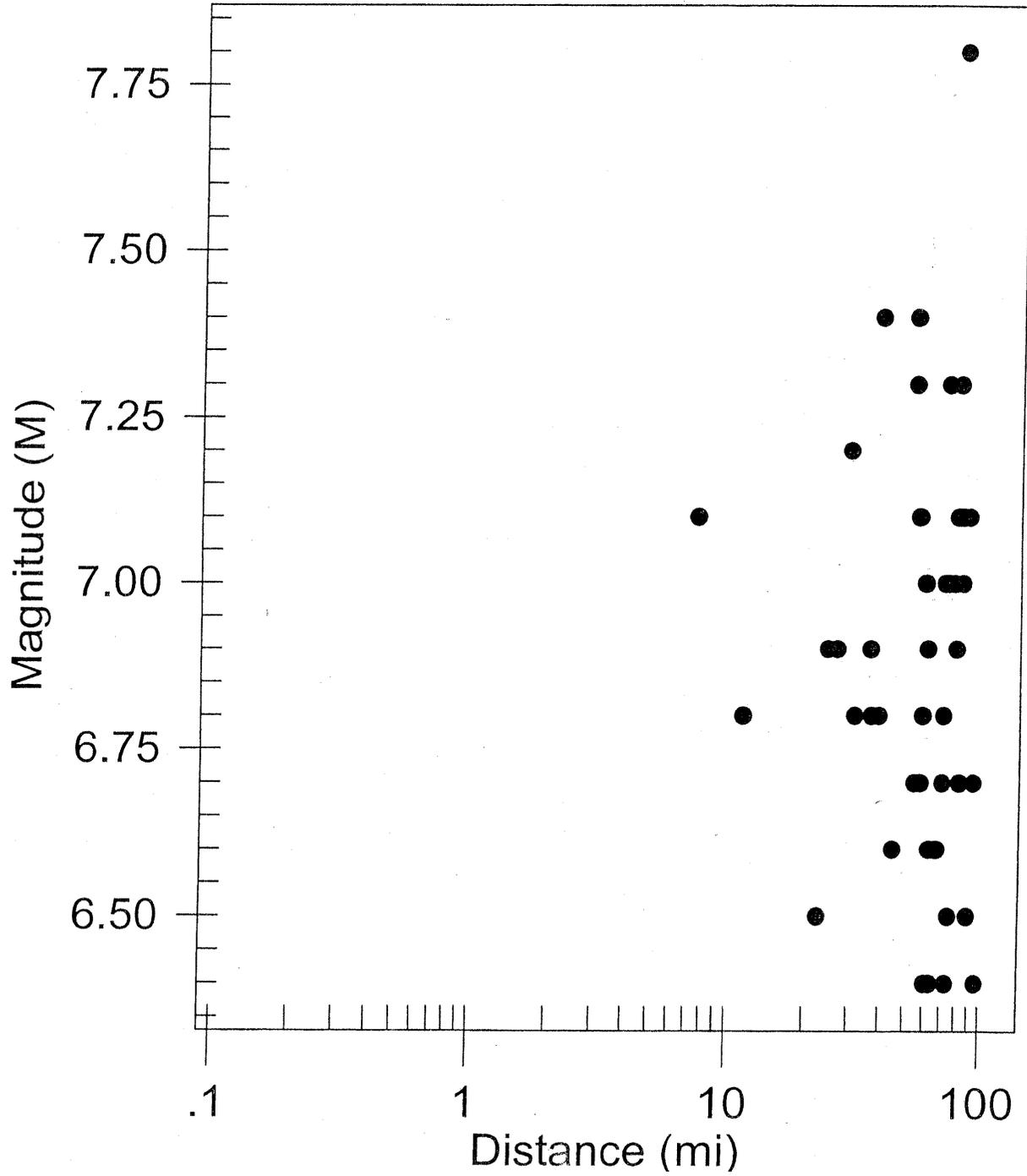
# MAXIMUM EARTHQUAKES

Valley View Casino



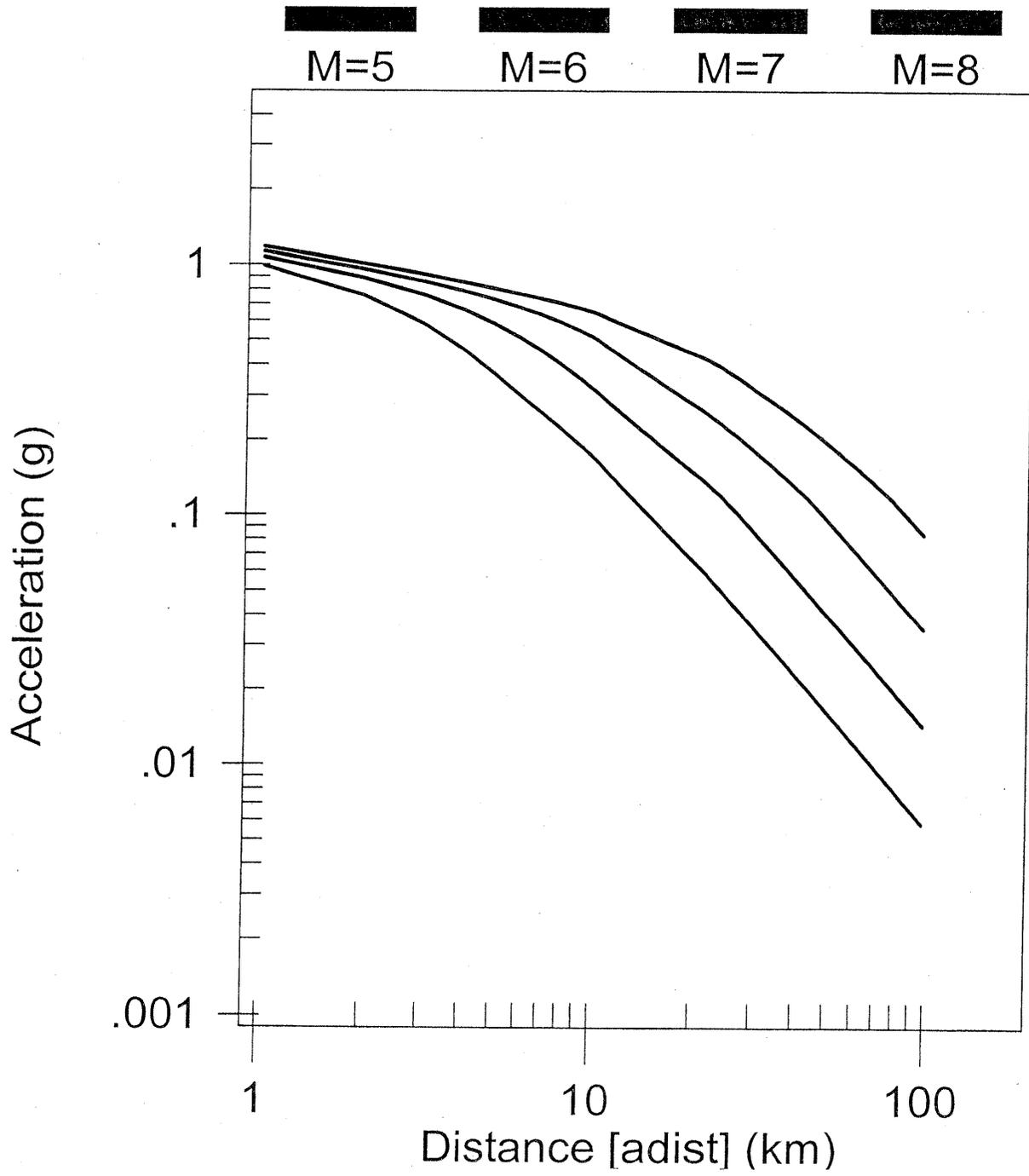
# EARTHQUAKE MAGNITUDES & DISTANCES

## Valley View Casino



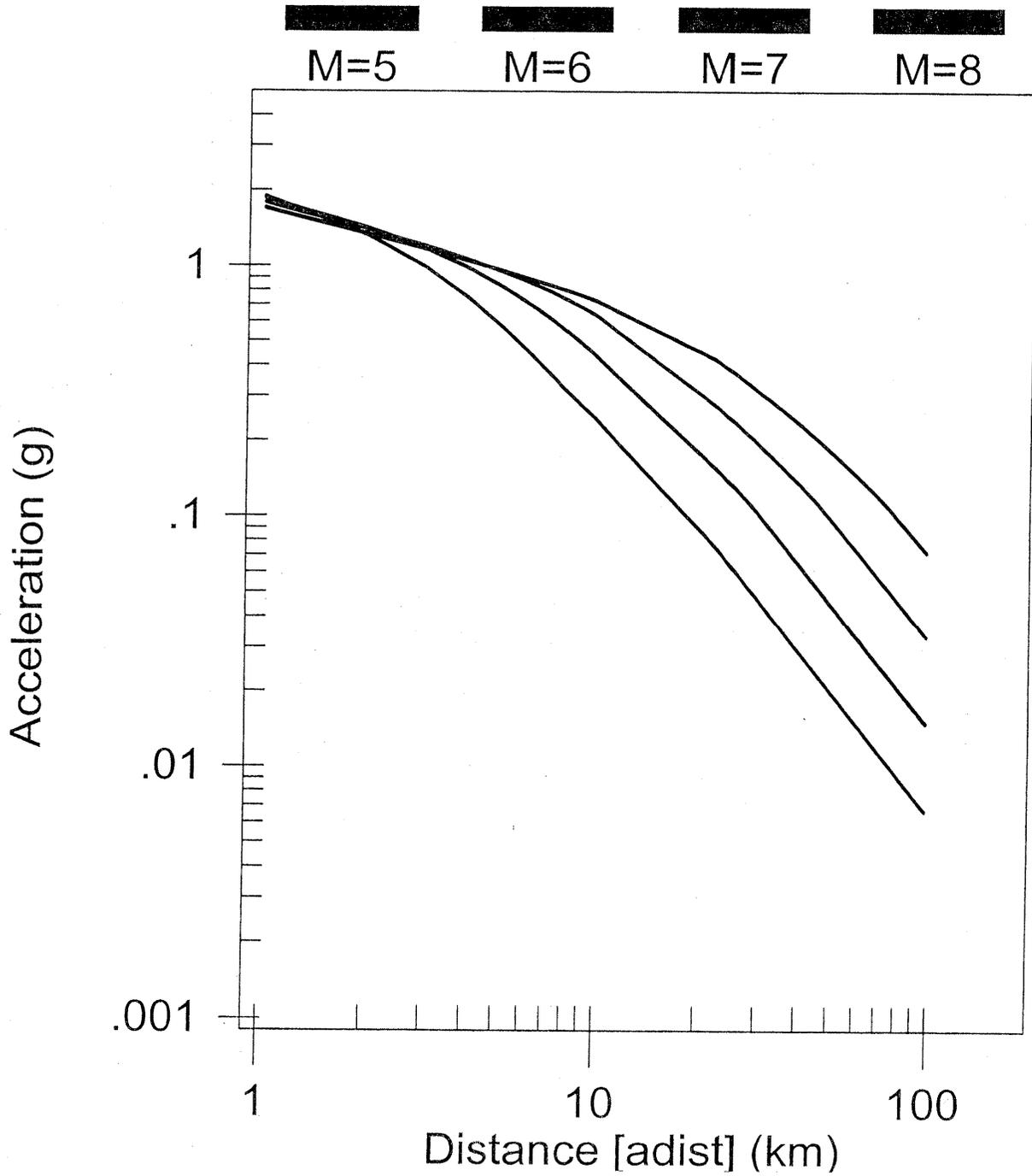
# STRIKE-SLIP FAULTS

16) Campbell & Bozorgnia (1997 Rev.) - Hard Rock



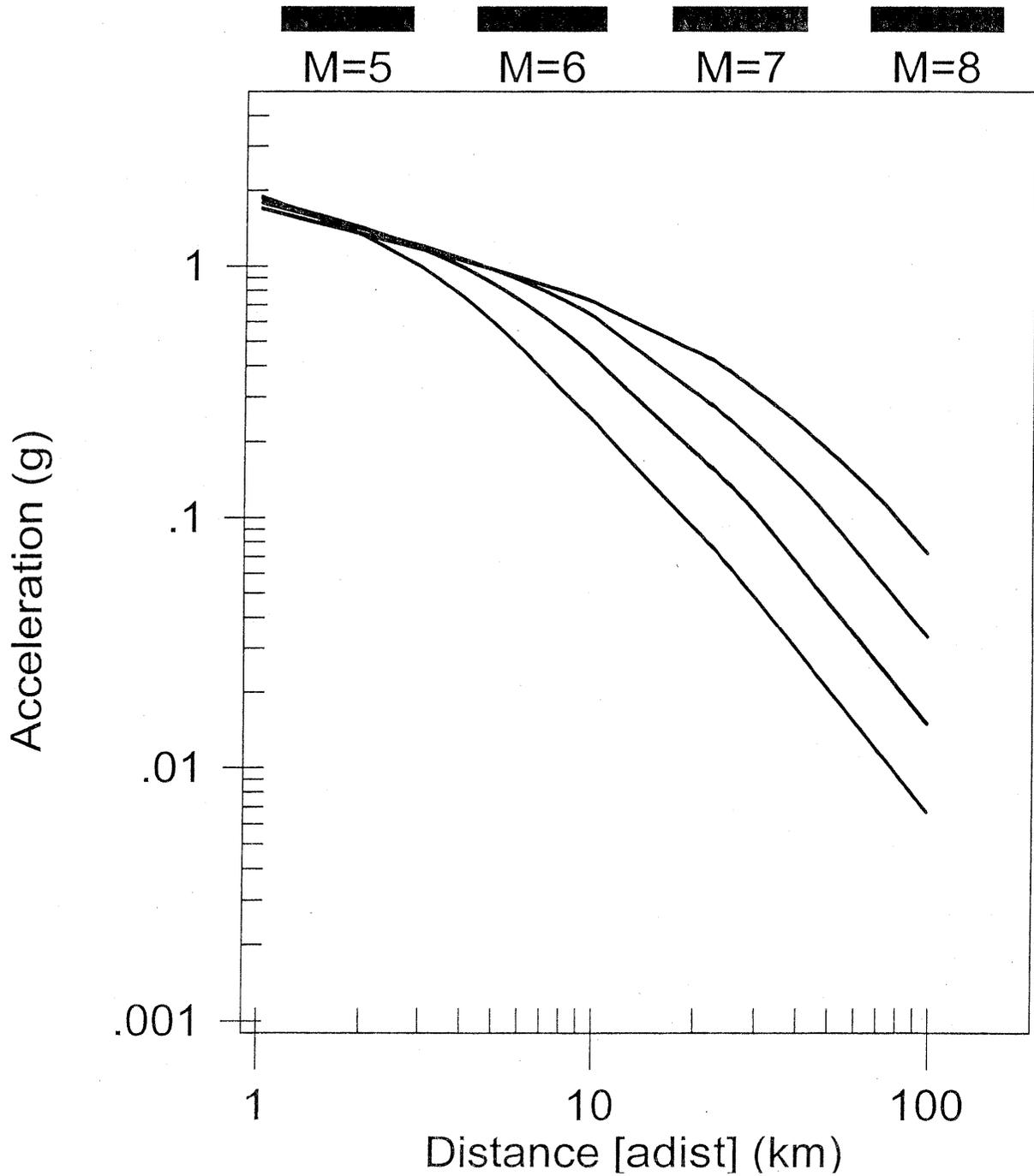
# DIP-SLIP FAULTS

16) Campbell & Bozorgnia (1997 Rev.) - Hard Rock



# BLIND-THRUST FAULTS

16) Campbell & Bozorgnia (1997 Rev.) - Hard Rock



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*  
*   U B C S E I S   *  
*  
*   Version 1.03   *  
*  
*****
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COMPUTATION OF 1997  
UNIFORM BUILDING CODE  
SEISMIC DESIGN PARAMETERS

JOB NUMBER: 056-45046

DATE: 07-14-2004

JOB NAME: Valley View Cas

FAULT-DATA-FILE NAME: CDMGUBCR.DAT

SITE COORDINATES:

SITE LATITUDE: 33.2162  
SITE LONGITUDE: 116.9714

UBC SEISMIC ZONE: 0.4

UBC SOIL PROFILE TYPE: SB

NEAREST TYPE A FAULT:

NAME: ELSINORE-JULIAN  
DISTANCE: 11.9 km

NEAREST TYPE B FAULT:

NAME: ELSINORE-TEMECULA  
DISTANCE: 18.3 km

NEAREST TYPE C FAULT:

NAME:  
DISTANCE: 99999.0 km

SELECTED UBC SEISMIC COEFFICIENTS:

Na: 1.0  
Nv: 1.1  
Ca: 0.40  
Cv: 0.45  
Ts: 0.445  
To: 0.089

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*****  
* CAUTION: The digitized data points used to model faults are *  
* limited in number and have been digitized from small- *  
* scale maps (e.g., 1:750,000 scale). Consequently, *  
* the estimated fault-site-distances may be in error by *  
* several kilometers. Therefore, it is important that *  
* the distances be carefully checked for accuracy and *  
* adjusted as needed, before they are used in design. *  
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## SUMMARY OF FAULT PARAMETERS

Page 1

ABBREVIATED FAULT NAME	APPROX. DISTANCE (km)	SOURCE TYPE (A, B, C)	MAX. MAG. (Mw)	SLIP RATE (mm/yr)	FAULT TYPE (SS, DS, BT)
ELSINORE-JULIAN	11.9	A	7.1	5.00	SS
ELSINORE-TEMECULA	18.3	B	6.8	5.00	SS
EARTHQUAKE VALLEY	36.5	B	6.5	2.00	SS
ROSE CANYON	39.6	B	6.9	1.50	SS
NEWPORT-INGLEWOOD (offshore)	43.1	B	6.9	1.50	SS
SAN JACINTO-ANZA	48.1	A	7.2	12.00	SS
SAN JACINTO-COYOTE CREEK	50.7	B	6.8	4.00	SS
SAN JACINTO-SAN JACINTO VALLEY	58.5	B	6.9	12.00	SS
ELSINORE-GLEN IVY	59.0	B	6.8	5.00	SS
ELSINORE-COYOTE MOUNTAIN	63.2	B	6.8	4.00	SS
CORONADO BANK	63.4	B	7.4	3.00	SS
SAN JACINTO - BORREGO	72.3	B	6.6	4.00	SS
SAN ANDREAS - Southern	87.1	A	7.4	24.00	SS
CHINO-CENTRAL AVE. (Elsinore)	87.8	B	6.7	1.00	DS
PALOS VERDES	90.1	B	7.1	3.00	SS
SAN JACINTO-SAN BERNARDINO	92.4	B	6.7	12.00	SS
ELSINORE-WHITTIER	94.1	B	6.8	2.50	SS
PINTO MOUNTAIN	96.4	B	7.0	2.50	SS
BURNT MTN.	98.2	B	6.5	0.60	SS
NEWPORT-INGLEWOOD (L.A.Basin)	98.5	B	6.9	1.00	SS
SUPERSTITION MTN. (San Jacinto)	100.7	B	6.6	5.00	SS
EUREKA PEAK	102.4	B	6.5	0.60	SS
ELMORE RANCH	106.0	B	6.6	1.00	SS
SUPERSTITION HILLS (San Jacinto)	107.8	B	6.6	4.00	SS
ELSINORE-LAGUNA SALADA	115.1	B	7.0	3.50	SS
NORTH FRONTAL FAULT ZONE (East)	115.6	B	6.7	0.50	DS
CUCAMONGA	115.9	A	7.0	5.00	DS
NORTH FRONTAL FAULT ZONE (west)	117.0	B	7.0	1.00	DS
LANDERS	117.3	B	7.3	0.60	SS
BRAWLEY SEISMIC ZONE	118.5	B	6.5	25.00	SS
SAN JOSE	119.6	B	6.5	0.50	DS
CLEGHORN	120.6	B	6.5	3.00	SS
SIERRA MADRE (Central)	123.6	B	7.0	3.00	DS
EMERSON So. - COPPER MTN.	127.9	B	6.9	0.60	SS
HELENDALE - S. LOCKHARDT	128.7	B	7.1	0.60	SS
LENWOOD-LOCKHART-OLD WOMAN SPRGS	130.3	B	7.3	0.60	SS
JOHNSON VALLEY (Northern)	131.9	B	6.7	0.60	SS
SAN ANDREAS - 1857 Rupture	132.3	A	7.8	34.00	SS
IMPERIAL	134.7	A	7.0	20.00	SS
PISGAH-BULLION MTN.-MESQUITE LK	136.2	B	7.1	0.60	SS
CLAMSHELL-SAWPIT	139.9	B	6.5	0.50	DS
RAYMOND	142.9	B	6.5	0.50	DS
CALICO - HIDALGO	143.1	B	7.1	0.60	SS
VERDUGO	149.8	B	6.7	0.50	DS
HOLLYWOOD	154.3	B	6.5	1.00	DS
SANTA MONICA	164.7	B	6.6	1.00	DS

SUMMARY OF FAULT PARAMETERS

ABBREVIATED FAULT NAME	APPROX. DISTANCE (km)	SOURCE TYPE (A, B, C)	MAX. MAG. (Mw)	SLIP RATE (mm/yr)	FAULT TYPE (SS, DS, BT)
SIERRA MADRE (San Fernando)	170.5	B	6.7	2.00	DS
MALIBU COAST	171.2	B	6.7	0.30	DS
SAN GABRIEL	172.7	B	7.0	1.00	SS
ANACAPA-DUME	181.7	B	7.3	3.00	DS
GRAVEL HILLS - HARPER LAKE	184.2	B	6.9	0.60	SS
SANTA SUSANA	187.8	B	6.6	5.00	DS
HOLSER	196.8	B	6.5	0.40	DS
BLACKWATER	201.1	B	6.9	0.60	SS
OAK RIDGE (Onshore)	207.0	B	6.9	4.00	DS
SIMI-SANTA ROSA	207.7	B	6.7	1.00	DS
SAN CAYETANO	214.8	B	6.8	6.00	DS
SANTA YNEZ (East)	234.3	B	7.0	2.00	SS
VENTURA - PITAS POINT	237.7	B	6.8	1.00	DS
GARLOCK (West)	242.4	A	7.1	6.00	SS
M.RIDGE-ARROYO PARIDA-SANTA ANA	247.2	B	6.7	0.40	DS
GARLOCK (East)	249.9	A	7.3	7.00	SS
SANTA CRUZ ISLAND	251.8	B	6.8	1.00	DS
RED MOUNTAIN	252.0	B	6.8	2.00	DS
PLEITO THRUST	252.8	B	6.8	2.00	DS
BIG PINE	260.2	B	6.7	0.80	SS
OWL LAKE	265.9	B	6.5	2.00	SS
PANAMINT VALLEY	266.4	B	7.2	2.50	SS
WHITE WOLF	269.0	B	7.2	2.00	DS
DEATH VALLEY (South)	270.0	B	6.9	4.00	SS
TANK CANYON	271.0	B	6.5	1.00	DS
So. SIERRA NEVADA	272.6	B	7.1	0.10	DS
LITTLE LAKE	273.6	B	6.7	0.70	SS
SANTA YNEZ (West)	285.0	B	6.9	2.00	SS
SANTA ROSA ISLAND	287.4	B	6.9	1.00	DS
DEATH VALLEY (Graben)	316.0	B	6.9	4.00	DS
LOS ALAMOS-W. BASELINE	328.0	B	6.8	0.70	DS
OWENS VALLEY	343.9	B	7.6	1.50	SS
LIONS HEAD	345.4	B	6.6	0.02	DS
SAN JUAN	351.4	B	7.0	1.00	SS
SAN LUIS RANGE (S. Margin)	354.0	B	7.0	0.20	DS
CASMALIA (Orcutt Frontal Fault)	363.1	B	6.5	0.25	DS
HUNTER MTN. - SALINE VALLEY	365.2	B	7.0	2.50	SS
DEATH VALLEY (Northern)	370.5	A	7.2	5.00	SS
INDEPENDENCE	379.9	B	6.9	0.20	DS
LOS OSOS	383.7	B	6.8	0.50	DS
HOSGRI	391.5	B	7.3	2.50	SS
RINCONADA	403.0	B	7.3	1.00	SS
BIRCH CREEK	436.8	B	6.5	0.70	DS
WHITE MOUNTAINS	440.3	B	7.1	1.00	SS
SAN ANDREAS (Creeping)	455.4	B	5.0	34.00	SS
DEEP SPRINGS	457.7	B	6.6	0.80	DS

## SUMMARY OF FAULT PARAMETERS

VVCASINO.OUT

ABBREVIATED FAULT NAME	DISTANCE (km)	TYPE (A, B, C)	MAG. (Mw)	RATE (mm/yr)	TYPE (SS, DS, BT)
DEATH VALLEY (N. of Cucamongo)	460.1	A	7.0	5.00	SS
ROUND VALLEY (E. of S.N.Mtns.)	473.2	B	6.8	1.00	DS
FISH SLOUGH	479.5	B	6.6	0.20	DS
HILTON CREEK	499.6	B	6.7	2.50	DS
HARTLEY SPRINGS	524.7	B	6.6	0.50	DS
ORTIGALITA	537.7	B	6.9	1.00	SS
CALAVERAS (So. of Calaveras Res)	544.8	B	6.2	15.00	SS
MONTEREY BAY - TULARCITOS	549.8	B	7.1	0.50	DS
PALO COLORADO - SUR	552.3	B	7.0	3.00	SS
QUIEN SABE	557.6	B	6.5	1.00	SS
MONO LAKE	560.9	B	6.6	2.50	DS
ZAYANTE-VERGELES	576.9	B	6.8	0.10	SS
SARGENT	581.8	B	6.8	3.00	SS
SAN ANDREAS (1906)	582.1	A	7.9	24.00	SS
ROBINSON CREEK	592.4	B	6.5	0.50	DS
SAN GREGORIO	625.2	A	7.3	5.00	SS
GREENVILLE	629.7	B	6.9	2.00	SS
HAYWARD (SE Extension)	631.4	B	6.5	3.00	SS
MONTE VISTA - SHANNON	632.1	B	6.5	0.40	DS
ANTELOPE VALLEY	633.2	B	6.7	0.80	DS
HAYWARD (Total Length)	650.8	A	7.1	9.00	SS
CALAVERAS (No. of Calaveras Res)	650.8	B	6.8	6.00	SS
GENOA	659.4	B	6.9	1.00	DS
CONCORD - GREEN VALLEY	697.5	B	6.9	6.00	SS
RODGERS CREEK	736.8	A	7.0	9.00	SS
WEST NAPA	737.1	B	6.5	1.00	SS
POINT REYES	757.4	B	6.8	0.30	DS
HUNTING CREEK - BERRYESSA	758.6	B	6.9	6.00	SS
MAACAMA (South)	799.0	B	6.9	9.00	SS
COLLAYOMI	815.3	B	6.5	0.60	SS
BARTLETT SPRINGS	818.0	A	7.1	6.00	SS
MAACAMA (Central)	840.7	A	7.1	9.00	SS
MAACAMA (North)	899.7	A	7.1	9.00	SS
ROUND VALLEY (N. S.F. Bay)	904.7	B	6.8	6.00	SS
BATTLE CREEK	923.1	B	6.5	0.50	DS
LAKE MOUNTAIN	963.2	B	6.7	6.00	SS
GARBERVILLE-BRICELAND	980.9	B	6.9	9.00	SS
MENDOCINO FAULT ZONE	1038.0	A	7.4	35.00	DS
LITTLE SALMON (Onshore)	1043.3	A	7.0	5.00	DS
MAD RIVER	1045.2	B	7.1	0.70	DS
CASCADIA SUBDUCTION ZONE	1052.3	A	8.3	35.00	DS
MCKINLEYVILLE	1055.9	B	7.0	0.60	DS
TRINIDAD	1057.2	B	7.3	2.50	DS
FICKLE HILL	1058.0	B	6.9	0.60	DS
TABLE BLUFF	1064.0	B	7.0	0.60	DS
LITTLE SALMON (Offshore)	1077.2	B	7.1	1.00	DS

SUMMARY OF FAULT PARAMETERS

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ABBREVIATED FAULT NAME	APPROX. DISTANCE (km)	SOURCE TYPE (A, B, C)	MAX. MAG. (Mw)	SLIP RATE (mm/yr)	FAULT TYPE (SS, DS, BT)
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VVCASINO.OUT  
BIG LAGOON - BALD MTN.FLT.ZONE | 1093.8 | B | 7.3 | 0.50 | DS  
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# DESIGN RESPONSE SPECTRUM

Seismic Zone: 0.4 Soil Profile: SB

