

The Great
Southern California
**Shake
Out**

November 12–16, 2008

Lucy Jones, United States Geological Survey
Stephen Sellers, California Emergency
Management Agency
Gary Sturdivan, East Valley Water District



Earthquake Country **Alliance**
We're all in this together.

Preparing everyone for the inevitable



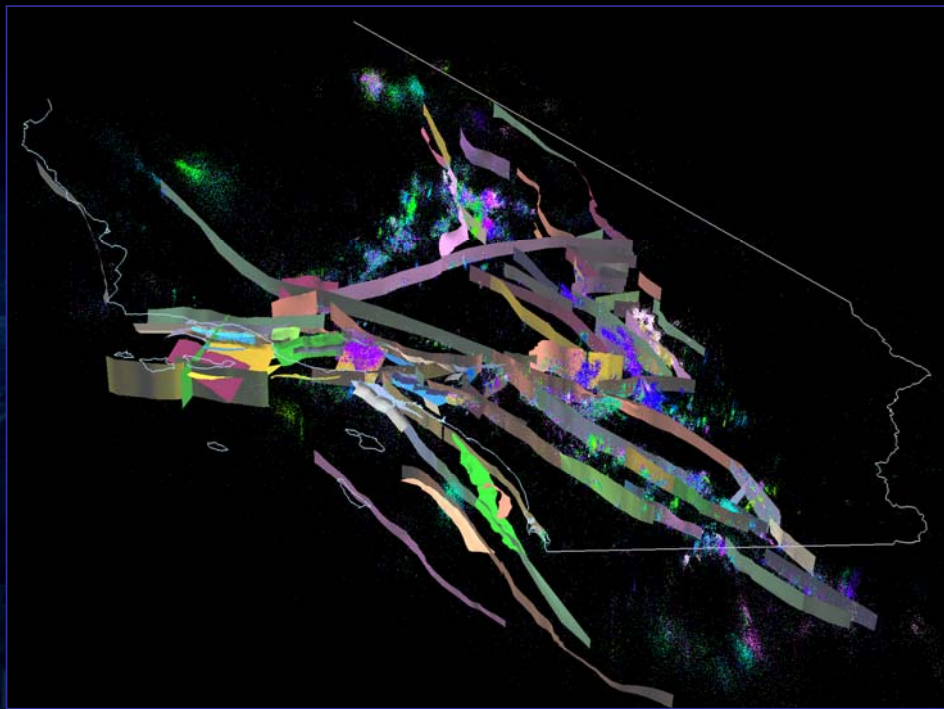
- To demonstrate how hazard science can improve a community's resiliency to natural hazards
- Multi-hazard: earthquakes, tsunamis, landslides, wildfires, floods, coastal erosion
- Used stakeholder workshops to set research priorities



Shake
Out

Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires

Over 300 active faults



Landslides

- Earthquakes push up the mountains and the rain (and gravity) brings them back down



Wildfires

Losses in southern California have increased every decade during the 20th century

During the past 30 years, 13 of the nation's 15 most destructive wildfires have occurred in California



The fires lead to debris flows

- Christmas 2003
- Debris flows from at least 80 burned basins
- 16 dead



... And to floods

- \$26.5m to clean up and repair damage



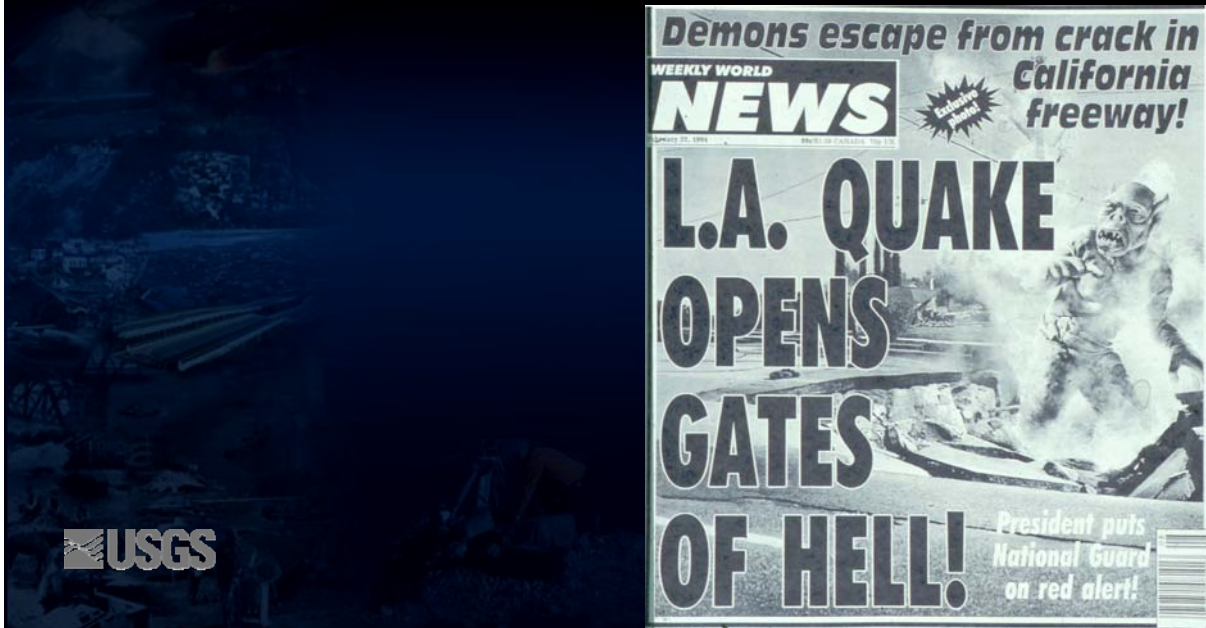
Coastal retreat



And Social Consequences



And a population that needs help making good decisions



ShakeOut Earthquake Scenario

Top request of stakeholders

A plausible great earthquake

Big enough to be worth studying but not worst case

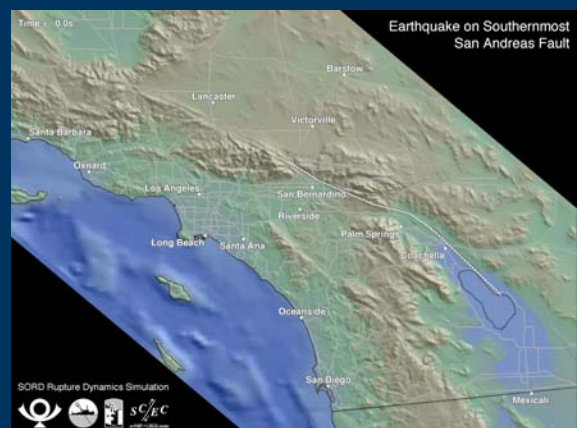
Credible

A team of 300+ experts from 50+ organizations

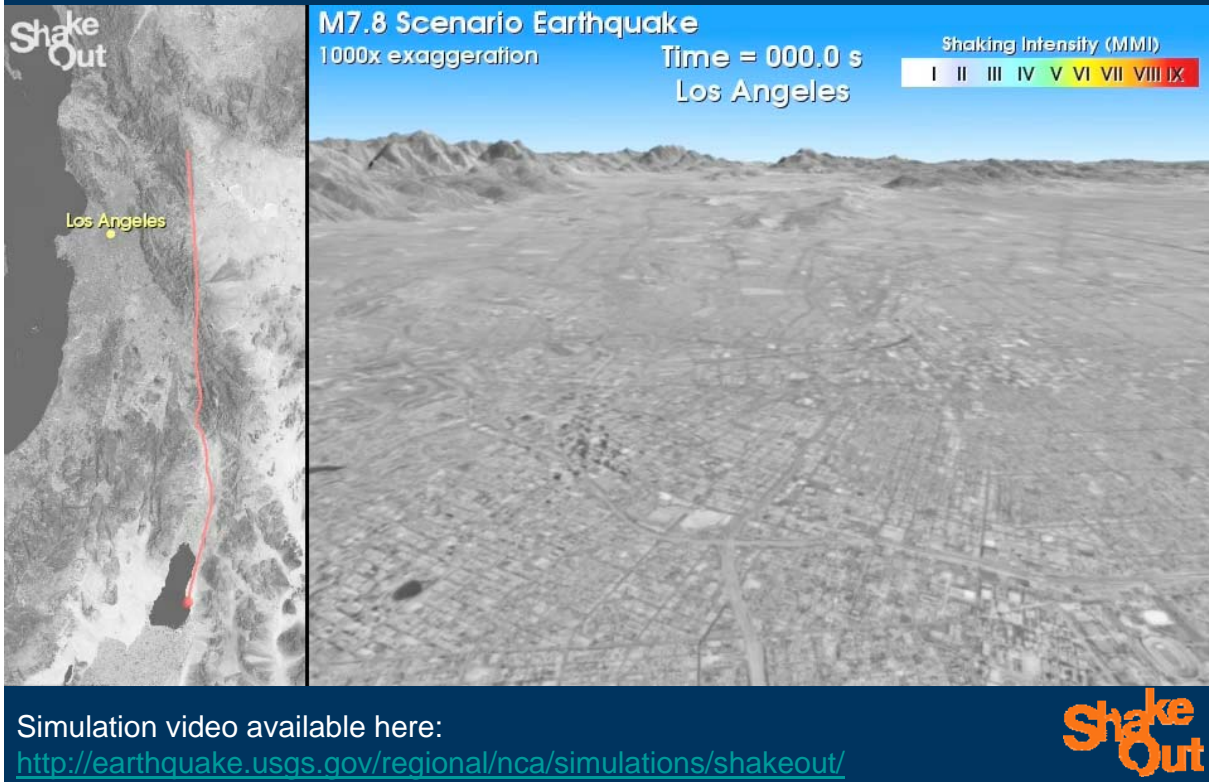
Comprehensive

from earth science through engineering to economics and disaster psychology

Accessible to non-specialists



Accessible to generalists



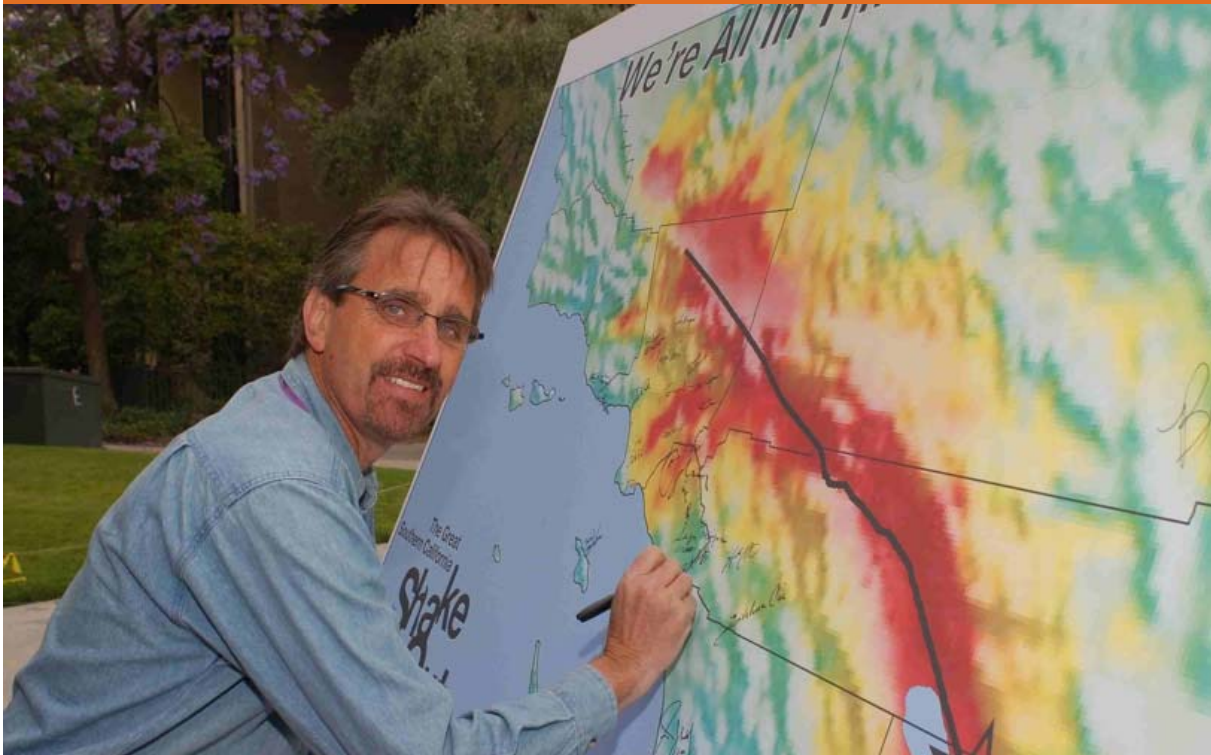
Multi Hazards Demonstration Project

Preparedness Now video on YouTube:

<http://www.youtube.com/watch?v=opXZY1zZ8xk>



So we created the ShakeOut



So we created the ShakeOut



So we created the ShakeOut



So we created the ShakeOut



So we created the ShakeOut



The Great Southern California ShakeOut

- A week-long series of events to inspire southern Californians to improve their earthquake resiliency
 - ShakeOut - Public Drill
 - Golden Guardian - emergency responders exercise
 - International Earthquake Conference
 - Get Ready Rally
- Put on by the Earthquake Country Alliance, a coalition of earthquake professionals



**Shake
Out**



Earthquake Country Alliance
We're all in this together

ShakeOut Steering Committee



Earthquake Country Alliance
We're all in this together

US Geological Survey, Southern California Earthquake Center, City of Los Angeles, Office of Emergency Services, Seismic Safety Commission, Art Center, Caltech, and others in the ECA with key activities/roles during ShakeOut.

- Group met biweekly beginning Dec. 2007
- Members contributed significant time developing materials, giving presentations, managing web content, confirming registrations, securing sponsorships, and more.



ShakeOut Goals

- Participation of at least 5 million people in the ShakeOut Drill
 - School, Business, and Community Organization recruitment efforts will have several million people participate
 - Everyone is encouraged to “spread the word” to promote people participating in the ShakeOut!
- Shift the culture in southern California about earthquakes
 - We must all take greater responsibility for readiness
 - We all need to talk about earthquakes and preparedness more often
- Significant increase in earthquake readiness at all levels



How did it work?



Listen to the Social Scientists

- Approach: Consistent messages
- Unified source through Earthquake Country Alliance
 - Science (USGS, SCEC)
 - Government (county, State and City)
 - Fire Departments
 - Corporate (Chamber of Commerce, major employers)
- Common Goal:
- Multiple Media



Shake Out. Don't Freak Out.
November 13, 2008 Register Now at www.shakeout.org




Join Us
for the Largest
Earthquake Drill
in U.S. History.
November 13, 2008

www.shakeout.org



www.ShakeOut.org

The Great Southern California ShakeOut



HOME

THE DRILL

THE SCENARIO

REGISTER / LOGIN

WHAT YOU CAN DO

CALENDAR

RESOURCES

NEWS MEDIA

SPONSORS

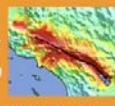
SUPPORTERS

ORGANIZERS

CONTACT US

The Great Southern California ShakeOut

At 10 a.m. on November 13, join millions of people throughout Southern California in the **ShakeOut Drill**, the largest earthquake preparedness activity in U.S. history! Please register today.



The Great Southern California ShakeOut also includes other events to help us get ready for big earthquakes.

Resources for participants and news media

- The **What You Can Do** section includes simple suggestions as well as detailed drill scripts for certain groups.
- NEW! **Audio and Video "Drill Broadcast"** recordings have been created in English and Spanish to provide instructions during your drill (Video versions have text captions).
- NEW! **"Drop, Cover, Hold On"**, compelling new film that depicts what will happen in a "big one," and other videos.
- NEW! **Technical Drill Resources**, including a simulated CISM Display, ShakeMaps, and more.
- NEW! **News Media Resources** including contacts, visuals, media advisories and releases, and more.

Main Activities

ShakeOut Drill (November 13)

Golden Guardian 2008 (November 13-18)






International Earthquake Conference (November 12-14)

After Shock Multi-player Simulation (Starts 10:02 a.m. Nov. 13)

Los Angeles Earthquake: Get Ready Rally (November 14)

Take One More Step (November 14-16)

Major Sponsors

5.2 Million and Counting!

Time until the ShakeOut Drill:
1 day 0:00:00

[Register Here](#)

En español

[Information in other languages](#)

5.2 Million and Counting!

Time until the ShakeOut Drill:
1 day 0:00:00

[Register Here](#)

What You Can Do:

Instructions for **Individuals and Families**, **Neighborhood Groups**, **CERT Groups**, **Schools**, **Scouting Groups**, **Colleges and Universities**, **Businesses**, **Non-Profit Organizations**, **Earth-Based Groups**, **Medical Centers**, **Local Governments**, and **Museums**.

[Frequently Asked Questions](#)

Why "Drop, Cover, and Hold On" is recommended.

[Tell a friend about ShakeOut!](#)

[Participant Login](#)

What happens at 10:02 is up to you...

Sign up and see how well you would survive.

ShakeOut Participants for Los Angeles County

(Click on each group to see a list of participants that have agreed to be listed on our website)

Category	Registrants	Participants*
Total:		2706463
Individuals/Families		26877
Schools	694	1951701
Colleges/Universities	69	269908
Businesses	1259	168001
Community Groups	223	33481
Government Agencies	218	143873
Faith-based Organizations	79	13635
Medical Organizations	169	67612
Media	24	1976
Other	235	24632

* Number of people registered

www.dropcoverholdon.org



Protect Yourself. Spread The Word.

The Great Southern California ShakeOut

Everybody drops on 11.13.08

At 10 a.m. on November 13, join millions of Southern Californians in the largest Drop, Cover, Hold On drill in U.S. history!

[LEARN HOW TO PARTICIPATE](#)

PLAY BEAT THE QUAKE

Test your earthquake knowledge and skill right now!



DROP!



COVER!



HOLD ON!

Protect Yourself. Spread The Word.

The Great Southern California ShakeOut

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PLAY BEAT THE QUAKE

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VERBOS

DOWNLOAD WALLPAPER: 11



¡AGÁCHASE!



¡CÚBRASE!



¡AGÁRRESE!

Protégete. Divulga La Palabra.

El Gran ShakeOut del Sur de California

Todos se agachan en 11.13.08

A las 10 a.m. el 13 de Noviembre, únete a millones de residentes del sur de California en el simulacro Agacharse, Cubrirse, y Agarrarse más grande en la historia estadounidense.

[¡APRENDE A COMO PARTICIPAR](#)

DERROTA EL TEMBLOR

(Pon a prueba tu conocimiento de terremoto y habilidad ahora mismo)

ENGLISH VERSION

BAJAR PAREDÓN: 1100 x 1024 1024 x 768 800 x 600

ShakeOut

Beat the Quake



Make it real: make it visual

- Make this a media event
 - “The Biggest Drill Ever”



Shake
Out

Stories around the world

Google

earthquake drill

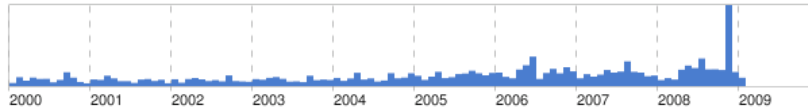
Search

[Advanced archive search](#)
[Archive search help](#)

Web

« [View all web results for earthquake drill](#)

2000-09 [Search other dates](#)



05/2006

May 4, 2006 - May 4--DANVILLE -- Like a well-oiled machine, children, parents and faculty at St. Isidore's ol in Danville ran through the school's first-ever **earthquake** evacuation **drill** Wednesday with nary a . The kindergarten-through-eighth-grade school of some 650 students has been ...

[St. Isidore's students practice earthquake drill....](#) - [Related web pages](#)
accessmylibrary.com/premium/0286/0286-15123679.html

写真: 園児



米カリフォルニアで大地震を想定した避難訓練
2006.11.17.18

Shake
Out

Talk About Earthquakes at Home

- “Mommy, we had an earthquake drill today”



5.47 Million Participants in 2008

- Schools: 3.95 million (1589 registrants)
- Colleges: 564,000 (121 registrants)
- Businesses: 342,000 (2531 registrants)
- Government: 289,600 (593 registrants)
- Faith and Community organizations: 142,000 (1161 reg.)
- Medical: 107,000 (280 registrants)
- Individuals/Families: 57,600 (19,200 registrants)



Focus on Concrete Actions

- Perceived risk does not affect behavior
- Information on what actions to take does affect behavior
- Focused on
 - Drop, cover, hold
 - Store water
 - Secure your space
 - Fire fighting



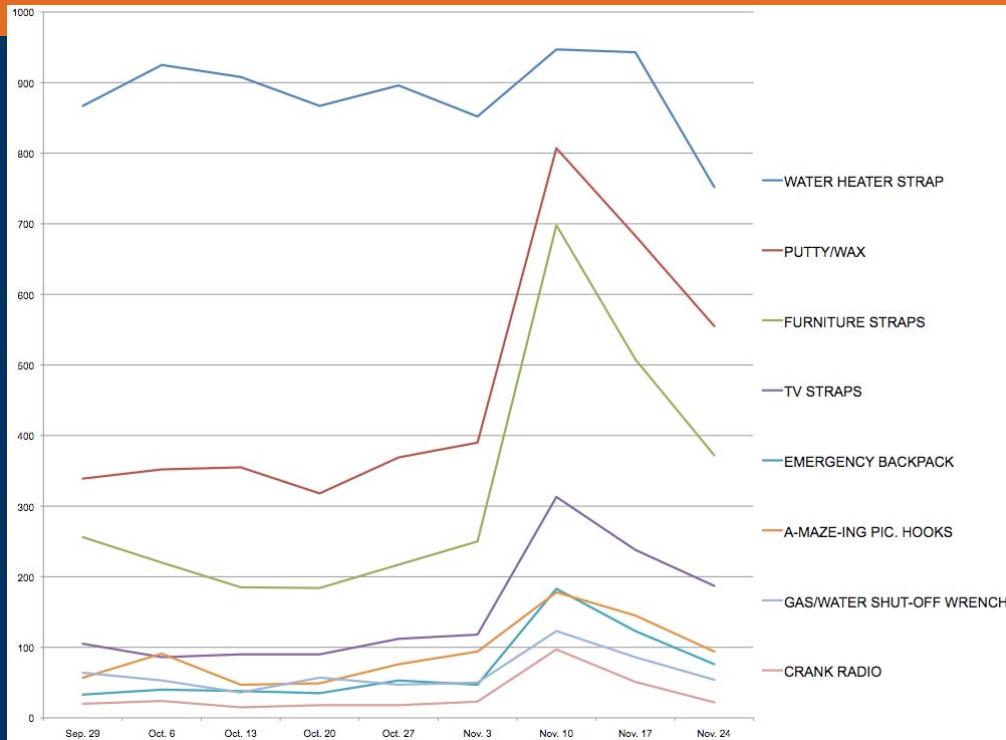
1989 Loma Prieta



1994 Northridge



ShakeOut Outcome: Home Depot



Shake
Out

ShakeOut Success

- Get the best in every field
- Let the best be the best at what they do



Shake
Out

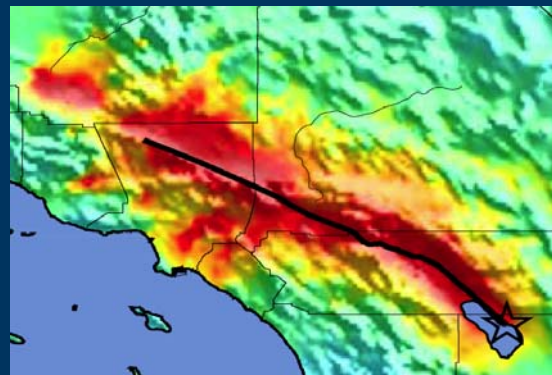
Water issues in the ShakeOut

East Valley Water District
San Bernardino, CA
Gary Sturdivan
909-885-4900



Started with the Science

- Having a comprehensive scenario completed by the USGS scientists, made the scenario plausible
- USGS Shaking Intensity Maps, outlining each water agencies boundaries allowed agencies to estimate the severity and damage to the water and wastewater infrastructure

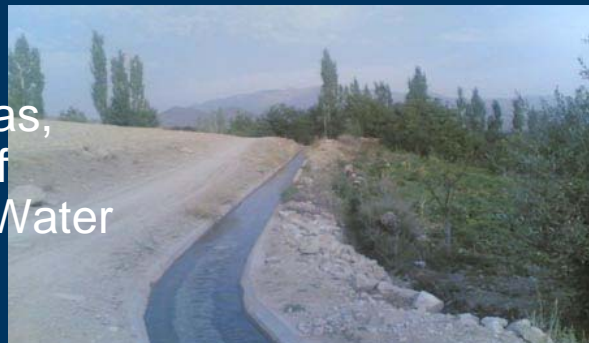


The Scenario and Planning

- Water agencies introduced to the ShakeOut Earthquake Scenario
- Water/Wastewater agencies understood the magnitude and severity of the damage to their infrastructure
- Water/wastewater agencies started meeting on the issues; with the understanding that they check their lawsuit at the door

Water Issues Identified in the ShakeOut

- Each water agency will face thousands of water and wastewater pipeline failures
- Generators, roadway failures
- Lack of water/wastewater treatment chemicals when railways disrupted
- Communications with County Operational Areas, California Department of Public Health, Drinking Water



Water Issues Identified (con't.)

- Water storage issues (damaged reservoirs)
- Lack of Laboratories to test water samples
- Prioritization of water/wastewater repair parts coming into affected area
- Cross-contamination of water and wastewater systems

Sewer Issues Identified in the ShakeOut

- Sewer pipeline failures, lift station failures, flooding streets and buildings
- Sewage treatment plants fail and overflow
- Sewage runs to rivers and streams causing contamination of water-ways and water supplies down stream



How do we deal with this?

- We need mutual aid
- We formed Emergency Response Network of the Inland Empire (ERNIE) for San Bernardino & Riverside Counties
- 11 ERNIE members before the ShakeOut
- 26 members today

Water in the ShakeOut

- 75 water agencies participated in ShakeOut exercise
- First ever multi-agency functional exercise
- Exercised
 - Communications
 - Staff response
 - Mutual aid
 - Interstate mutual aid



Recommendations

- Elevate Water Services to its own emergency support function within the FEMA
- Obtain better communications between Fire agencies and water agencies
- Water agencies may have non-potable water that could be used for firefighting, saving the potable water for the public

Mitigation Through Mutual Aid

- California Water/Wastewater Agency Response Network (CalWARN)
- National Water/Wastewater Agency Response Network; sponsored by the American Water Works Association and U.S. EPA

2006



2009



Mitigation

Water/Wastewater issues identified during the ShakeOut can only be mitigated by all agencies working together for the good of all agencies and the public



Earthquake Country Alliance
We're all in this together.

The response continues

"This is the best single effort in emergency preparedness in my nearly 20 years in the business. The Golden Guardian / Great ShakeOut project did more to prepare our cities than all previous efforts combined for many years past. I have never had so much participation and interest in disaster preparedness. And it continues!"

- Mike Martinet, Los Angeles County Emergency Manager



The response continues



The response continues



The response continues



What's Next?

The Great
California
**Shake
Out**

October 15, 2009



ARkStorm Video is on YouTube:

<http://www.youtube.com/watch?v=UQHeidsBhyI>