



Annex to 2010 Association of Bay
Area Governments
Local Hazard Mitigation Plan
Taming Natural Disasters

Zone 7 Water Agency, Zone 7 of
Alameda County Flood Control and
Water Conservation District

February 23, 2011

Table of Contents

Introduction	3
The Regional Planning Process.....	3
The Local Planning Process.....	4
<i>Process for Updating Plan Sections</i>	5
<i>Review of Existing Plans and Studies</i>	5
<i>Public Meetings</i>	6
Hazards Assessment	6
Past Occurrences Of Disasters (natural and human-induced).....	6
Risk Assessment	7
<i>Urban Land Exposure</i>	7
<i>Infrastructure Exposure</i>	7
<i>Exposure of Zone 7 Water Agency County -Owned Buildings</i>	8
<i>Repetitive Loss Properties</i>	8
<i>Other risks</i>	9
National Flood Insurance Program	9
Mitigation Goals and Objectives.....	9
Mitigation Activities and Priorities.....	9
<i>Evaluation of Progress from 2005 Plan</i>	9
<i>Future Mitigation Actions and Priorities</i>	10
<i>On-Going Mitigation Strategy Programs</i>	11
Incorporation into Existing Planning Mechanisms	12
Plan Update Process.....	13
Mitigation Plan Point of Contact	13
Exhibit A - Jurisdiction Boundary Map	14
Exhibit B - Public Meeting Announcements	15
Exhibit C - Mitigation Strategies.....	16

Introduction

Zone 7 Water Agency (Zone 7) is one of the 10 active zones of the Alameda County Flood Control and Water Conservation District (ACFC&WCD). Its jurisdiction boundary map is shown in Exhibit A. Zone 7 is governed by a seven-member board of directors (Zone 7 Board). Each director is elected at-large by residents within Zone 7's service area to a four-year term. The Zone 7 Board sets policy and provides direction to agency management and staff. In 2010, Zone 7's operating budget was about \$50 Million; it employs approximately 106 employees.

Zone 7 is responsible for wholesaling treated and untreated water supply, managing the ground water basin, and providing flood control to the Livermore-Amador Valley. Zone 7 supplies treated water to local retailers who in turn distribute it to the community, as well as provide untreated water for local agriculture. The retail water agencies contracting with Zone 7 for treated water include the City of Pleasanton, the City of Livermore, Dublin San Ramon Services District, and the California Water Service Company.

Water for the Livermore-Amador Valley currently comes from three primary sources: imported surface water from the State Water Project (SWP), local runoff from the Arroyo del Valle, and local groundwater. Zone 7 is one of 29 State Water Project contractors. SWP water is either served directly to customers as untreated or treated water, or stored for later use (in Lake Del Valle, the local groundwater basin, or groundwater banks in Kern County). Zone 7 shares water rights for available flows in the Arroyo del Valle with Alameda County Water District. The local runoff from the Arroyo del Valle is captured in Lake Del Valle under agreements with the State Department of Water Resources. After storage in Lake Del Valle, this runoff is either treated and used directly, or recharged into the local groundwater basin for later recovery. Zone 7 only pumps groundwater that it has artificially recharged.

Zone 7 serves a population of approximately 220,000 in a service area comprised of approximately 430 square miles in the eastern section of Alameda County that includes Pleasanton, Livermore, Dublin and parts of San Ramon (Dougherty Valley area) as well as the surrounding unincorporated Alameda County lands. Zone 7 is responsible for approximately 42 linear miles of pipeline and 36 linear miles of flood control channels and drainage facilities. These channels consist primarily of enlarged natural channels or excavated new channels. Some channels have enhanced landscaping and trails which are open to the public.

The Regional Planning Process

Zone 7 again joined with the Association of Bay Area Governments (ABAG) to update the existing regional or Multi-Jurisdictional Local Hazard Mitigation Plan ((M-J LHMP.) The participation started in June 2009 and has continued through to 2011. Many of the activities conducted by Zone 7 were fed into the planning process for the multi-jurisdictional plan.

Specifically, we have participated in the following workshops, conferences, and meetings:

- Attended ABAG Water Workshop meeting of March 25, 2009
- Provided letter of Commitment with the Multi-Jurisdictional Local Hazard Mitigation Plan on June 17, 2009
- Attended ABAG Flooding Workshop on July 7, 2009

At these workshops Zone 7 staff provided input on the regional strategies from the perspective of a water service agency. For more information on these meetings and for rosters of attendees, please see Appendix A and H in the ABAG M-J LHMP 2010.

As part of the collaborative effort, Zone 7 also provided:

- Critical Facilities Data update on June 19, 2009
- Mitigation Strategies publically reviewed at Zone 7 Water Agency Board meeting on December 16, 2009

The Local Planning Process

The local planning process was started by a Safety Technician, an Emergency and Safety Supervisor, and an Associate Engineer updating the Critical Facilities Data in June 2009. The existing list of critical facilities from 2005 and new facilities built since and/or were turned over to Zone 7 since 2005, were reviewed and needed changes were incorporated into the 2010 Critical Facilities data list. This list was given to ABAG for inclusion in the M-J LHMP. Exact locations are not presented due to public access to the information. The sites are represented as points in the general area of location for security reasons.

The 2005 Mitigation Strategies were reviewed by staff from Groundwater Section, Water Supply Engineering, Flood Control Section, the Office of the General Manager, Environmental Permitting & Planning, Financial and Systems Services, and the Accounting Section. The group was made up of engineers, geologists, hydro geologists, a communications specialist, a senior staff analyst, the Accounting Manager, and safety technicians. Over the course of 2 ½ months people met to discuss the strategies and agree on what was appropriate for Zone 7 for the 2010 list.

Hydro Geologists from the Groundwater Section gave input on existing and planned wells plus the Well Master Plan. Engineers from the Water Supply Engineering Section gave comments on the Urban Water Management Plan, Capital Improvement Program and proposed construction.

The Flood Control Section discussed the JEPA or Joint Exercise of Powers Agreement for aquatic pesticides and flood control related issues such as infrastructure damages from major storms. From the Office of the General Manager, a Communications Specialist discussed outreach programs and Environmental Permitting and Planning section discussed the Clean Water Program. Additionally, one Associate Engineer provided comments on the Streams Management Master Plan.

The 2005 Mitigation Strategies were compared to known policies or programs and recommendations were made about strategies and priorities. Next, the subject matter experts were brought in for one on one discussion about their recommendations. Their comments were incorporated in the strategies document. Lastly the entire package of updated strategies was routed to representatives from the various sections and executive management for comment.

Water Process for Updating Plan Sections

Two staff members led a complete review of the Annex to evaluate whether the information contained within the sections was current and correct. This team met with subject matter experts for each section and requested specific input on sections pertaining to their expertise. The plan will again be monitored over the next 5 years for any necessary changes.

The public has been included in the update process through Zone 7's Board meetings and website. Zone 7 provides opportunity for public comment through a public hearing. The Board specifically requests public comments during an agenda item, but prior to taking any action. Zone 7's website links to Zone 7's LHMP and the ABAG M-J LHMP, and has contact information for anyone who wishes to discuss either plan.

Review of Existing Plans & Studies

As outlined above, subject matter experts were called to provide comment on existing plans and studies. Their comments were captured in Mitigation Activities and On-Going Mitigation Activities portion of this Annex. The following plans were reviewed in the development of this annex.

Existing Plans, Studies, Reports, and Technical Information	Method of Incorporation into the Jurisdiction Annex
Capital Improvement Program	This was used to determine whether projects were currently viable or would need to be deferred due to lack of funding
Water Supply Evaluation	This study provides information on how much water we will need to secure, to provide water to the community. It is used in our reliability studies.
Urban Water Management Plan	This plan is used for long-term source planning for existing and future needs. It is a 20 year planning document that includes scenarios with normal rainfall, dry (drought) and multiple dry years.
Asset Management Plan	This is used to evaluate the life of our equipment and used to schedule asset replacement projects to maintain a reliable water system.
Stream Management Master Plan	This Plan provides a regional response to flood control and as well as trails and environmental enhancements
Strategic Plan	This document is adopted by our Board of Directors and it sets agency priorities.

Public Meetings

Zone 7 provided two opportunities for public input. DRAFT mitigation strategies (included as Exhibit C) were provided at Zone 7's December 16, 2009, Board meeting and on Zone 7's website. Zone 7 Board meetings are held at 7:00 pm on the third Wednesday of every month, are open to the public, and are posted 5 days before the meeting. The Strategies are permanently posted to our website with contact information and a link to ABAG's M-J LHMP. The Draft Annex will also be posted and available for public comment. Zone 7 hopes that by providing information concerning the LHMP it will inform the public about what hazards are present for water and flood control systems, and what is being done to mitigate those hazards. Public comment was received from the internet posting but not at the public hearing. A copy of the internet posting is included as Exhibit B to the Zone 7 2010 Annex.

The Zone 7 Board of Directors will consider adopting the full plan in a public meeting via an official Resolution after approval by FEMA.

Hazards Assessment

Zone 7 has reviewed the hazards identified and ranked those hazards based on past disasters and expected future impacts. The conclusion is that earthquakes (particularly shaking), flooding (including dam failure), landslides (including unstable earth), and wildfires pose a significant risk for potential loss. Severe drought, though a potential problem for Zone 7 operations, is not fully assessed as part of the M-J LHMP. Zone 7 has prepared a Water Shortage Contingency Plan, as part of the required 2010 Urban Water Management Plan (UWMP). The 2010 UWMP was adopted by the Zone 7 Board in December 2010. Zone 7 is continuing to assess its ability to provide reliable services during a severe drought as part of its Water Supply Evaluation update, which is scheduled to be completed in March/April 2011.

Zone 7 does not believe it faces any natural disasters not listed in the ABAG multi-jurisdictional plan; however, the multi-jurisdictional plan did not include specifics on water treatment and distribution facilities. Specific water distribution, water supply, and water source issues were not addressed. A discussion of these issues and hazards can be found in the Mitigation Activities and Priorities section below.

While Zone 7 has access to maps concerning earthquakes and dam failure, they are less encompassing and not as current as those shown on the ABAG website at <http://quake.abag.ca.gov/mitigation>. The ABAG maps were therefore used for the assessment.

Past Occurrences of Disasters (natural and human-induced)

More information on State and Federally declared disasters in the Zone 7 area can be found at <http://quake.abag.ca.gov/mitigation/ThePlan-D-Version-December09.pdf>.

The disaster history of our area is included in the ABAG website for Alameda County at <http://quake.abag.ca.gov/mitigation/disaster-history.html>. Specifically, Zone 7 has experienced earthquake and flooding damages. One water treatment plant sustained earthquake damage to a clarifier which resulted in the plant being unable to process water for 30 days. Flood control channels experienced slopes failures and silting caused by extreme rainfall.

Specific flooding events that impacted Zone 7 are:

Year	Disaster		Total Project Costs
1995	1044/1046	Channel slope failures	\$2,000,000
1997	1155	Channel slope failures	\$325,000
1998	1203	Channel slope failures	\$2,500,000
2006	1646	Channel slope failures	\$1,700,000

We have experienced other local storm drainage related issues but have been able to respond to them under our annual routine maintenance program.

Risk Assessment

Urban Land Exposure

Zone 7 has no jurisdiction over Urban Land exposure. We only have control over the facilities we own or that are owned by Alameda County on our behalf, which are discussed in another area. We are a Water Wholesaler and Flood Control District and have no general plan nor do we control development within our area of influence.

Infrastructure Exposure

This section is not applicable for a water agency; however, in 2005 Zone 7 had 35 miles of transmission pipe lines and now has 42 miles in 2011. These lines have been included with municipal and county roads in other annexes.

Exposure of Zone 7 -Owned Buildings

Zone 7 reviewed the various regional hazard maps found at the ABAG website at <http://quake.abag.ca.gov/mitigation> / and <http://www.abag.ca.gov/cgi-bin/pickmapx.pl> to examine the hazard exposure of the Agency's facilities. The following number of facilities is exposed to the various hazards analyzed.

Note that there is a 5-year lag in the data so the 2010 plan is using 2005 data and the 2005 plan used 2000 data.

Exposure (number of facility types)		
Hazard	Locally owned critical facilities	
	Plan Year 2005	Plan Year 2010
Total Number of Facilities	31	34
Earthquake Shaking (within highest two shaking categories)	11	10
Liquefaction Susceptibility (within moderate, high, or very high liquefaction susceptibility)	11	23
Liquefaction Hazard (within CGS study zone)	N/A	9
Earthquake-Induced Landslides (within CGS study zone) ¹	0	0
Earthquake Faulting (within CGS zone)	2	0
Flooding (within 100 year floodplain)	3	0
Flooding (within 500 year floodplain)	0	9
Landslides (within areas of existing landslides)	4	0
Wildfires (subject to high, very high, or extreme wildfire threat)	25	18
Wildland-Urban Interface Fire Threat	10	0
Dam Inundation	8	16
Sea Level Rise (exposed to 16-in sea level rise) ²	-	0
Sea Level Rise (exposed to 55-in sea level rise) ³	-	0
Tsunamis ⁴ (within inundation area)	-	0
Drought ⁵	-	-

Repetitive Loss Properties

Not applicable for a water agency.

¹ The California Geological Survey continues to map Alameda County and added the Livermore-Altamont area in late 2009. Though some areas of the County have not yet been completely mapped, the densely populated areas in Alameda County are mostly done.

² Sea level rise data was not available in 2005

³ Sea level rise data was not available in 2005

⁴ Tsunami evacuation planning maps were not available inside the San Francisco Bay in 2005. This map became available in December 2009. It should be noted that this map is not a hazard map and should be used for evacuation planning purposes only. The inundation line represents the highest inundation at any particular location from a suite of tsunami sources. It is not representative of any single tsunami.

⁵ Drought will not damage locally owned facilities directly.

Other risks

Severe drought, as discussed in Hazards earlier in this document, is a potential problem for Zone 7 operations and it is not fully assessed as part of the M-J LHMP Annex. After adoption, Zone 7 submitted the 2010 update to its Urban Water Management Plan (UWMP) to the Department of Water Resources on December 23, 2010. The UWMP includes a Water Shortage Contingency Plan that discusses how Zone 7 will manage partial or catastrophic losses of water supply during drought or other emergency conditions. The UWMP was developed with the retail water agencies and was reviewed by other public agencies in the service area.

National Flood Insurance Program

Zone 7 is not a flood plain manager; however, Zone 7 supports the efforts of the four flood plain managers in our area.

Mitigation Goals and Objectives

The goal of the ABAG M-J LHMP is to maintain and enhance a disaster-resistant region by reducing the potential for loss of life, property damage, and environmental degradation from natural disasters, while accelerating economic recovery from those disasters. This goal is unchanged from the 2005 plan and continues to be the goal of Zone 7 in designing its mitigation program.

Additionally, Zone 7 has the specific objective of improving water production facilities and appurtenances that are vulnerable to the effects of earthquakes and flooding damages in order to provide a reliable water supply even under a natural disaster.

Mitigation Activities and Priorities

Evaluation of Progress from 2005 Plan

In 2005, mitigation actions and priorities were identified. The following gives an update on several of those strategies including actions taken and the current status. The reference numbers at the end of each item correlates to the Mitigation Strategy number involved.

Water System Reliability Assessment (July 1994) – This report provided an assessment of how the Zone 7 Water System may respond under various earthquake conditions, including earthquake induced power outages and fires. The report examined 10 different scenarios of earthquakes. Each scenario was associated with a particular fault and magnitude. The assessment provided information useful for determining system upgrades strategies and priorities. The report generated facility upgrades and replacement work, much of which has been completed. Two notable upgrades are still needed. One is the replacement of the clarifier fiberglass panels at the Patterson Pass Water Treatment Plant (PPWTP). Zone 7 is undertaking a project to replace the entire clarifier mechanism in 2011. The other upgrade is at the superpulser sedimentation basins at the Del Valle Water Treatment Plant. Zone 7 has a capital improvement project to reassess and improve reliability of the superpulser basins. It should be

noted that the initial concerns with the reliability of the superpulser basins have been partially offset by construction of parallel dissolved air flotation (DAF) basins in 2007. (INFR c-1)

Seismic Upgrade Project (May 1996), Update for October 2010

- 1) Installed an interconnection with the City of Livermore water system at our PPWTP. (The City's reservoirs meet current seismic code). During a significant seismic event we would most likely lose our washwater tank on the hill. To seismically retrofit it would cost as much as a new tank. The interconnection allows us a safety net until we have the financial resources to replace the existing washwater tank.
- 2) Installed an emergency bypass line for the Ultrafiltration Water Treatment Plant (UFWTP) around the clearwell. If the clearwell were to fail during a seismic event we would now be able to keep the UFWTP running by bypassing the clearwell. (INFRA a-4)

Altamont Pipeline Livermore Reach (APLLIV) Project - The APLLIV alignment is the first phase of an 11-mile pipeline connecting a future treatment plant to the Zone 7 water transmission system. This first phase alignment is approximately 5.6 miles of 42-inch diameter welded steel pipe (mostly double lap welded). APLLIV was completed in August 2009 and is operational. It was constructed to increase Zone 7's reliability to meet demands in the eastern service area when the South Bay Aqueduct (SBA) is shut down due to planned/unplanned outages or has limited flows due to regulations to protect fish habitat in the Delta. APLLIV allows the transfer of water from the west side sources (Zone 7 municipal wells and Del Valle Water Treatment Plant (DVWTP)) to the east side of the Zone 7 transmission system, providing additional reliability to the east side in case of PPWTP outages. APLLIV also increases Zone 7's transmission system reliability by providing another loop in the transmission system by connecting to Zone 7's existing 36-inch Cross Valley Pipeline near Kittyhawk Road in Livermore, and 18-inch Vasco Pipeline located in Vasco Road, in Livermore. (INFRA c-1)

Emergency Generator (June 2004), Update October 2010

- 1) Installed a standard method of electrical connection for emergency generators at all major well facilities (Mocho Wells 3 and 4, Hopyard Well 6, Stoneridge Well, and Chain-of-Lakes Wells). These connections allow us to bring portable generators onsite in the event of an emergency/electrical outage.
- 2) Installed an additional 500 KW generator at DVWTP. This now enables the plant to be fully operational during an emergency/electrical outage. (INFRA a-4;a-11;b-6)

Vulnerability Assessment Study (2003) - Progress has been accomplished in the last 5 years to reduce agency vulnerabilities; new controls have been installed and existing systems have been repaired. (GOV - a1, a9)

Future Mitigation Actions and Priorities

As a participant in the 2010 ABAG multi-jurisdictional planning process, the staff of Zone 7 helped in the development and review of the comprehensive list of mitigation strategies in the overall multi-jurisdictional plan. The decision on priority was made based on a variety of

criteria, not simply on an economic cost-benefit analysis. These criteria include being technically and administratively feasible, politically acceptable, socially appropriate, legal, economically sound, and not harmful to the environment or our heritage. Representatives from multiple sections described in the Planning Process section then met to review progress on Zone 7's 2005 strategies, and to identify and prioritize additional mitigation strategies to update the list.

These draft priorities were submitted to Zone 7 Executive Management and Zone 7 Board of Directors. The draft priorities will be provided to the Board of Directors for adoption pending approval of this LHMP by FEMA.

The Zone 7 planning team also prioritized specific mitigation tasks for the next 5 years. They looked at projects specific to Zone 7 that had potential funding and were included in the Capital Improvement Program and other strategies that did not have foreseeable funding but were listed as a potential mitigation for Zone 7. The strategies include programs, policies, resolutions and/or mandates for implementation of funded projects. Comments were provided on those mitigations not yet funded or not appropriate for water agencies.

On-Going Mitigation Strategy Programs

Zone 7 has many on-going mitigation programs that help create a more disaster-resistant region. The following list highlights those programs identified as *Existing Programs* in the mitigation strategy spreadsheet.

2011 Water Supply Evaluation – Zone 7 is currently conducting an assessment of its ability to meet projected water demands at build out. The assessment is to determine future water supply, conveyance, and facility needs to meet customer reliability/level of service goals. The Water Supply Evaluation will become a working document that prioritizes and schedules defined projects with ongoing progress updates towards meeting water supply and facility needs at build out. (INFRA c-1)

Streams Management Master Plan SMMP (2006) – The SMMP is a multi-disciplinary approach to stream management in the Zone 7 area. Flood Protection and Drainage, Erosion and Sedimentation, Water Supply, Water Quality Habitat & Environment and Recreation, Trails & Education were addressed. Channels were evaluated based on hydraulic properties and existing knowledge of flooding history. Specific methods of improvement that would span the range of disciplines being addressed were evaluated for each project site. The alternatives ranged from storage options to creating stormwater by-pass channels. This project involved a variety of public workshops to draw together all interested public and private stakeholders to participate in the process. An EIR was prepared that examined the various alternatives for all 45 projects identified in the SMMP. Funding options are being explored to complete the recommended projects. Further evaluation of individual projects as well as prioritization based on need is on-going. (INFR –d-1; d9; ENVI-a4, a5)

Emergency Operation Plan - The plan is updated every year with new contact information for regulatory agencies, contractors, service providers, and chemical vendors. A full review of the document is anticipated in 2011. (GOV – b1)

Asset Management Plan Update (March 2011) – The Asset Management Plan (AMP) update is in progress, and this report which will contain long-term asset renewal funding requirements and near-term asset renewal projects for inclusion in the ten-year Capital Improvement Program. The work includes: an evaluation of Zone 7's inventory of capital assets; development of methodologies and decision processes for asset renewal; condition assessment of key water treatment and distribution assets; risk analysis of below-ground assets (i.e., pipelines); development of the annual allowance necessary to adequately fund Renewal/Replacement projects over the long term; and comparison of the necessary funding level with the existing funding allowance. This effort is being performed in collaboration with Zone 7 Engineering, Maintenance & Operations, Finance staff, and Zone 7 Retailers. (INFRA a-4; GOV- a2)

Joint Exercise of Powers Agreement (JEPA) - Zone 7, along with Contra Costa County, Contra Costa County Flood Control and Water Conservation District, ACFC&WCD, City of Antioch, and the City of Concord, worked together under JEPA to request an NPDES (National Pollution Discharge Elimination System) Permit to apply aquatic pesticides to control undesirable vegetation in channels. Undesirable vegetation must be controlled to maintain design flow capacities, reduce silt deposition, and reduce erosion damages to the embankments of channels. This program was initiated in 2003, extended 5 years in 2004, and has now been extended for 2 more years through 2011.

Additionally Zone 7 pursues mechanical vegetation removal for isolated areas where chemical control is too broad a treatment. (ENVI a-13)

Alameda Countywide Clean Water Program – Alameda Countywide Clean Water Program (ACCWP) is a consortium of 14 cities and two flood control agencies, including Zone 7, within Alameda County that discharge storm water to the San Francisco Bay. On October 14, 2009, the Municipal Regional Stormwater NPDES Permit (MRP) was issued by the Regional Water Quality Control Board, an executive agency of the State of California. The MRP regulates the discharge of storm water runoff from the municipal separate storm sewer systems maintained by a total of 76 cities, counties, and flood control districts within the jurisdiction of six Bay Area regional stormwater programs, including ACCWP. The MRP specifies the actions necessary to reduce discharge of pollutants in stormwater to the maximum extent practicable, in a manner designed to achieve compliance with water quality standards and objectives, and effectively prohibit non-stormwater discharges into municipal storm drain systems and watercourses within the Permittees' jurisdiction. The MRP includes requirements for the following components applicable to Zone 7: Municipal Operations, New Development and Redevelopment, Illicit Discharge and Elimination, Construction Site Controls, Public Information and Outreach, Water Quality Monitoring, Trash Reduction, and Exempt and Conditionally Exempt Discharges. Complying with the MRP requirements provides the benefit of reducing damage related to flooding. (INFR - d8)

Incorporation into Existing Planning Mechanisms

Zone 7 has several planning mechanisms that provide support for the LHMP. These were identified in the section Review of Existing Plans & Studies.

Zone 7 uses these pre-existing programs to assist in the classification and prioritization of system facilities. These facilities are evaluated for potential hazards, renewal/replacement, and system-wide improvements and expansion strategies. Therefore, the mitigation actions identified in this plan will be carried out primarily through those existing plans and programs. In addition, Zone 7

enforces the requirements of the California Environmental Quality Act (CEQA), which, since 1988, requires mitigation for identified natural hazards.

Plan Update Process

As required by the Disaster Mitigation Act of 2000, Zone 7 will update this plan annex at least once every five years, by participating in a multi-agency effort with ABAG and other agencies to develop a multi-jurisdictional plan.

Zone 7 will continue to monitor this Annex. The plan will be monitored on an on-going basis by Agency staff as described in the Local Planning Process section. However, the major disasters affecting our community, legal changes, notices from ABAG as the lead agency on this process, and other triggers will be used. Zone 7 Executive Management will be responsible for determining if the plan should be updated.

Zone 7 is committed to reviewing and updating this plan annex at least once every five years, as required by the Disaster Mitigation Act of 2000. Zone 7 will contact ABAG four years after this plan is approved to ensure that ABAG plans to undertake the plan update process. If so, Zone 7 again plans to participate in the multi-jurisdictional plan. If ABAG is unwilling or unable to act as the lead agency in the multi-jurisdictional effort, other agencies will be contacted, including the County's Office of Emergency Services. Counties should then work together to identify another regional forum for developing a multi-jurisdictional plan.

The public will continue to be involved whenever the plan is updated and as appropriate during the monitoring and evaluation process. Prior to adoption of updates, Zone 7 will provide the opportunity for the public to comment on the updates. A public notice will be posted prior to the meeting to announce the comment period and meeting logistics. All documents and links relating to the LHMP will be permanently available on Zone 7's website. The hope is to gain public confidence and awareness for disaster related issues, while providing information on the work effort Zone 7 has undertaken to mitigate impacts.

Mitigation Plan Point of Contact

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Alternate Point of Contact

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Exhibit A - Jurisdiction Boundary (Service Area) Map

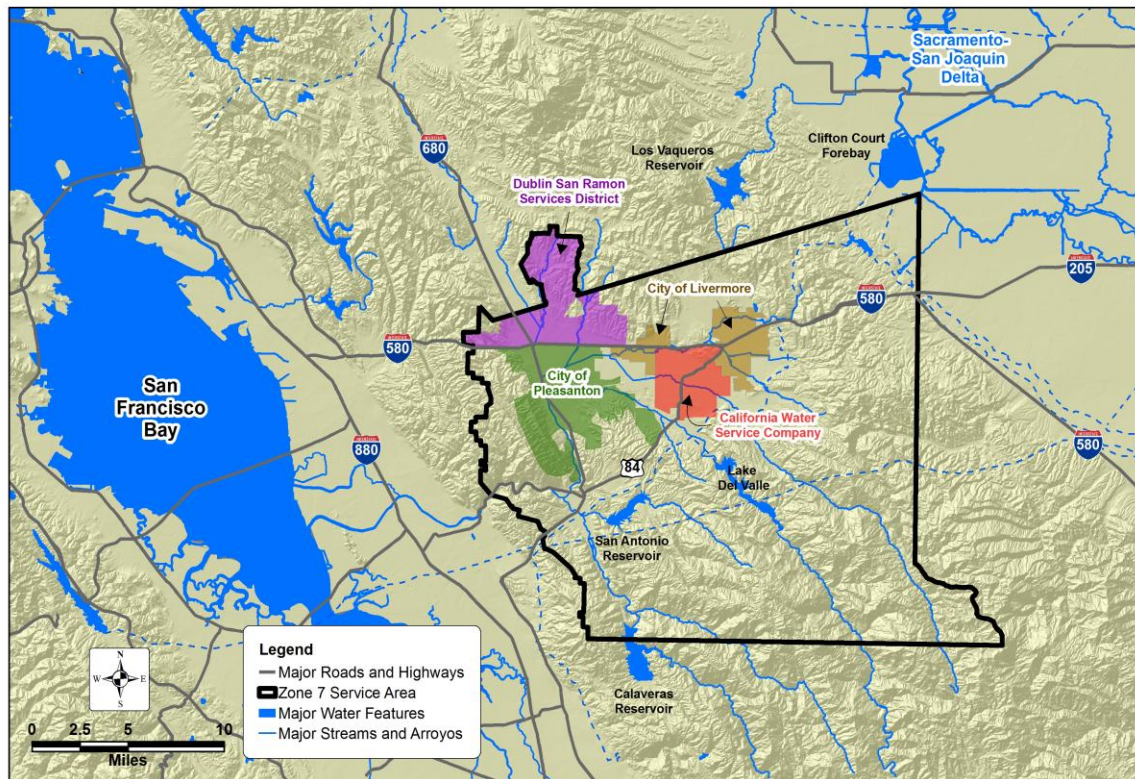


Exhibit B - Public Meeting Announcements

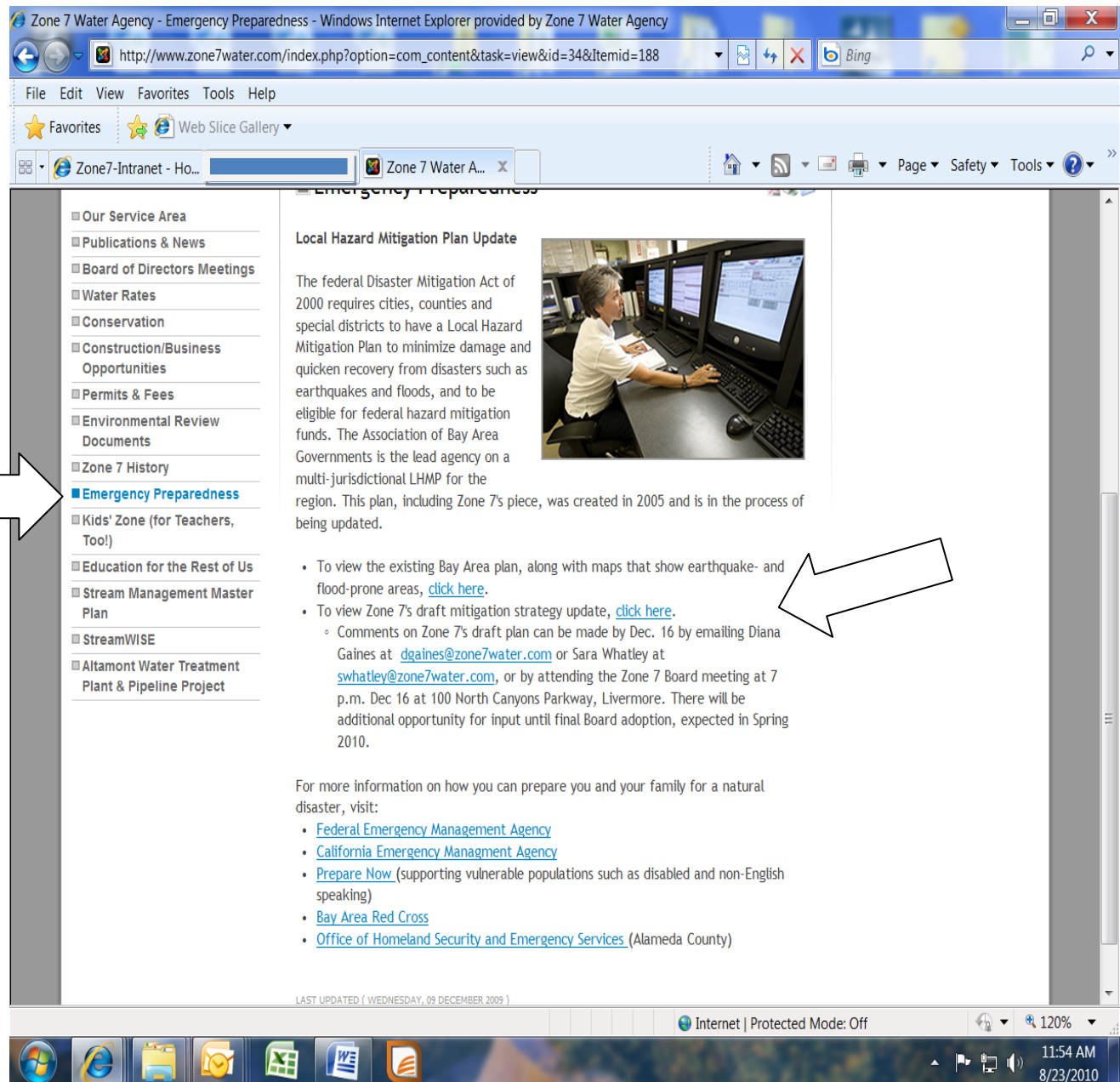


Exhibit C

Draft Infrastructure Mitigation Strategies

2009-2010 Strategy Number	2005 Original Strategy Number	Specific Mitigation Strategy	Applicable Hazards	Existing Program	Existing Program, underfunded	Very High - Unofficial Program- Becomes Official on Plan Adoption, no funding needed	High - Actively Looking for Funding	Moderate	Under Study	Not Applicable, Not Appropriate, or Not Cost Effective	Not Yet Considered	Responsible Agency or Department (Required if Existing Program, Existing Program under funded, Very High, High, or Under Study)	Ordinance or Resolution # (if existing program), Estimated Cost and Possible Funding Agency (if high priority), Estimated Date of Completion (if study), WHY if not same as regional priority, OR Other Comments
filling out this form, including a city, county, or special													
a-1	a-1	Assess the vulnerability of critical facilities owned by infrastructure operators subject to damage in natural disasters or security threats, including fuel tanks and facilities owned outside of the Bay Area that can impact service delivery within the region. Note - Infrastructure agencies, departments, and districts are those that operate transportation and utility facilities and networks.	EQ LS WF FL SEC		X								
a-2	a-2	If a dam owner , comply with State of California and federal requirements to assess the vulnerability of dams to damage from earthquakes, seiches, landslides, liquefaction, or security threats.	EQ LS WF FL SEC							X			Not a dam owner
a-3	a-3	Encourage the cooperation of utility system providers and cities, counties, and special districts, and PG&E to develop strong and effective mitigation strategies for infrastructure systems and facilities.	EQ LS WF FL DR SEC	X									
a-4	a-4	Retrofit or replace critical lifeline infrastructure facilities and/or their backup facilities that are shown to be vulnerable to damage in natural disasters.	EQ LS WF FL SEC		X								
a-5	a-5	Support and encourage efforts of other (lifeline infrastructure) agencies as they plan for and arrange financing for seismic retrofits and other disaster mitigation strategies. (For example, a city might pass a resolution in support of a transit agency's retrofit program.)	EQ LS WF FL DR SEC	X									
a-6	a-6	Develop a plan for speeding the repair and functional restoration of water and wastewater systems through stockpiling of shoring materials, temporary pumps, surface pipelines, portable hydrants, and other supplies, such as those available through the Water /Wastewater Agency Response Network (WARN). Communicate that plan to local governments and critical facility operators.	EQ LS WF FL DR SEC	X									

Exhibit C

Draft Infrastructure Mitigation Strategies

2009-2010 Strategy Number	2005 Original Strategy Number	Specific Mitigation Strategy	Applicable Hazards	Existing Program	Existing Program, underfunded	Very High - Unofficial Program- Becomes Official on Plan Adoption, no funding needed	High - Actively Looking for Funding	Moderate	Under Study	Not Applicable, Not Appropriate, or Not Cost Effective	Not Yet Considered	Responsible Agency or Department (Required if Existing Program, Existing Program under funded, Very High, High, or Under Study)	Ordinance or Resolution # (if existing program), Estimated Cost and Possible Funding Agency (if high priority), Estimated Date of Completion (if study), WHY if not same as regional priority, OR Other Comments
a-7	a-7	Engage in, support, and/or encourage research by others (such as USGS, universities, or Pacific Earthquake Engineering Research Center-PEER) on measures to further strengthen transportation, water, sewer, and power systems so that they are less vulnerable to damage in disasters.	EQ LS WF FL DR SEC	X									
a-8	a-8	Pre-position emergency power generation capacity (or have rental/lease agreements for these generators) in critical buildings of cities, counties, and special districts to maintain continuity of government and services.	EQ LS WF FL SEC		X								
a-9	a-9	(REWORDED) Ensure that critical intersection traffic lights function following loss of power by installing battery back-ups, emergency generators, or lights powered by alternative energy sources such as solar. Proper functioning of these lights is essential for rapid evacuation, such as with hazmat releases resulting from natural disasters.	EQ LS WF FL SEC						X			not applicable for a water agency	
a-10	a-10	Develop unused or new pedestrian rights-of-way as walkways to serve as additional evacuation routes (such as fire roads in park lands).	EQ LS WF FL SEC						X			not applicable for a water agency	
a-11	a-11	Minimize the likelihood that power interruptions will adversely impact lifeline utility systems or critical facilities by ensuring that they have adequate back-up power.	EQ LS WF FL SEC		X								
a-12	a-12	Encourage replacing above ground electric and phone wires and other structures with underground facilities, and use the planning-approval process to ensure that all new phone and electrical utility lines are installed underground.	EQ LS WF FL SEC		X								
a-13	a-13	If you own a dam, coordinate with the State Division of Safety of Dams to ensure an adequate timeline for the maintenance and inspection of dams, as required of dam owners by State law, and communicate this information to local governments and the public.	EQ LS WF FL SEC						X				Not a dam owner

Exhibit C

Draft Infrastructure Mitigation Strategies

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a-14	a-14	Encourage communication between State Emergency Management Agency (CalEMA) , FEMA, and utilities related to emergencies occurring outside of the Bay Area that can affect service delivery in the region.	EQ LS WF FL DR SEC	X									
a-15	a-15	Ensure that transit operators, private ambulance companies, cities, and/or counties have mechanisms in place for medical transport during and after disasters that take into consideration the potential for reduced capabilities of roads following these same disasters.	EQ LS WF FL SEC							X		not applicable for a water agency	
a-16	new	Recognize that heat emergencies produce the need for non-medical transport of people to cooling centers by ensuring that (1) transit operators have plans for non-medical transport of people during and after such emergencies including the use of paratransit and (2) cities, counties, and transit agencies have developed ways to communicate the plan to the public.	Heat							X		not applicable for a water agency	
a-17	a-16	Effectively utilize the Regional Transportation Management Center (TMC) in Oakland , the staffing of which is provided by Caltrans, the CHP and MTC. The TMC is designed to maximize safety and efficiency throughout the highway system. It includes the Emergency Resource Center (ERC) which was created specifically for primary planning and procedural disaster management. RESPONSIBLE AGENCY: MTC only.	EQ LS WF FL SEC							X		not applicable for a water agency	
a-18	new	Develop (with the participation of paratransit providers, emergency responders, and public health professionals) plans and procedures for paratransit system response and recovery from disasters.	EQ LS WF FL Heat SEC							X		not applicable for a water agency	
a-19	new	Coordinate with other critical infrastructure facilities to establish plans for delivery of water and wastewater treatment chemicals.	EQ LS WF FL SEC	X									
a-20	new	Establish plans for delivery of fuel to critical infrastructure providers.	EQ LS WF FL SEC		X								

Exhibit C

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a-21	new	As an infrastructure operator, designate a back-up Emergency Operations Center with redundant communications systems.	EQ LS WF FL SEC		X								
a-22	new	Monitor scientific studies of the Sacramento-San Joaquin Delta and policy decisions related to the long-term disaster resistance of that Delta system to ensure that decisions are made based on comprehensive analysis and in a scientifically-defensible manner. Levee failure due to earthquakes, flooding, and climate change (including sea level rise and more frequent and more severe flooding) are all of concern. The long-term health of the Delta area is critical to the Bay Area's water supply, is essential for the San Francisco Bay and estuary's environmental health, provides recreation opportunities for Bay Area residents, and provides the long-term sustainability of Delta communities. While only part of the Delta is within the nine Bay Area counties covered by this multi-jurisdictional LHMP, the Delta is tied to the infrastructure, water supply, and economy of the Bay Area.	EQ FL		X								
INFR - b - Earthquakes													
b-1	b-1	Expedite the funding and retrofit of seismically-deficient city- and county-owned bridges and road structures by working with Caltrans and other appropriate governmental agencies.	EQ							X		not applicable for a water agency	
b-2	b-2	Establish a higher priority for funding seismic retrofit of existing transportation and infrastructure systems (such as BART) than for expansion of those systems.	EQ							X		not applicable for a water agency	
b-3	b-3	Include "areas subject to high ground shaking, earthquake-induced ground failure, and surface fault rupture" in the list of criteria used for determining a replacement schedule for pipelines (along with importance, age, type of construction material, size, condition, and maintenance or repair history).	EQ	x									
b-4	b-4	Install specially-engineered pipelines in areas subject to faulting, liquefaction, earthquake-induced landsliding, or other earthquake hazard.	EQ		X								
b-5	b-5	Replace or retrofit water-retention structures that are determined to be structurally deficient, including levees, dams, reservoirs and tanks.	EQ		X								

Exhibit C

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b-6	b-6	Install portable facilities (such as hoses, pumps, emergency generators, or other equipment) to allow pipelines to bypass failure zones such as fault rupture areas, areas of liquefaction, and other ground failure areas (using a priority scheme if funds are not available for installation at all needed locations).	EQ		X								
b-7	b-7	Install earthquake-resistant connections when pipes enter and exit bridges and work with bridge owners to encourage retrofit of these structures.	EQ		X								
b-8	b-8	Comply with all applicable building and fire codes, as well as other regulations (such as state requirements for fault, landslide, and liquefaction investigations in particular mapped areas) when constructing or significantly remodeling infrastructure facilities.	EQ	X									
b-9	b-9	Clarify to workers in critical facilities and emergency personnel, as well as to elected officials and the public, the extent to which the facilities are expected to perform only at a life safety level (allowing for the safe evacuation of personnel) or are expected to remain functional following an earthquake.	EQ	X									
b-10	b-10	Develop a water-based transportation “system” across the Bay for use in the event of major earthquakes. Implementation of such a system could prove extremely useful in the event of structural failure of either the road-bridge systems or BART and might serve as an adjunct to existing transportation system elements in the movement of large numbers of people and/or goods.	EQ							X		not applicable for a water agency	

Exhibit C

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INFR - c - Wildfire													
c-1	c-1	Ensure a reliable source of water for fire suppression (meeting acceptable standards for minimum volume and duration of flow) for existing and new development.	WF		X								
c-2	c-2	Develop a coordinated approach between fire jurisdictions and water supply agencies to identify needed improvements to the water distribution system, initially focusing on areas of highest wildfire hazard (including wildfire threat areas and in wildland-urban-interface areas).	WF							X			No fire hydrants for public use
c-3	c-3	Develop a defensible space vegetation program that includes the clearing or thinning of (a) non-fire resistive vegetation within 30 feet of access and evacuation roads and routes to critical facilities, or (b) all non-native species (such as eucalyptus and pine, but not necessarily oaks) within 30 feet of access and evacuation roads and routes to critical facilities.	WF		X								
c-4	c-4	For new development , ensure all dead-end segments of public roads in high hazard areas have at least a "T" intersection turn-around sufficient for typical wildland fire equipment.	WF							X		not applicable for a water agency	
c-5	c-5	For new development , enforce minimum road width of 20 feet with an additional 10-foot clearance on each shoulder on all driveways and road segments greater than 50 feet in length in wildfire hazard areas.	WF							X		not applicable for a water agency	
c-6	c-6	Require that development in high fire hazard areas provide adequate access roads (with width and vertical clearance that meet the minimum standards of the <i>Fire Code</i> or relevant local ordinance), onsite fire protection systems, evacuation signage, and fire breaks.	WF							X		not applicable for a water agency	
c-7	c-7	Ensure adequate fire equipment road or fire road access to developed and open space areas.	WF							X		not applicable for a water agency	
c-8	c-8	Maintain fire roads and/or public right-of-way roads and keep them passable at all times.	WF							X		not applicable for a water agency	
INFR - d - Flooding													
d-1	d-1	Conduct a watershed analysis of runoff and drainage systems to predict areas of insufficient capacity in the storm drain and natural creek system.	FL		X								
d-2	d-2	Develop procedures for performing a watershed analysis to examine the impact of development on flooding potential downstream, including communities outside of the jurisdiction of proposed projects.	FL		X								

Exhibit C

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d-3	d-3	Conduct a watershed analysis at least once every ten years unless there is a major development in the watershed or a major change in the Land Use Element of the General Plan of the cities or counties within the watershed.	FL		X								
d-4	d-4	Assist, support, and/or encourage the U.S. Army Corp of Engineers, various Flood Control and Water Conservation Districts, and other responsible agencies to locate and maintain funding for the development of flood control projects that have high cost-benefit ratios (such as through the writing of letters of support and/or passing resolutions in support of these efforts).	FL	X									
d-5	d-5	Pursue funding for the design and construction of storm drainage projects to protect vulnerable properties, including property acquisitions, upstream storage such as detention basins, and channel widening with the associated right-of-way acquisitions, relocations, and environmental mitigations.	FL		X								
d-6	d-6	Continue to repair and make structural improvements to storm drains, pipelines, and/or channels to enable them to perform to their design capacity in handling water flows as part of regular maintenance activities. (This strategy has the secondary benefit of addressing fuel, chemical, and cleaning product issues.)	FL		X								
d-7	d-7	Continue maintenance efforts to keep storm drains and creeks free of obstructions, while retaining vegetation in the channel (as appropriate) to allow for the free flow of water.	FL		X								
d-8	d-8	Enforce provisions under creek protection, stormwater management, and discharge control ordinances designed to keep watercourses free of obstructions and to protect drainage facilities to conform with the Regional Water Quality Control Board's Best Management Practices.	FL		X								
d-9	d-9	Develop an approach and locations for various watercourse bank protection strategies, including for example, (1) an assessment of banks to inventory areas that appear prone to failure, (2) bank stabilization, including installation of rip rap, or whatever regulatory agencies allow (3) stream bed depth management using dredging, and (4) removal of out-of-date coffer dams in rivers and tributary streams.	FL		X								
d-10	d-10	Use reservoir sediment or reed removal as one way to increase storage for both flood control and water supply.	FL		X								

Exhibit C

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d-11	d-11	Identify critical locally-owned bridges affected by flooding and either elevate them to increase stream flow and maintain critical ingress and egress routes or modify the channel to achieve equivalent objectives.	FL		X								
d-12	d-12	Provide or support the mechanism to expedite the repair or replacement of levees that are vulnerable to collapse from earthquake-induced shaking or liquefaction, rodents, and other concerns, particularly those protecting critical infrastructure.	FL		X								This response is based on our maintenence roads being considered levees.
d-13	d-13	Ensure that utility systems in new developments are constructed in ways that reduce or eliminate flood damage.	FL							X		not applicable for a water agency	
d-14	d-14	Determine whether or not wastewater treatment plants are protected from floods, and if not, investigate the use of flood-control berms to not only protect from stream or river flooding, but also increase plant security.	FL							X		not applicable for a water agency	
d-15	d-15	Work cooperatively with water agencies, flood control districts, Caltrans, and local transportation agencies to determine appropriate performance criteria for watershed analysis.	FL		X							Zone 7 Standard Practice	
d-16	d-16	Work for better cooperation among the patchwork of agencies managing flood control issues.	FL	X									
d-17	d-17	Improve monitoring of creek and watercourse flows to predict potential for flooding downstream by working cooperatively with land owners and the cities and counties in the watershed.	FL		X								
d-18	new	Using criteria developed by EPA for asset management, inventory existing assets, the condition of those assets, and improvements needed to protect and maintain those assets. Capture this information in a Geographic Information System (GIS) and use it to select locations for creek monitoring gauges.	FL							X			Flood control properties are listed per GASB34 and Alameda County fixed asset policy

Exhibit C

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INFR - e - Landslides													
e-1	e-1	Include "areas subject to ground failure" in the list of criteria used for determining a replacement schedule (along with importance, age, type of construction material, size, condition, and maintenance or repair history) for pipelines.	LS	X									
e-2	e-2	Establish requirements in zoning ordinances to address hillside development constraints in areas of steep slopes that are likely to lead to excessive road maintenance or where roads will be difficult to maintain during winter storms due to landsliding.	LS							X		not applicable for a water agency	
INFR - f - Building Reoccupancy													
f-1	f-1	Ensure that critical buildings owned or leased by special districts or private utility companies participate in a program similar to San Francisco's Building Occupancy Resumption Program (BORP). The BORP program permits owners of buildings to hire qualified engineers to create facility-specific post-disaster inspection plans and allows these engineers to become automatically deputized as City/County inspectors for these buildings in the event of an earthquake or other disaster. This program allows rapid reoccupancy of the buildings. Note - A qualified (deleted structural) engineer is a California licensed engineer with relevant experience.	EQ LS WF FL SEC							X		not applicable for a water agency	
INFR - g - Public Education													
g-1	g-1	Provide materials to the public related to planning for power outages.	EQ LS WF FL SEC							X		not applicable for a water agency	
g-2	g-2	Provide materials to the public related to family and personal planning for delays due to traffic or road closures, or due to transit system disruption caused by disasters.	EQ LS WF FL SEC							X		not applicable for a water agency	

Exhibit C

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g-3	g-3	Provide materials to the public related to coping with reductions in water supply or contamination of that supply BEYOND regulatory notification requirements.	EQ LS WF FL DR SEC	X									
g-4	g-4	Provide materials to the public related to coping with disrupted storm drains, sewage lines, and wastewater treatment (such as that developed by ABAG's Sewer Smart Program).	EQ LS WF FL DR SEC	X									
g-5	g-5	Facilitate and/or coordinate the distribution of emergency preparedness or mitigation materials that are prepared by others, such as by making the use of the internet or other electronic means , or placing materials on community access channels or in city or utility newsletters, as appropriate.	EQ LS WF FL DR SEC	X									
g-6	new	Sponsor the formation and training of Community Emergency Response Teams (CERT) for the employees of your agency. [Note – these programs go by a variety of names in various cities and areas.]	EQ LS WF FL DR SEC								X		
g-7	new	Develop and distribute culturally appropriate materials related to disaster mitigation and preparedness, such as those on the http://www.preparenow.org website related to infrastructure issues.	EQ LS WF FL DR SEC	X									

Draft Health Mitigation Strategies

2009-2010 Strategy Number		Specific Mitigation Strategy	Applicable Hazards	Priority (CHECK ONLY ONE)								Responsible Agency or Department (Required if Existing Program, Existing Program under funded, Very High, High, or Under Study)	Ordinance or Resolution # (if existing program), Estimated Cost and Possible Funding Agency (if high priority), Estimated Date of Completion (if study), WHY if not same as regional priority, OR Other Comments
2005 Original Strategy Number	Existing Program			Existing Program, underfunded	Very High - Unofficial Program - Becomes Official on Plan Adoption, no funding needed	High - Actively Looking for Funding	Moderate	Under Study	Not Appropriate, or Not Cost Effective	Not Yet Considered			
HEAL - a - Hospitals and Other Critical Health Care Facilities (including those facilities licensed by OSHPD, as well as water agencies, public & private hospitals as noted). To be filled out by cities, counties, and county health department as well as water agencies, public & private hospitals as noted)													
a-1	a-1	Work to ensure that cities, counties, county health departments, and hospital operators coordinate with each other (and that hospitals cooperate with the California Office of Statewide Health Planning and Development - OSHPD) to comply with current state law that mandates that critical facilities are structurally sound and have nonstructural systems designed to remain functional following disasters by 2013. In particular, this coordination should include understanding any problems with obtaining needed funding. RESPONSIBLE AGENCIES: Cities, counties, county health departments, and hospitals	EQ LS WF FL SEC							X		not applicable for a water agency	
a-2	a-2	Encourage hospitals in your community to work with OSHPD to formalize arrangements with structural engineers to report to the hospital, assess damage, and determine if the buildings can be reoccupied. The program should be similar to San Francisco's Building Occupancy Resumption Program (BORP) that permits owners of buildings to hire qualified structural engineers to create building-specific post-disaster inspection plans and allows these engineers to become automatically deputized as inspectors for these buildings in the event of an earthquake or other disaster. OSHPD, rather than city/county building departments, has the authority and responsibility for the structural integrity of hospital structures. RESPONSIBLE AGENCIES: Cities, counties, county health departments, and hospitals	EQ LS WF FL SEC							X		not applicable for a water agency	
a-3	a-3	Ensure health care facilities are adequately prepared to care for victims with respiratory problems related to smoke and/or particulate matter inhalation. RESPONSIBLE AGENCIES: Cities, counties, county health departments, and hospitals	EQ WF SEC							X		not applicable for a water agency	
a-4	a-4	Ensure these health care facilities have the capacity to shut off outside air and be self-contained. RESPONSIBLE AGENCIES: Cities, counties, county health departments, and hospitals	EQ WF SEC							X		not applicable for a water agency	

Draft Health Mitigation Strategies

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a-5	a-5	Ensure that hospitals and other major health care facilities have auxiliary water and power sources. RESPONSIBLE AGENCIES: Cities, counties, county health departments, water suppliers, and hospitals	EQ LS WF FL SEC							X		not applicable for a water agency	
a-6	a-6	Work to ensure that county health departments work with health care facilities to institute isolation capacity should a need for them arise following a communicable disease epidemic. Isolation capacity varies from a section of the hospital for most communicable diseases to the entire hospital for a major pandemic flu. RESPONSIBLE AGENCIES: Cities, counties, county health departments, and hospitals	EQ WF FL SEC							X		not applicable for a water agency	
a-7	a-7	Develop printed materials, utilize existing materials (such as developed by FEMA, the American Red Cross, and others, including non-profit organizations), conduct workshops, and/or provide outreach encouraging employees of these critical health care facilities to have family disaster plans and conduct mitigation activities in their own homes. RESPONSIBLE AGENCIES: Cities, counties, county health departments, and hospitals	EQ LS WF FL SEC							X		not applicable for a water agency	
HEAL - b - Ancillary Health-Related Facilities (including medical offices, pharmacies, free-standing or specialty clinics, etc.)													
b-1	b-1	Identify these ancillary facilities in your community. These facilities are not regulated by OSHPD in the same way as hospitals. RESPONSIBLE AGENCIES: Cities, counties, and county health departments	EQ LS WF FL SEC							X		not applicable for a water agency	
b-2	b-2	Encourage these facility operators to develop disaster mitigation plans. RESPONSIBLE AGENCIES: Cities, counties, and county health departments	EQ LS WF FL SEC							X		not applicable for a water agency	
b-3	b-3	Encourage these facility operators to create, maintain, and/or continue partnerships with local governments to develop response and business continuity plans for recovery. RESPONSIBLE AGENCIES: Cities, counties, and county health departments	EQ LS WF FL SEC							X		not applicable for a water agency	
HEAL - c - Coordination Initiatives													
c-1	c-1	Designate locations for the distribution of antibiotics to large numbers of people should the need arise, as required to be included in each county's Strategic National Stockpile Plan. RESPONSIBLE AGENCIES: County Health Departments	FLU SEC							X		not applicable for a water agency	

Draft Health Mitigation Strategies

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c-2	c-2	Ensure that you know the Metropolitan Medical Response System (MMRS) cities in your area. Fremont, Oakland, San Francisco, and San Jose (plus Sacramento and Stockton) are the MMRS cities in or near the Bay Area . MMRS cities are provided with additional federal funds for organizing, equipping, and training groups of local fire, rescue, medical, and other emergency management personnel to respond to a mass casualty event. (The coordination among public health, medical, emergency management, coroner, EMS, fire, and law enforcement is a model for all cities and counties.) RESPONSIBLE AGENCIES: Cities, counties, county health departments, and hospitals	EQ LS WF FL SEC							X		not applicable for a water agency	
c-3	c-3	Know that National Disaster Medical System (NDMS) uniformed or non-uniformed personnel are within one-to-four hours of your community. These federal resources include veterinary, mortuary, and medical personnel. Teams in or near the Bay Area are headquartered in the cities of Santa Clara and Sacramento. RESPONSIBLE AGENCIES: Cities, counties, county health departments, and hospitals	EQ LS WF FL SEC							X		not applicable for a water agency	
c-4	c-4	Plan for hazmat related-issues due to a natural or technological disaster. Hazmat teams should utilize the State of California Department of Health Services laboratory in Richmond for confirmation of biological agents and Lawrence Livermore National Laboratory or Sandia (both in Livermore) for confirmation of radiological agents. RESPONSIBLE AGENCIES: Cities, counties, county health departments, and hospitals.	EQ WF FL SEC							X		not applicable for a water agency	
c-5	d-1	Create discussion forums for food and health personnel (including, for example, medical professionals, veterinarians, and plant pathologists) to develop safety, security, and response strategies for food supply contamination (at the source, in processing facilities, in distribution centers, and in grocery stores). RESPONSIBLE AGENCIES: County environmental health departments	FL SEC							X		not applicable for a water agency	

Draft Health Mitigation Strategies

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c-6	new	Ensure mental health continuity of operations and disaster planning is coordinated among county departments, (including Public Health and Emergency Services), private sector mental health organizations, professional associations, and national and community-based non-profit agencies involved in supporting community mental health programs. First , such planning should ensure that the capability exists to provide both immediate on-site mental health support at facilities such as evacuation centers, emergency shelters, and local assistance centers, as well as to coordinate on-going mental health support during the long-term recovery process. Second , this planning should ensure that mental health providers, in collaboration with the county agencies responsible for providing public information, are prepared to provide consistent post-disaster stress and other mental health guidance to the public impacted by the disaster.	EQ LS WF FL SEC							X		not applicable for a water agency	
deleted	d-2	(duplicate information to c-2)											
deleted	d-3	(duplicate information to c-3)											
deleted	d-4	(duplicate information to c-4)											

Draft Housing Mitigation Strategies

2009-2010 Strategy Number		Specific Mitigation Strategy	Applicable Hazards	Priority (CHECK ONLY ONE)								Responsible Agency or Department (Required if Existing Program, Existing Program under funded, Very High, High, or Under Study)	Ordinance or Resolution # (if existing program), Estimated Cost and Possible Funding Agency (if high priority), Estimated Date of Completion (if study), WHY if not same as regional priority, OR Other Comments
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HSNG - a - Multi-Hazard													
a-1	a-1	Assist in ensuring adequate hazard disclosure by working with real estate agents to improve enforcement of real estate disclosure requirements for residential properties with regard to seven official natural hazard zones: 1) Special Flood Hazard Areas (designated by FEMA), 2) Areas of Potential Flooding from dam failure inundation, 3) Very High Fire Hazard Severity Zones, 4) Wildland Fire Zones, 5) Earthquake Fault Zones (designated under the Alquist-Priolo Earthquake Fault Zoning Act), and the 6) Liquefaction and Landslide Hazard Zones (designated under the Seismic Hazard Mapping Act).	EQ LS WF FL SEC							X		not applicable for a water agency	
a-2	a-2	Create incentives for private owners of historic or architecturally significant residential buildings to undertake mitigation to levels that will minimize the likelihood that these buildings will need to be demolished after a disaster, particularly if those alterations conform to the federal Secretary of the Interior's <i>Guidelines for Rehabilitation</i> .	EQ LS WF FL SEC							X		not applicable for a water agency	
a-3	NEW Was GOV T b-4	Develop a plan for short-term sheltering of residents of your community in conjunction with the American Red Cross.	EQ LS WF FL SEC							X		not applicable for a water agency	
a-4	NEW Was GOV T b-4	Develop a plan for interim housing for those displaced by working with the Regional Catastrophic Planning Grant Program (CPGP) that funded this effort in 2009. (Estimated completion is 2011.)	EQ LS WF FL SEC							X		not applicable for a water agency	

Draft Housing Mitigation Strategies

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HSNG - b - Single-Family Homes Vulnerable to Earthquakes													
b-1	b-1	Utilize or recommend adoption of a retrofit standard that includes standard plan sets and construction details for voluntary bolting of homes to their foundations and bracing of outside walls of crawl spaces ("cripple" walls), such as Plan Set A developed by a committee representing the East Bay-Peninsula-Monterey Chapters of the International Code Council (ICC), California Building Officials (CALBO), the Structural Engineers Association of Northern California (SEAONC), the Northern California Chapter of the Earthquake Engineering Research Institute (EERI-NC), and ABAG's Earthquake Program.	EQ							X		not applicable for a water agency	
b-2	b-2	Require engineered plan sets for seismic retrofitting of heavy two-story homes with living areas over garages, as well as for split level homes (that is, homes not covered by Plan Set A) , until standard plan sets and construction details become available.	EQ							X		not applicable for a water agency	
b-3	b-3	Require engineered plan sets for seismic retrofitting of homes on steep hillsides (because these homes are not covered by Plan Set A) .	EQ							X		not applicable for a water agency	
b-4	b-4	Encourage local government building inspectors to take classes on a periodic basis (such as the FEMA-developed training classes offered by ABAG) on retrofitting of single-family homes, including application of Plan Set A .	EQ							X		not applicable for a water agency	
b-5	b-5	Encourage private retrofit contractors and home inspectors doing work in your area to take retrofit classes on a periodic basis (such as the FEMA-developed training classes offered by ABAG or additional classes that might be offered by the CALBO Training Institute) on retrofitting of single-family homes.	EQ							X		not applicable for a water agency	
b-6	b-6	Conduct demonstration projects on common existing housing types demonstrating structural and nonstructural mitigation techniques as community models for earthquake mitigation.	EQ							X		not applicable for a water agency	
b-7	b-7	Provide retrofit classes or workshops for homeowners in your community, or help promote utilization of subregional workshops in the South Bay, East Bay, Peninsula, and North Bay as such workshops become available through outreach using existing community education programs .	EQ							X		not applicable for a water agency	
b-8	b-8	Establish tool-lending libraries with common tools needed for retrofitting for use by homeowners with appropriate training.	EQ							X		not applicable for a water agency	

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b-9	b-9	(reworded) Provide financial incentives to owners of single-family homes to retrofit if those retrofits comply with Plan Set A or IEBC 2006 in addition to that provided by existing state law State law that makes such retrofits exempt from increases in property taxes.	EQ							X		not applicable for a water agency	
HSNG - c - Soft-Story Multifamily Residential Structures Vulnerable to Earthquakes													
c-1	c-1	Require engineered plan sets for voluntary or mandatory soft-story seismic retrofits by private owners until a standard plan set and construction details become available.	EQ							X		not applicable for a water agency	
c-2	c-2	Adopt the 2009 (changed date) International Existing Building Code or the latest applicable standard for the design of voluntary or mandatory soft-story building retrofits for use in city/county building department regulations. In addition, allow use of changes to that standard recommended by SEAOC for the 2012 IEBC.	EQ							X		not applicable for a water agency	
c-3	c-3	Work to educate building owners, local government staff, engineers, and contractors on privately-owned soft-story retrofit procedures and incentives using materials such as those developed by ABAG and the City of San Jose (see http://quake.abag.ca.gov/eqhouse.html .)	EQ							X		not applicable for a water agency	
c-4	c-4	Conduct an inventory of privately-owned existing or suspected soft-story residential structures as a first step in establishing voluntary or mandatory programs for retrofitting these buildings.	EQ							X		not applicable for a water agency	
c-5	c-5	Use the soft-story inventory to require private owners to inform all existing tenants (and prospective tenants prior to signing a lease agreement) that they may live in this type of building.	EQ							X		not applicable for a water agency	
c-6	c-6	Use the soft-story inventory to require private owners to inform all existing and prospective tenants that they may need to be prepared to live elsewhere following an earthquake if the building has not been retrofitted.	EQ							X		not applicable for a water agency	
c-7	c-7	Investigate and adopt appropriate financial, procedural, and land use incentives (such as parking waivers) for private owners of soft-story buildings to facilitate retrofit such as those described by ABAG (see http://quake.abag.ca.gov/fixit).	EQ							X		not applicable for a water agency	
c-8	c-8	(reworded) Explore development of State regulations or legislation to require or encourage private owners of soft-story structures to strengthen them.	EQ							X		not applicable for a water agency	

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c-9	c-9	Provide technical assistance in seismically strengthening privately-owned soft-story structures.	EQ							X		not applicable for a water agency	
HSNG - d - Unreinforced Masonry Housing Stock													
d-1	d-1	Continue to actively implement existing State law that requires cities and counties to maintain lists of the addresses of unreinforced masonry buildings and inform private property owners that they own this type of hazardous structure.	EQ							X		not applicable for a water agency	
d-2	d-2	Accelerate retrofitting of privately-owned unreinforced masonry structures that have not been retrofitted, for example, by (a) actively working with owners to obtain structural analyses of their buildings, (b) helping owners obtain retrofit funding, (c) adopting a mandatory versus voluntary, retrofit program, and/or (d) applying penalties to owners who show inadequate efforts to upgrade these buildings.	EQ							X		not applicable for a water agency	
d-3	d-3	Require private owners to inform all existing tenants (and prospective tenants prior to signing a lease agreement) that they live in an unreinforced masonry building and the standard to which it may have been retrofitted.	EQ							X		not applicable for a water agency	
d-4	d-4	As required by State law, require private owners to inform all existing tenants that they may need to be prepared to live elsewhere following an earthquake even if the building has been retrofitted, because it has probably been retrofitted to a life-safety standard, not to a standard that will allow occupancy following major earthquakes.	EQ							X		not applicable for a water agency	

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HSNG - e - Other Privately-Owned Structurally Vulnerable Residential Buildings and Earthquakes													
e-1	e-1	Identify and work toward tying down mobile homes used as year-round permanent residences using an appropriate cost-sharing basis (for example, 75% grant, 25% owner).	EQ							X		not applicable for a water agency	
e-2	e-2	Inventory non-ductile concrete, tilt-up concrete (such as converted lofts), and other privately-owned potentially structurally vulnerable residential buildings.	EQ							X		not applicable for a water agency	
e-3	e-3	Adopt the 2009 International Existing Building Code or the latest applicable standard for the design of voluntary or mandatory retrofit of privately-owned seismically vulnerable buildings.	EQ							X		not applicable for a water agency	
e-4	e-4	Adopt one or more of the following strategies as incentives to encourage retrofitting of privately-owned seismically vulnerable residential buildings: (a) waivers or reductions of permit fees, (b) below-market loans, (c) local tax breaks, (d) grants to cover the cost of retrofitting or of a structural analysis, (e) land use (such as parking requirement waivers) and procedural incentives, or (f) technical assistance.	EQ							X		not applicable for a water agency	
HSNG - f - New Construction and Earthquakes													
f-1	f-1	Continue to require that all new housing be constructed in compliance with (deleted "structural") requirements of the most recently adopted version of the California Building Code.	EQ							X		not applicable for a water agency	
f-2	f-2	Conduct appropriate employee training and support continued education to ensure enforcement of building codes and construction standards, as well as identification of typical design inadequacies of housing and recommended improvements.	EQ							X		not applicable for a water agency	
HSNG - g - Wildfire and Structural Fires													
g-1	g-1	Increase efforts to reduce hazards in existing private development in wildland-urban-interface fire-threatened communities or in areas exposed to high-to-extreme fire threat through improving engineering design and vegetation management for mitigation, appropriate code enforcement, and public education on defensible space mitigation strategies.	WF							X		not applicable for a water agency	
g-2	g-2	Tie public education on defensible space and a comprehensive defensible space ordinance to a field program of enforcement.	WF							X		not applicable for a water agency	

Draft Housing Mitigation Strategies

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g-3	g-3	Require that new homes in wildland-urban-interface fire-threatened communities or in areas exposed to high-to-extreme fire threat be constructed of fire-resistant building materials (including roofing and exterior walls) and incorporate fire-resistant design features (such as minimal use of eaves, internal corners, and open first floors) to increase structural survivability and reduce ignitability. Note - See Structural Fire Prevention Field Guide for Mitigation of Wildfires at http://osfm.fire.ca.gov/structural.html .	WF							X		not applicable for a water agency	
g-4	g-4	Create or identify "model" properties showing defensible space and structural survivability in neighborhoods that are wildland-urban-interface fire-threatened communities or in areas exposed to high-to-extreme fire threat.	WF							X		not applicable for a water agency	
g-5	g-5	Consider fire safety, evacuation, and emergency vehicle access when reviewing proposals to add secondary units or additional residential units in wildland-urban-interface fire-threatened communities or in areas exposed to high-to-extreme fire threat.	WF							X		not applicable for a water agency	
g-6	g-6	Adopt and amend as needed updated versions of the <i>California Building and Fire Codes</i> so that optimal fire-protection standards are used in construction and renovation projects of private buildings .	WF							X		not applicable for a water agency	
g-7	g-7	Create a mechanism to enforce provisions of the <i>California Building and Fire Codes</i> and other local codes that require the installation of smoke detectors and fire-extinguishing systems on existing residential buildings by making installation a condition of (a) finalizing a permit for any work valued at over a fixed amount and/or (b) on any building over 75 feet in height, and/or (b) as a condition for the transfer of property.	WF							X		not applicable for a water agency	
g-8	g-8	Work to ensure a reliable source of water for fire suppression in rural-residential areas through the cooperative efforts of water districts, fire districts, and residents.	WF							X		not applicable for a water agency	
g-9	g-9	Expand vegetation management programs in wildland-urban- interface fire-threatened communities or in areas exposed to high-to-extreme fire threat to more effectively manage the fuel load through roadside collection and chipping, mechanical fuel reduction equipment, selected harvesting, use of goats or other organic methods of fuel reduction, and selected use of controlled burning.	WF							X		not applicable for a water agency	

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g-10	g-11	Establish special funding mechanisms (such as Fire Hazard Abatement Districts or regional bond funding) to fund reduction in fire risk of existing properties through vegetation management that includes reduction of fuel loads, use of defensible space, and fuel breaks.	WF							X		not applicable for a water agency	
g-11	g-12	Work with residents in rural-residential areas to ensure adequate plans are developed for appropriate access and evacuation in wildland-urban-interface fire-threatened communities or in areas exposed to high-to-extreme fire threat. For example, in some areas, additional roads can be created, and in other areas, the communities will need to focus on early warning and evacuation because additional roads are not feasible.	WF							X		not applicable for a water agency	
g-12	g-13	Require fire sprinklers in new homes located more than 1.5 miles or a 5-minute response time from a fire station or in an identified high hazard wildland-urban-interface wildfire area.	WF							X		not applicable for a water agency	
g-13	g-14	Require fire sprinklers in all new or substantially remodeled multifamily housing, regardless of distance from a fire station.	WF							X		not applicable for a water agency	
g-14	g-15	Require sprinklers in all mixed use development to protect residential uses from fires started in non-residential areas.	WF							X		not applicable for a water agency	
g-15	g-16	Compile a list of privately-owned high-rise and high-occupancy buildings which are deemed, due to their age or construction materials, to be particularly susceptible to fire hazards, and determine an expeditious timeline for the fire-safety inspection of all such structures.	WF							X		not applicable for a water agency	
g-16	g-17	Conduct periodic fire-safety inspections of all multi-family buildings, as required by State law.	WF							X		not applicable for a water agency	
g-17	g-18	Ensure that city/county-initiated fire-preventive vegetation-management techniques and practices for creek sides and high-slope areas do not contribute to the landslide and erosion hazard. For example, vegetation in these sensitive areas could be thinned, rather than removed, or replanted with less flammable materials. When thinning, the non-native species should be removed first. Other options would be to use structural mitigation, rather than vegetation management in the most sensitive areas.	WF LS							X		not applicable for a water agency	

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g-18	g-19	Create a mechanism to require the bracing of water heaters and flexible couplings on gas appliances, and/or (as specified under “b. Single-family homes vulnerable to earthquakes” above) the bolting of homes to their foundations and strengthening of cripple walls to reduce fire ignitions due to earthquakes.	EQ WF							X		not applicable for a water agency	
g-19	g-20	Work with the State Fire Marshall, the California Seismic Safety Commission, Pacific Earthquake Engineering Research Center (PEER), and other experts to identify and manage gas-related fire risks of soft-story residential or mixed use buildings that are prone to collapse and occupant entrapment consistent with the natural gas safety recommendations of Seismic Safety Commission Report SSC-02-03. Note - See http://www.seismic.ca.gov/pub/CSSC_2002-03_Natural%20Gas%20Safety.pdf . Also note - any valves that are installed may need to have both excess flow and seismic triggers (“hybrid” valves).	EQ WF							X		not applicable for a water agency	
g-20	new	Work with insurance companies to create a public/private partnership to give a discount on fire insurance premiums to “Forester Certified” Fire Wise landscaping and fire-resistant building materials on private property.	WF							X		not applicable for a water agency	
HSNG - h - Flooding													
h-1	h-1	To reduce flood risk, thereby reducing the cost of flood insurance to private property owners, work to qualify for the highest-feasible rating under the Community Rating System of the National Flood Insurance Program.	FL							X		not applicable for a water agency	
h-2	h-2	Balance the housing needs of residents against the risk from potential flood-related hazards.	FL							X		not applicable for a water agency	
h-3	h-3	Ensure that new private development pays its fair share of improvements to the storm drainage system necessary to accommodate increased flows from the development, or does not increase runoff by draining water to pervious areas or detention facilities.	FL							X		not applicable for a water agency	
h-4	h-4	Provide sandbags and plastic sheeting to residents in anticipation of rainstorms, and deliver those materials to vulnerable populations upon request.	FL							X		not applicable for a water agency	

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h-5	h-5	Provide public information on locations for obtaining sandbags and/or deliver those sandbags to those various locations throughout a city and/or county prior to and/or during the rainy season.	FL							X		not applicable for a water agency	
h-6	h-6	Apply floodplain management regulations for private development in the floodplain and floodway.	FL							X		not applicable for a water agency	
h-7	h-7	Ensure that new subdivisions are designed to reduce or eliminate flood damage by requiring lots and rights-of-way be laid out for the provision of approved sewer and drainage facilities, providing on-site detention facilities whenever practicable.	FL							X		not applicable for a water agency	
h-8	h-8	Encourage home and apartment owners to participate in home elevation programs within flood hazard areas.	FL							X		not applicable for a water agency	
h-9	h-9	As funding opportunities become available, encourage home and apartment owners to participate in acquisition and relocation programs for areas within floodways.	FL							X		not applicable for a water agency	
h-10	h-10	Encourage owners of properties in a floodplain to consider purchasing flood insurance. For example, point out that most homeowners' insurance policies do not cover a property for flood damage.	FL							X		not applicable for a water agency	

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HSNG - i - Landslides and Erosion													
i-1	i-1	Increase efforts to reduce landslides and erosion in existing and future development by improving appropriate code enforcement and use of applicable standards for private property , such as those appearing in the <i>California Building Code</i> , <i>California Geological Survey Special Report 117 – Guidelines for Evaluating and Mitigating Seismic Hazards in California</i> , <i>American Society of Civil Engineers (ASCE) report Recommended Procedures for Implementation of DMG Special Publication 117: Guidelines for Analyzing and Mitigating Landslide Hazards in California</i> , and the <i>California Board for Geologists and Geophysicists Guidelines for Engineering Geologic Reports</i> . Such standards should cover excavation, fill placement, cut-fill transitions, slope stability, drainage and erosion control, slope setbacks, expansive soils, collapsible soils, environmental issues, geological and geotechnical investigations, grading plans and specifications, protection of adjacent properties, and review and permit issuance.	LS							X		not applicable for a water agency	
i-2	i-2	Increase efforts to reduce landslides and erosion in existing and future private development through continuing education of design professionals on mitigation strategies.	LS							X		not applicable for a water agency	

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HSNG - j - Building Reoccupancy													
j-1	j-1 same as econ i-5	Develop and enforce a repair and reconstruction ordinance to ensure that damaged buildings are repaired in an appropriate and timely manner and retrofitted concurrently. This repair and reconstruction ordinance should apply to all public and private buildings, and also apply to repair of all damage, regardless of cause. See http://quake.abag.ca.gov/recovery/info-repair-ord.html.	EQ LS WF FL SEC							X		not applicable for a water agency	
j-2	NE W same as econ i-6	Establish preservation-sensitive measures for the repair and reoccupancy of historically significant privately-owned structures, including requirements for temporary shoring or stabilization where needed, arrangements for consulting with preservationists, and expedited permit procedures for suitable repair or rebuilding of historically or architecturally valuable structures.	EQ LS WF FL SEC							X		not applicable for a water agency	
HSNG - k - Public Education													
k-1	k-1	Provide information to residents of your community on the availability of interactive hazard maps showing your community on ABAG's web site.	EQ LS WF FL SEC							X		not applicable for a water agency	
k-2	k-2	Develop printed materials, utilize existing materials (such as developed by FEMA and the American Red Cross), conduct workshops, and/or provide outreach encouraging residents to have family disaster plans that include drop-cover-hold earthquake drills, fire and storm evacuation procedures, and shelter-in-place emergency guidelines.	EQ LS WF FL SEC							X		not applicable for a water agency	
k-3	k-3	Inform residents of comprehensive mitigation activities, including elevation of appliances above expected flood levels, use of fire-resistant roofing and defensible space in high wildfire threat and wildfire-urban-interface areas, structural retrofitting techniques for older homes, and use of intelligent grading practices through workshops, publications, and media announcements and events.	EQ LS WF FL SEC							X		not applicable for a water agency	
k-4	k-4	Develop a public education campaign on the cost, risk, and benefits of earthquake, flood, and other hazard insurance as compared to mitigation.	EQ LS WF FL SEC							X		not applicable for a water agency	

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k-5	k-5	Use disaster anniversaries, such as April (the 1906 earthquake), September (9/11), and October (Loma Prieta earthquake and Oakland Hills fire), to remind the public of safety and security mitigation activities.	EQ LS WF FL SEC							X		not applicable for a water agency	
k-6	k-6	Sponsor the formation and training of Community Emergency Response Teams (CERT) for residents in your community. [Note – these programs go by a variety of names in various cities and areas.]	EQ LS WF FL SEC							X		not applicable for a water agency	
k-7	k-7	Include flood fighting technique session based on California Department of Water Resources training to the list of available public training classes offered by CERT.	FL							X		not applicable for a water agency	
k-8	k-8	Institute the neighborhood watch block captain and team programs outlined in the Citizen Corps program guide.	EQ LS WF FL SEC							X		not applicable for a water agency	
k-9	k-9	Assist residents in the development of defensible space through the use of, for example, “tool libraries” for weed abatement tools, roadside collection and/or chipping services (for brush, weeds, and tree branches) in wildland-urban-interface fire-threatened communities or in areas exposed to high-to-extreme fire threat.	WF							X		not applicable for a water agency	
k-10	k-10	Train homeowners to locate and shut off gas valves if they smell or hear gas leaking.	EQ LS WF FL SEC							X		not applicable for a water agency	
k-11	k-12	Develop a program to provide at-cost NOAA weather radios to residents of flood hazard areas that request them, with priority to neighborhood watch captains and others trained in their use.	FL							X		not applicable for a water agency	
k-12	k-13	Make use of the materials on the ABAG web site at http://quake.abag.ca.gov/fixit and other web sites to increase residential mitigation activities related to earthquakes. (ABAG plans to continue to improve the quality of those materials over time.)	EQ							X		not applicable for a water agency	
k-13	k-14	Develop a “Maintain-a-Drain” campaign, similar to that of the City of Oakland, encouraging private businesses and residents to keep storm drains in their neighborhood free of debris.	FL							X		not applicable for a water agency	

Draft Housing Mitigation Strategies

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k-14	k-15	Encourage the formation of a community- and neighborhood-based approach to wildfire education and action through local Fire Safe Councils and the <i>Fire Wise Program</i> . This effort is important because grant funds are currently available to offset costs of specific council-supported projects.	WF							X		not applicable for a water agency	
k-15	k-16	Inform shoreline-property owners of the possible long-term economic threat posed by rising sea levels.	FL							X		not applicable for a water agency	
k-16	k-17	Distribute appropriate materials related to disaster mitigation and preparedness to residents. Appropriate materials are (1) culturally appropriate and (2) suitable for special needs populations. For example, such materials are available on the http://www.preparenow.org website and from non-governmental organizations that work with these communities on an on-going basis.	EQ LS WF FL SEC							X		not applicable for a water agency	
deleted	g-10	DELETED - REPLACED BY DISCUSSION OF REVERSE 911 in GOVT c-14.											
deleted	k-11												

Draft Economy Mitigation Strategies

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				Existing Program	Existing Program, underfunded	Very High - Unofficial Program- Becomes Official on Plan Adoption, no funding needed	High - Actively Looking for Funding	Moderate	Under Study	Not Appropriate, or Not Cost Effective	Not Yet Considered		
ECON - a - Multi-Hazard													
a-1	a-1	Assist in ensuring adequate hazard disclosure by working with real estate agents to improve enforcement of real estate disclosure requirements for commercial and industrial properties with regard to seven official natural hazard zones: 1) Special Flood Hazard Areas (designated by FEMA), 2) Areas of Potential Flooding from dam failure inundation, 3) Very High Fire Hazard Severity Zones, 4) Wildland Fire Zones, 5) Earthquake Fault Zones (designated under the Alquist-Priolo Earthquake Fault Zoning Act), and the 6) Liquefaction and Landslide Hazard Zones (designated under the Seismic Hazard Mapping Act).	EQ LS WF FL SEC							X		not applicable for a water agency	
a-2	a-2	Create incentives for private owners of historic or architecturally significant commercial and industrial buildings to undertake mitigation to levels that will minimize the likelihood that these buildings will need to be demolished after a disaster, particularly if those alterations conform to the federal Secretary of the Interior's <i>Guidelines for Rehabilitation</i> .	EQ LS WF FL SEC							X		not applicable for a water agency	
ECON - b - Soft-Story Commercial Buildings Vulnerable to Earthquakes													
b-1	b-1	Require engineered plan sets for voluntary or mandatory soft-story seismic retrofits by private owners until a standard plan set and construction details become available.	EQ							X		not applicable for a water agency	
b-2	b-2	Adopt the 2009 (changed date) International Existing Building Code or the latest applicable standard for the design of voluntary or mandatory soft-story building retrofits for use in city/county building department regulations. In addition, allow use of changes to that standard recommended by SEAOC for the 2012 IEBC.	EQ							X		not applicable for a water agency	
b-3	b-3	Work to educate building owners, local government staff, engineers, and contractors on privately-owned soft-story retrofit procedures and incentives using materials such as those developed by ABAG and the City of San Jose (see http://quake.abag.ca.gov/eqhouse.html .)	EQ							X		not applicable for a water agency	
b-4	b-4	Conduct an inventory of privately-owned existing or suspected soft-story commercial or industrial structures as a first step in establishing voluntary or mandatory programs for retrofitting these buildings.	EQ							X		not applicable for a water agency	

Draft Economy Mitigation Strategies

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b-5	b-5	Use the soft-story inventory to require private owners to inform all existing tenants (and prospective tenants prior to signing a lease agreement) that they may work in this type of building.	EQ							X		not applicable for a water agency	
b-6	b-6	Use the soft-story inventory to require private owners to inform all existing and prospective tenants that they may need to be prepared to work elsewhere following an earthquake if the building has not been retrofitted.	EQ							X		not applicable for a water agency	
b-7	b-7	Investigate and adopt appropriate financial, procedural, and land use incentives (such as parking waivers) for private owners of soft-story buildings to facilitate retrofit such as those described by ABAG (see http://quake.abag.ca.gov/fixit).	EQ							X		not applicable for a water agency	
b-8	b-8	(reworded) Explore development of State regulations or legislation to require or encourage private owners of soft-story structures to strengthen them.	EQ							X		not applicable for a water agency	
b-9	b-9	Provide technical assistance in seismically strengthening privately-owned soft-story structures.	EQ							X		not applicable for a water agency	

Draft Economy Mitigation Strategies

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ECON - c - Unreinforced Masonry Buildings in Older Downtown Areas													
c-1	c-1	Continue to actively implement existing State law that requires cities and counties to maintain lists of the addresses of unreinforced masonry buildings and inform private property owners that they own this type of hazardous structure.	EQ							X		not applicable for a water agency	
c-2	c-2	Accelerate retrofitting of privately-owned unreinforced masonry structures that have not been retrofitted, for example, by (a) actively working with owners to obtain structural analyses of their buildings, (b) helping owners obtain retrofit funding, (c) adopting a mandatory (rather than voluntary) retrofit program, and/or (d) applying penalties to owners who show inadequate efforts to upgrade these buildings.	EQ							X		not applicable for a water agency	
c-3	c-3	Require private owners to inform all existing tenants (and prospective tenants prior to signing a lease agreement) that they work in an unreinforced masonry building and the standard to which it may have been retrofitted.	EQ							X		not applicable for a water agency	
c-4	c-4	As required by State law, require private owners to inform all existing tenants that they may need to be prepared to work elsewhere following an earthquake even if the building has been retrofitted, because it has probably been retrofitted to a life-safety standard, not to a standard that will allow occupancy following major earthquakes.	EQ							X		not applicable for a water agency	
ECON - d - Privately-Owned Structurally Vulnerable Buildings													
d-1	d-1	Inventory non-ductile concrete, tilt-up concrete, and other privately-owned structurally vulnerable buildings.	EQ							X		not applicable for a water agency	
d-2	d-2	Adopt the 2009 International Existing Building Code or the latest applicable standard for the design of voluntary or mandatory retrofit of privately-owned seismically vulnerable buildings.	EQ							X		not applicable for a water agency	
d-3	d-3	Adopt one or more of the following strategies as incentives to encourage retrofitting of privately-owned seismically vulnerable commercial and industrial buildings: (a) waivers or reductions of permit fees, (b) below-market loans, (c) local tax breaks, (d) grants to cover the cost of retrofitting or of a structural analysis, (e) land use (such as parking requirement waivers) and procedural incentives, or (f) technical assistance.	EQ							X		not applicable for a water agency	
ECON - e - Wildfire and Structural Fires													

Draft Economy Mitigation Strategies

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e-1	e-1	Increase efforts to reduce hazards in existing private development in wildland-urban-interface fire-threatened communities or in areas exposed to high-to-extreme fire threat through improving engineering design and vegetation management for mitigation, appropriate code enforcement, and public education on defensible space mitigation strategies.	WF							X		not applicable for a water agency	
e-2	new	Tie public education on defensible space and a comprehensive defensible space ordinance to a field program of enforcement.	WF							X		not applicable for a water agency	
e-3	e-2	Require that new privately-owned business and office buildings in high fire hazard areas be constructed of fire-resistant building materials and incorporate fire-resistant design features (such as minimal use of eaves, internal corners, and open first floors) to increase structural survivability and reduce ignitability.	WF							X		not applicable for a water agency	
e-4	e-3	Adopt and amend as needed updated versions of the <i>California Building and Fire Codes</i> so that optimal fire-protection standards are used in construction and renovation projects of private buildings.	WF							X		not applicable for a water agency	
e-5	e-4	Create a mechanism to enforce provisions of the <i>California Building and Fire Codes</i> and other local codes that require the installation of smoke detectors and fire-extinguishing systems on existing privately-owned buildings by making installation a condition of (a) finalizing a permit for any work valued at over a fixed amount and/or (b) on any building over 75 feet in height, and/or (b) as a condition for the transfer of property.	WF							X		not applicable for a water agency	
e-6	e-5	(reworded to more closely match the HSNG strategy) Expand vegetation management programs in wildland-urban-interface fire-threatened communities or in areas exposed to high-to-extreme fire threat to more effectively manage the fuel load through roadside collection and chipping, mechanical fuel reduction equipment, selected harvesting, use of goats or other organic methods of fuel reduction, and selected use of controlled burning.	WF							X		not applicable for a water agency	
e-7	e-6	Establish special funding mechanisms (such as Fire Hazard Abatement Districts or regional bond funding) to fund reduction in fire risk of existing properties through vegetation management that includes reduction of fuel loads, use of defensible space, and fuel breaks.	WF							X		not applicable for a water agency	

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e-8	e-7	Establish special funding mechanisms (such as Fire Hazard Abatement Districts or regional bond funding) to fund fire-safety inspections of private properties, roving firefighter patrols on high fire-hazard days, and public education efforts.	WF							X		not applicable for a water agency	
e-9	e-8	Compile a list of privately-owned high-rise and high-occupancy buildings that are deemed, due to their age or construction materials, to be particularly susceptible to fire hazards, and determine an expeditious timeline for the fire-safety inspection of all such structures.	WF							X		not applicable for a water agency	
e-10	e-9	Conduct periodic fire-safety inspections of all privately-owned commercial and industrial buildings.	WF							X		not applicable for a water agency	
e-11	e-10	Work with the State Fire Marshall, the California Seismic Safety Commission, Pacific Earthquake Engineering Research Center (PEER), and other experts to identify and manage gas-related fire risks of privately-owned soft-story mixed use buildings that are prone to collapse and occupant entrapment consistent with the natural gas safety recommendations of Seismic Safety Commission Report SSC-02-03. Note - See http://www.seismic.ca.gov/pub/CSSC_2002-03_Natural%20Gas%20Safety.pdf . Also note - any valves that are installed may need to have both	EQ WF							X		not applicable for a water agency	
e-12	e-11	Ensure that city/county-initiated fire-preventive vegetation-management techniques and practices for creek sides and high-slope areas do not contribute to the landslide and erosion hazard.	WF							X		not applicable for a water agency	
e-13	e-12	Work with insurance companies to create a public/private partnership to give a discount on fire insurance premiums to "Forester Certified" <i>Fire Wise</i> landscaping and fire-resistant building materials on private property .	WF							X		not applicable for a water agency	
ECON - f - Flooding													
f-1	f-1	To reduce flood risk, thereby reducing the cost of flood insurance to private property owners, work to qualify for the highest-feasible rating under the Community Rating System of the National Flood Insurance Program.	FL							X		not applicable for a water agency	
f-2	f-2	Balance the needs for private commercial and industrial development against the risk from potential flood-related hazards.	FL							X		not applicable for a water agency	

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f-3	f-3	Ensure that new private development pays its fair share of improvements to the storm drainage system necessary to accommodate increased flows from the development, or does not increase runoff by draining water to pervious areas or detention facilities.	FL							X		not applicable for a water agency	
f-4	f-4	Provide sandbags and plastic sheeting to private businesses in anticipation of rainstorms, and deliver those materials to vulnerable populations upon request.	FL							X		not applicable for a water agency	
f-5	f-5	Provide information to private business on locations for obtaining sandbags and deliver those sandbags to those various locations throughout a city and/or county.	FL							X		not applicable for a water agency	
f-6	f-6	Apply floodplain management regulations for private development in the floodplain and floodway.	FL							X		not applicable for a water agency	
f-7	f-7	Encourage private business owners to participate in building elevation programs within flood hazard areas .	FL							X		not applicable for a water agency	
f-8	f-8	As funding becomes available, encourage private business owners to participate in acquisition and relocation programs for areas within floodways.	FL							X		not applicable for a water agency	
f-9	f-9	Require an annual inspection of approved flood-proofed privately-owned buildings to ensure that (a) all flood-proofing components will operate properly under flood conditions and (b) all responsible personnel are aware of their duties and responsibilities as described in their building's <i>Flood Emergency Operation Plan</i> and <i>Inspection & Maintenance Plan</i> .	FL							X		not applicable for a water agency	

Draft Economy Mitigation Strategies

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ECON - g - Landslides and Erosion													
g-1	g-1	Increase efforts to reduce landslides and erosion in existing and future development by improving appropriate code enforcement and use of applicable standards for private property , such as those appearing in the <i>California Building Code</i> , <i>California Geological Survey Special Report 117 – Guidelines for Evaluating and Mitigating Seismic Hazards in California</i> , American Society of Civil Engineers (ASCE) report <i>Recommended Procedures for Implementation of DMG Special Publication 117: Guidelines for Analyzing and Mitigating Landslide Hazards in California</i> , and the California Board for Geologists and Geophysicists <i>Guidelines for Engineering Geologic Reports</i> . Such standards should cover excavation, fill placement, cut-fill transitions, slope stability, drainage and erosion control, slope setbacks, expansive soils, collapsible soils, environmental issues, geological and geotechnical investigations, grading plans and specifications, protection of adjacent properties, and review and permit issuance.	LS							X		not applicable for a water agency	
g-2	g-2	Increase efforts to reduce landslides and erosion in existing and future private development through continuing education of design professionals on mitigation strategies.	LS							X		not applicable for a water agency	
ECON - h - New Construction and Earthquakes										X		not applicable for a water agency	
h-1	h-1	Continue to require that all new privately-owned commercial and industrial buildings be constructed in compliance with (deleted "structural") requirements of the most recently adopted version of the <i>California Building Code</i> .	EQ							X		not applicable for a water agency	
h-2	h-2	Conduct appropriate employee training and support continued education to ensure enforcement of construction standards for private development .	EQ							X		not applicable for a water agency	
h-3	h-3	Work with private building owners to help them recognize that many strategies that increase earthquake resistance also decrease damage in an explosion. In addition, recognize that ventilation systems can be designed to contain airborne biological agents.	EQ SEC							X		not applicable for a water agency	

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ECON - i - Building Reoccupancy													
i-1	i-1	Institute a program to encourage owners of private buildings to participate in a program similar to San Francisco's Building Occupancy Resumption Program (BORP). This program permits owners of private buildings to hire qualified structural engineers to create building-specific post-disaster inspection plans and allows these engineers to become automatically deputized as City/County inspectors for these buildings in the event of an earthquake or other disaster.	EQ LS WF FL SEC							X		not applicable for a water agency	
i-2	i-2	Actively notify private owners of historic or architecturally significant buildings of the availability of the local BORP-type program and encourage them to participate to ensure that appropriately qualified structural engineers are inspecting their buildings, thus reducing the likelihood that the buildings will be inappropriately evaluated following a disaster.	EQ LS WF FL SEC							X		not applicable for a water agency	
i-3	i-3	Actively notify owners of educational facility buildings of the availability of the local BORP-type program and encourage them to participate to ensure that appropriately qualified structural engineers are inspecting their buildings, thus reducing the likelihood that the buildings will be inappropriately evaluated following a disaster.	EQ LS WF FL SEC							X		not applicable for a water agency	
i-4	i-4	Allow private building owners to participate in a BORP-type program as described above, but not actively encourage them to do so.	EQ LS WF FL SEC							X		not applicable for a water agency	
i-5	i-5	Develop and enforce a repair and reconstruction ordinance to ensure that damaged buildings are repaired in an appropriate and timely manner and retrofitted concurrently. This repair and	EQ LS WF FL SEC							X		not applicable for a water agency	
i-6	i-6	Establish preservation-sensitive measures for the repair and reoccupancy of historically significant privately-owned structures, including requirements for temporary shoring or stabilization where needed, arrangements for consulting with preservationists, and expedited permit procedures for suitable repair or rebuilding of historically or architecturally valuable structures.	EQ LS WF FL SEC							X		not applicable for a water agency	
ECON - j - Public Education													
j-1	j-1	Provide information to private business owners and their employees on the availability of interactive hazard maps on ABAG's web site.	EQ LS WF FL SEC							X		not applicable for a water agency	

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j-2	j-2	Develop printed materials, utilize existing materials (such as developed by FEMA and the American Red Cross), conduct workshops, and/or provide outreach encouraging private businesses' employees to have family disaster plans that include drop-cover-hold earthquake drills, fire and storm evacuation procedures, and shelter-in-place emergency guidelines.	EQ LS WF FL SEC							X		not applicable for a water agency	
j-3	j-3	Develop and print materials, conduct workshops, and provide outreach to Bay Area private businesses focusing on business continuity planning.	EQ LS WF FL SEC							X		not applicable for a water agency	
j-4	j-4	Inform Bay Area private business owners of mitigation activities, including elevation of appliances above expected flood levels, use of fire-resistant roofing and defensible space in wildland-urban-interface fire-threatened communities or in areas exposed to high-to-extreme fire threat, structural retrofitting techniques for older buildings, and use of intelligent grading practices through workshops, publications, and media announcements and events.	WF FL							X		not applicable for a water agency	
j-5	j-5	Sponsor the formation and training of Community Emergency Response Teams (CERT) training for other than your own employees through partnerships with local private businesses. [Note – these programs go by a variety of names in various cities and areas.]	EQ LS WF FL SEC							X		not applicable for a water agency	
j-6	j-6	Assist private businesses in the development of defensible space through the use of, for example, "tool libraries" for weed abatement tools, roadside collection and/or chipping services (for brush, weeds, and tree branches) in wildland-urban-interface fire-threatened communities or in areas exposed to high-to-extreme fire threat.	WF							X		not applicable for a water agency	
j-7	j-7	Make use of the materials developed by others (such as found on ABAG's web site at http://quake.abag.ca.gov/business) to increase mitigation activities related to earthquakes by groups other than your own agency . ABAG plans to continue to improve the quality of those materials over time.	EQ							X		not applicable for a water agency	
j-8	j-8	Develop a "Maintain-a-Drain" campaign, similar to that of the City of Oakland, encouraging private businesses and residents to keep storm drains in their neighborhood free of debris.	FL							X		not applicable for a water agency	

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j-9	j-9	Encourage the formation of a community- and neighborhood-based approach to wildfire education and action through local Fire Safe Councils and the <i>Fire Wise Program</i> . This effort is important because grant funds are currently available to offset costs of specific council-supported projects.	WF							X		not applicable for a water agency	
j-10	j-10	Encourage private businesses and laboratories handling hazardous materials or pathogens increase security to a level high enough to create a deterrent to crime and terrorism, including active implementation of "cradle-to-grave" tracking systems.	SEC EQ							X		not applicable for a water agency	
j-11	j-11	Encourage joint meetings of security and operations personnel at major private employers to develop innovative ways for these personnel to work together to increase safety and security.	SEC EQ							X		not applicable for a water agency	
j-12	j-12	Inform private shoreline-property owners of the possible long-term economic threat posed by rising sea levels.	FL							X		not applicable for a water agency	
j-13	j-13	Distribute appropriate materials related to disaster mitigation and preparedness to private business owners. Appropriate materials are (1) culturally appropriate and (2) suitable for special needs populations. For example, such materials are available on the http://www.preparenow.org website and from non-governmental organizations that work with these communities on an on-going basis.	EQ LS WF FL SEC							X		not applicable for a water agency	

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GOVT - a - Focus on Critical Facilities (...Owned by the Local Government Filling Out This Form)															
a-1	a-1	Assess the vulnerability of critical facilities (such as city halls, fire stations, operations and communications headquarters , community service centers, seaports, and airports) to damage in natural disasters and make recommendations for appropriate mitigation.	EQ LS WF FL		X										
a-2	a-2	Retrofit or replace critical facilities that are shown to be vulnerable to damage in natural disasters.	EQ LS WF FL SEC		X										
a-3	a-3	Clarify to workers in critical facilities and emergency personnel, as well as to elected officials and the public, the extent to which the facilities are expected to perform only at a life safety level (allowing for the safe evacuation of personnel) or are expected to remain functional following an earthquake.	EQ X												
a-4	a-4	Conduct comprehensive programs to identify and mitigate problems with facility contents, architectural components, and equipment that will prevent critical buildings from being functional after major natural disasters. Such contents and equipment includes computers and servers, phones, files, and other tools used by staff to conduct daily business.	EQ LS WF FL SEC		X										
a-5	a-5	Encourage joint meetings of security and operations personnel at critical facilities to develop innovative ways for these personnel to work together to increase safety and security.	EQ LS WF FL SEC X												
a-6	a-6	When Installing micro and/or surveillance cameras around critical public assets tied to web-based software, and develop a surveillance protocol to monitor these cameras, investigate the possibility of using the cameras for the secondary purpose of post-disaster damage assessment.	EQ LS WF FL SEC					X							
a-7	a-7	Identify and undertake cost-effective retrofit measures related to security on critical facilities (such as moving and redesigning air intake vents and installing blast-resistant features) when these buildings undergo major renovations related to other natural hazards.	EQ LS WF FL SEC					X							

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a-8	a-8	Coordinate with the State Division of Safety of Dams to ensure that cities and counties are aware of the timeline for the maintenance and inspection of dams whose failure would impact their jurisdiction	EQ LS WF FL SEC							X			Not a dam owner
a-9	a-9	As a secondary focus, assess the vulnerability of non-critical facilities to damage in natural disasters based on occupancy and structural type, make recommendations on priorities for structural improvements or occupancy reductions, and identify potential funding mechanisms.	EQ LS WF FL SEC					X					
a-10	a-10	Ensure that new government-owned facilities comply with and are subject to the same or more stringent regulations as imposed on privately-owned development.	EQ LS WF FL SEC							X			not applicable for a water agency; however we do follow regulations on any facilities we build
a-11	a-11	Comply with all applicable building and fire codes, as well as other regulations (such as state requirements for fault, landslide, and liquefaction investigations in particular mapped areas) when constructing or significantly remodeling government-owned facilities.	EQ LS WF FL SEC	X									
a-12	a-12	Prior to acquisition of property to be used as a critical facility, conduct a study to ensure the absence of significant structural hazards and hazards associated with the building site.	EQ LS WF FL SEC	X									
a-13	new	Ensure that any regulations imposed on private-owned businesses related to repair and reconstruction (see "Economy Section") are enforced and imposed on local government's own buildings and structures.	EQ LS WF FL SEC							X		not applicable for a water agency	
GOVT - b - Maintain and Enhance Local Government's Emergency Recovery Planning													
b-1	b-1	Establish a framework and process for pre-event planning for post-event recovery that specifies roles, priorities, and responsibilities of various departments within the local government organization, and that outlines a structure and process for policy-making involving elected officials and appointed advisory committees.	EQ LS WF FL SEC	X									
b-2	b-2	Prepare a basic Recovery Plan that outlines the major issues and tasks that are likely to be the key elements of community recovery, as well as integrate this planning into response planning (such as with continuity of operations plans).	EQ LS WF FL SEC							X		not applicable for a water agency	

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b-3	b-3	Establish a goal for the resumption of local government services that may vary from function to function.	EQ LS WF FL SEC							X		not applicable for a water agency	
b-4	b-25	Develop a continuity of operations plan that includes back-up storage of vital records, such as plans and back-up procedures to pay employees and vendors if normal finance department operations are disrupted, as well as other essential electronic files.	EQ LS WF FL SEC							X			not responsible for payroll but, have back-up storage for electronic data.
b-5	new	Plan for the emergency relocation of government-owned facilities critical to recovery, as well as any facilities with known structural deficiencies or in hazardous areas.	EQ LS WF FL SEC							X			Zone 7's EOC is built as essential services building and water treatment plants can not be relocated
GOVT - c - Maintain and Enhance Local Government's Emergency Response Capacity													
c-1	new (old b-4 moved to HSN G a-2)	Develop a plan for short-term and intermediate-term sheltering of your employees.	EQ LS WF FL SEC	X									
c-2	new	Encourage your employees to have a family disaster plan.	EQ LS WF FL SEC								X		Have link to Red Cross web-site for information. Have discussed some elements with EOC staff
c-3	new	Offer CERT/NERT-type training to your employees.	EQ LS WF FL SEC								X		
c-4	b-5 (a)	Periodically assess the need for new or relocated fire or police stations and other emergency facilities.	EQ LS WF FL SEC							X		not applicable for a water agency	
c-5	b-5 (b)	Periodically assess the need for changes in staffing levels, as well as for additional or updated supplies, equipment, technologies, and in-service training classes.	EQ LS WF FL SEC	X									
c-6	b-6	Ensure that fire, police, and other emergency personnel have adequate radios, breathing apparatuses, protective gear, and other equipment to respond to a major disaster.	EQ LS WF FL SEC							X		not applicable for a water agency	

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c-7	b-7	Participate in developing and maintaining a system of interoperable communications for first responders from cities, counties, special districts, state, and federal agencies.	EQ LS WF FL SEC		X								
c-8	b-8	Harden emergency response communications, including, for example, building redundant capacity into public safety alerting and/or answering points, replacing or hardening microwave and simulcast systems, adding digital encryption for programmable radios, and ensuring a plug-and-play capability for amateur radio.	EQ LS WF FL SEC							X		not applicable for a water agency	
c-9	b-9	Purchase command vehicles for use as mobile command/EOC vehicles if current vehicles are unsuitable or inadequate.	EQ LS WF FL SEC							X		not applicable for a water agency	
c-10	b-10	Maintain the local government's emergency operations center in a fully functional state of readiness.	EQ LS WF FL SEC							X		not applicable for a water agency	
c-11	b-11	Expand or participate in expanding traditional disaster exercises involving city and county emergency personnel to include airport and port personnel, transit and infrastructure providers, hospitals, schools, park districts, and major employers.	EQ LS WF FL SEC		X								
c-12	b-12	Maintain and update as necessary the local government's Standardized Emergency Management System (SEMS) Plan and the National Incident Management System (NIMS) Plan, and submit an appropriate NIMSCAST report.	EQ LS WF FL SEC	X									
c-13	b-13	Continue to participate not only in general mutual-aid agreements, but also in agreements with adjoining jurisdictions for cooperative response to fires, floods, earthquakes, and other disasters.	EQ LS WF FL SEC	X									
c-14	b-14 & b-22	Install alert and warning systems for rapid evacuation or shelter-in-place. Such systems include outdoor sirens and/or reverse-911 calling systems.	EQ LS WF FL SEC							X		not applicable for a water agency	
c-15	b-15	Conduct periodic tests of the alerting and warning system. (deleted some wording)	EQ LS WF FL SEC		X								

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c-16	b-16	Regulate and enforce the location and design of street-address numbers on buildings and minimize the naming of short streets (that are actually driveways) to single homes.	EQ LS WF FL SEC							X		not applicable for a water agency	
c-17	b-17	Monitor weather during times of high fire risk using, for example, weather stations tied into police and fire dispatch centers.	WF							X		not applicable for a water agency	
c-18	b-18	Establish regional protocols on how to respond to the NOAA Monterey weather forecasts, such as the identifying types of closures, limits on work that could cause ignitions, and prepositioning of suppression forces. A multi-agency coordination of response also helps provide unified messages to the public about how they should respond to these periods of increased fire danger. Response should also be modified based on knowledge of local micro-climates. Local agencies with less risk then may be available for mutual aid.	WF							X		not applicable for a water agency	
c-19	b-19	Increase local patrolling during periods of high fire weather.	WF							X		not applicable for a water agency	
c-20	b-20	Create and maintain an automated system of rain and flood gauges that is web enabled and publicly-accessible. Work toward creating a coordinated regional system.	FL LS		X								
c-21	b-21	Place remote sensors in strategic locations for early warning of hazmat releases or use of weapons of mass destruction, understanding that the appropriate early warning strategy depends on the type of problem.	EQ LS WF FL SEC		X								
c-22	b-23	Review and update, as necessary, procedures pursuant to the <i>State Dam Safety Act</i> for the emergency evacuation of areas located below major water-storage facilities.	EQ LS FL SEC	X									
c-23	a-8	Improve coordination among cities, counties, and dam owners so that cities and counties can better plan for evacuation of areas the could be inundated if a dam failed, impacting their jurisdiction.	EQ LS FL SEC	X									
c-24	b-24	Develop procedures for the emergency evacuation of areas identified on tsunami evacuation maps as these maps become available.	EQ (TS)								X		
c-25	new	Support and encourage planning and identification of facilities for the coordination of distribution of water, food, blankets, and other supplies, coordinating this effort with the American Red Cross.	EQ LS WF FL SEC		X								
GOVT - d - Participate in National, State, Multi-Jurisdictional and Professional Society Efforts to Identify and Mitigate Hazards													

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d-1	c-1	Promote information sharing among overlapping and neighboring local governments, including cities, counties, and special districts, as well as utilities.	EQ LS WF FL SEC	X									
d-2	c-2	Recognize that emergency services is more than the coordination of police and fire response; it also includes planning activities with providers of water, food, energy, transportation, financial, information, and public health services.	EQ LS WF FL SEC	X									
d-3	c-3	Recognize that a multi-agency approach is needed to mitigate flooding by having flood control districts, cities, counties, and utilities meet at least annually to jointly discuss their capital improvement programs for most effectively reducing the threat of flooding. Work toward making this process more formal to insure that flooding is considered at existing joint-agency meetings.	FL										Meetings occur on a project by project basis (not annually)
d-4	c-4	As new flood-control projects are completed, request that FEMA revise its flood-insurance rate maps and digital Geographic Information System (GIS) data to reflect flood risks as accurately as possible.	FL										
d-5	c-5	Participate in FEMA's National Flood Insurance Program.	FL	X									
d-6	c-6	Participate in multi-agency efforts to mitigate fire threat, such as the Hills Emergency Forum (in the East Bay), various FireSafe Council programs, and city-utility task forces. Such participation increases a jurisdiction's competitiveness in obtaining grants.	WF									not applicable for a water agency	
d-7	c-7	Work with major employers and agencies that handle hazardous materials to coordinate mitigation efforts for the possible release of these materials due to a natural disaster such as an earthquake, flood, fire, or landslide.	EQ LS WF FL SEC	X									
d-8	c-8	Encourage staff to participate in efforts by professional organizations to mitigate earthquake and landslide disaster losses, such as the efforts of the Northern California Chapter of the Earthquake Engineering Research Institute, the East Bay-Peninsula Chapter of the International Code Council, the Structural Engineers Association of Northern California, and the American Society of Grading Officials.	EQ LS										

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d-9	c-9	Conduct and/or promote attendance at local or regional hazard conferences and workshops for elected officials and staff to educate them on the critical need for programs in mitigating earthquake, wildfire, flood, and landslide hazards.	EQ LS WF FL SEC		X								
d-10	c-10	Cooperate with researchers working on government-funded projects to refine information on hazards, for example, by expediting the permit and approval process for installation of seismic arrays, gravity survey instruments, borehole drilling, fault trenching, landslide mapping, flood modeling, and/or damage data collection.	EQ LS WF FL SEC								X		Have done some monitoring for landslide movement in flood control channels
GOVT - d - Take a Lead in Loss and Risk Assessment Activities													
e-1	e-1	Work with the cities, counties, and special districts in the Bay Area to encourage them to adopt a Local Hazard Mitigation Plan and to assist them in integrating it into their overall planning process. RESPONSIBILITY: ABAG only; all others are "not applicable."	EQ LS WF FL DR TS SEC Flu Ag Heat							X		not applicable for a water agency	
e-2	e-2	Improve the risk assessment and loss estimation work in the <i>Taming Natural Disasters</i> report and multi-jurisdictional plan related to natural disasters. RESPONSIBILITY: ABAG only; all others are "not applicable."	EQ LS WF FL DR TS Flu Ag Heat							X		not applicable for a water agency	

Draft Education Mitigation Strategies

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				Existing Program	Existing Program, underfunded very high -	Unofficial Program - Becomes Official on Plan Adoption, no funding needed	High - Actively Looking for Funding	Moderate	Under Study	Not Appropriate, or Not Cost Effective	Not Yet Considered		
EDUC - a - Focus on Critical Facilities (...Owned by School Districts)													
a-1	a-1	Assess the vulnerability of critical public education facilities to damage in natural disasters and make recommendations for appropriate mitigation.	EQ LS WF FL SEC							X		not applicable for a water agency	
a-2	a-2	Retrofit or replace critical public education facilities that are shown to be vulnerable to damage in natural disasters.	EQ LS WF FL SEC							X		not applicable for a water agency	
a-3	a-3	Conduct comprehensive programs to identify and mitigate problems with facility contents, architectural components, and equipment that will prevent critical public education buildings from being functional after major disasters.	EQ LS WF FL SEC							X		not applicable for a water agency	
a-4	a-4	As a secondary focus, assess the vulnerability of non-critical educational facilities (that is, those that do not house students) to damage in natural disasters based on occupancy and structural type, make recommendations on priorities for structural improvements or occupancy reductions, and identify potential funding mechanisms.	EQ LS WF FL SEC							X		not applicable for a water agency	
a-5	new	Assess the vulnerability of critical private education, pre-school, and day care facilities to damage in natural disasters and make recommendations for appropriate mitigation.	EQ LS WF FL SEC							X		not applicable for a water agency	
a-6	a-5	(Major Rewording) Work with CalEMA and the Division of the State Architect to ensure that there will be an adequate group of Safety Assessment Program (SAP) inspectors trained and deployed by CalEMA to schools for post-disaster inspection. In addition, if a school district is uncomfortable with delays in inspection due to too few SAP inspectors available in catastrophic disasters, formalized arrangements can also be created with those inspectors certified by the Division of the State Architect as construction inspectors to report to the district, assess damage, and determine if the buildings can be reoccupied.	EQ LS WF FL SEC							X		not applicable for a water agency	
EDUC - b - Use of Educational Facilities as Emergency Shelters													
b-1	b-1	Work cooperatively with the American Red Cross, cities, counties, and non-profits to set up memoranda of understanding for use of education facilities as emergency shelters following disasters.	EQ LS WF FL SEC							X		not applicable for a water agency	

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b-2	b-2	Work cooperatively to ensure that school district personnel and relevant staff understand and are trained that being designated by the American Red Cross or others as a potential emergency shelter does NOT mean that the school has had a hazard or structural evaluation to ensure that it can be used as a shelter following any specific disaster.	EQ LS WF FL SEC							X		not applicable for a water agency	
b-3	b-3	Work cooperatively to ensure that school district personnel understand and are trained that they are designated as disaster service workers and must remain at the school until released.	EQ LS WF FL SEC							X		not applicable for a water agency	
EDUC - c - Actions Related to Disaster Preparedness and Recovery Planning													
c-1	new	Encourage employees of schools to have family disaster plans and conduct mitigation activities in their own homes.	EQ LS WF FL SEC							X		not applicable for a water agency	
c-2	c-2	Develop plans, in conjunction with fire jurisdictions, for evacuation or sheltering in place of school children during periods of high fire danger, thereby recognizing that overloading of streets near schools by parents attempting to pick up their children during these periods can restrict access by fire personnel and equipment.	EQ LS WF FL SEC							X		not applicable for a water agency	
c-3	c-3	Offer the 20-hour basic CERT training to teachers and after-school personnel.	EQ LS WF FL SEC							X		not applicable for a water agency	
c-4	c-4	Offer the 20-hour basic Student Emergency Response Training (SERT, rather than CERT) training to middle school and/or high school students as a part of the basic science or civics curriculum, as an after school club, or as a way to earn public service hours.	EQ LS WF FL SEC							X		not applicable for a water agency	
c-5	c-5	Offer the 20-hour basic CERT training course through the Adult School system and/or through the Community College system (either using instructors with teaching credentials or by making facilities available for classes not run by school personnel themselves).	EQ LS WF FL SEC							X		not applicable for a water agency	
c-6	c-6	Develop and maintain the capacity for schools to take care of the students for the first 48 hours after a disaster, and notify parents that this capacity exists.	EQ LS WF FL SEC							X		not applicable for a water agency	

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c-7	new	Develop a continuity of operations and disaster recovery plan using models such as that developed by the University of California Berkeley. (The American Red Cross has a role in promoting this activity, as well, in schools that they plan to use as shelters.)	EQ LS WF FL SEC							X		not applicable for a water agency	
EDUC - d- Actions Related to Schools as Conduits for Information to Families About Emergencies													
d-1	c-1	Utilize the unique ability of schools to reach families through educational materials on hazards, mitigation, and preparedness, particularly after disasters and at the beginning of the school year. These efforts will not only make the entire community more disaster-resistant, but speed the return of schools from use as shelters to use as teaching facilities, particularly if coordinated with cities, counties, the American Red Cross and others.	EQ LS WF FL SEC							X		not applicable for a water agency	
d-2	c-7	Develop and distribute culturally appropriate materials related to disaster mitigation and preparedness, such as those on the http://www.preparenow.org website.	EQ LS WF FL SEC							X		not applicable for a water agency	

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ENVI - a - Environmental Sustainability and Pollution Reduction														
a-1	a-1	Continue to enforce State-mandated requirements, such as the <i>California Environmental Quality Act</i> , to ensure that mitigation activities for hazards, such as seismic retrofits and vegetation clearance programs for fire threat, are conducted in a way that reduces environmental degradation such as air quality impacts, noise during construction, and loss of sensitive habitats and species, while respecting the community value of historic preservation.	EQ LS WF FL DR SEC	X										
a-2	a-2	Encourage regulatory agencies to work collaboratively with safety professionals to develop creative mitigation strategies that effectively balance environmental and safety needs, particularly to meet critical wildfire, flood, and earthquake safety levels.	EQ WF FL SEC	X										
a-3	a-3	Continue to enforce and/or comply with State-mandated requirements, such as the <i>California Environmental Quality Act</i> and environmental regulations to ensure that urban development is conducted in a way to minimize air pollution. For example, air pollution levels can lead to global warming, and then to drought, increased vegetation susceptibility to disease (such as pine bark beetle infestations), and associated increased fire hazard.	LS WF FL DR SEC	X										
a-4	a-4	Develop and implement a comprehensive program for watershed management optimizing ecosystem health with water yield to balance water supply, flooding, fire, and erosion concerns.	LS WF FL DR SEC		X								MEIR 07-2918 SMMP 07-2919	
a-5	a-5	Balance the need for the smooth flow of storm waters versus the need to maintain wildlife habitat by developing and implementing a comprehensive Streambed Vegetation Management Plan that ensures the efficacy of flood control efforts, mitigates wildfires and maintains the viability of living rivers .	LS WF FL DR					X						Envisioned with the SMMP or Streams Managemant Master Plan
a-6	a-8	Comply with applicable performance standards of any <i>National Pollutant Discharge Elimination System</i> municipal stormwater permit that seeks to manage increases in stormwater run-off flows from new development and redevelopment construction projects.	FL	X										

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a-7	a-9	Enforce and/or comply with the grading, erosion, and sedimentation requirements by prohibiting the discharge of concentrated stormwater flows by other than approved methods that seek to minimize associated pollution.	LS FL	X									
a-8	a-10	Explore ways to require that hazardous materials stored in the flood zone be elevated or otherwise protected from flood waters.	FL	X									
a-9	a-11	Enforce and/or comply with the hazardous materials requirements of the State of California Certified Unified Program Agency (CUPA).	EQ LS WF FL SEC	X									
a-10	a-12	Provide information on hazardous waste disposal and/or drop off locations.	EQ LS WF FL SEC	X									
a-11	new	When remodeling existing government and infrastructure buildings and facilities, remove asbestos to speed up clean up of buildings so that they can be reoccupied more quickly.	EQ LS WF FL SEC						X				
a-12	a-13	Develop and implement a program to control invasive and exotic species that contribute to fire and flooding hazards (such as eucalyptus, cattails, and cordgrass). This program could include vegetation removal, thinning, or replacement in hazard areas where there is a direct threat to structures.	WF FL		X								
a-13	a-14	Enforce provisions under creek protection, stormwater management, and discharge control ordinances designed to keep watercourses free of obstructions and to protect drainage facilities to conform with the Regional Water Quality Control Board's Best Management Practices.	FL		X								
ENVI - b - Climate Change													
b-1	a-6 + a-7	Stay informed of scientific information compiled by regional and state sources on the subject of rising sea levels and global warming, especially on additional actions that local governments can take to mitigate this hazard including special design and engineering of government-owned facilities in low-lying areas, such as wastewater treatment plants, ports, and airports.	LS WF FL DR	X									

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b-2	new	Inventory global warming emissions in your own local government's operations and in the community, set reduction targets and create an action plan.	LS WF FL DR	X									Inventoried global warming emmisions...Climate Action Leader
b-3	new	Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities.	LS WF FL DR							X		not applicable for a water agency	
b-4	new	Promote transportation options such as bicycle trails, commute trip reduction programs, incentives for car pooling and public transit.	LS WF FL DR							X		not applicable for a water agency (don't promote but, do support)	
b-5	new	Increase the use of clean, alternative energy by, for example, investing in "green tags", advocating for the development of renewable energy resources, recovering landfill methane for energy production, and supporting the use of waste to energy technology.	LS WF FL DR		X								
b-6	new	Make energy efficiency a priority through building code improvements, retrofitting city facilities with energy efficient lighting and urging employees to conserve energy and save money.	LS WF FL DR							X		not applicable for a water agency	
b-7	new	Purchase only Energy Star equipment and appliances for local government use.	LS WF FL DR							X			
b-8	new	Practice and promote sustainable building practices using the U.S. Green Building Council's LEED program or a similar system.	LS WF FL DR								X		No opportunity at this point for new building
b-9	new	Increase the average fuel efficiency of municipal fleet vehicles; reduce the number of vehicles; launch an employee education program including anti-idling messages; convert diesel vehicles to bio-diesel.	LS WF FL DR		X								
b-10	new	Evaluate opportunities to increase pump efficiency in water and wastewater systems; recover wastewater treatment methane for energy production.	LS WF FL DR		X								
b-11	new	Increase recycling rates in local government operations and in the community.	LS WF FL DR							X		not applicable for a water agency	
b-12	new	Maintain healthy urban forests; promote tree planting to increase shading and to absorb CO2.	LS WF FL DR							X		not applicable for a water agency	

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b-13	new	Help educate the public, schools, other jurisdictions, professional associations, business and industry about reducing global warming pollution.	LS WF FL DR							X		not applicable for a water agency	
ENVI - c - Agricultural and Aquaculture Resilience													
c-1	b-1	Maintain a variety of crops in rural areas of the region to increase agricultural diversity and crop resiliency. RESPONSIBLE AGENCIES: County Offices of the Agricultural Commissioner.	Ag DR SEC							X		not applicable for a water agency	
c-2	b-2	Promote and maintain the public-private partnerships dedicated to preventing the introduction of agricultural pests into regionally-significant crops, such as the glassy-winged sharpshooter into vineyards. RESPONSIBLE AGENCIES: County Offices of the Agricultural Commissioner.	Ag DR SEC							X		not applicable for a water agency	
c-3	b-4	Encourage livestock operators to develop an early-warning system to detect animals with communicable diseases (due to natural causes or bioterrorism). RESPONSIBLE AGENCIES: County Health Department and Office of the County Agricultural Commissioner.	Ag Flu SEC							X		not applicable for a water agency	
deleted	b-3	(deleted since not a disaster-related strategy)											

Draft Land Use Mitigation Strategies

2009 Strategy Code	Original Strategy Number	Specific Mitigation Strategy	Applicable Hazards	Priority (CHECK ONLY ONE)							Responsible Agency or Department (Required if Existing Program, Existing Program under funded, Very High, High, or Under Study)	Ordinance or Resolution # (if existing program), Estimated Cost and Possible Funding Agency (if high priority), Estimated Date of Completion (if study), WHY if not same as regional priority, OR Other Comments	
				Existing Program	Existing Program, underfunded	Program-Becomes Official on Plan Adoption, no funding needed	High - Actively Looking for Funding	Moderate	Under Study	Not Applicable, Not Appropriate, or Not Cost Effective	Not Yet Considered		
LAND - a - Earthquake Hazard Studies for New Private Developments													
a-1	a-1	Enforce and/or comply with the State-mandated requirement that site-specific geologic reports be prepared for development proposals within Alquist-Priolo Earthquake Fault Zones, and restrict the placement of structures for human occupancy. (This Act is intended to deal with the specific hazard of active faults that extend to the earth's surface, creating a surface rupture hazard.)	EQ							X		not applicable for a water agency	
a-2	a-2	Require preparation of site-specific geologic or geotechnical reports for development and redevelopment proposals in areas subject to earthquake-induced landslides or liquefaction as mandated by the State Seismic Hazard Mapping Act in selected portions of the Bay Area where these maps have been completed, and condition project approval on the incorporation of necessary mitigation measures related to site remediation, structure and foundation design, and/or avoidance.	EQ							X		not applicable for a water agency	
a-3	a-3	Recognizing that some faults may be a hazard for surface rupture, even though they do not meet the strict criteria imposed by the Alquist-Priolo Earthquake Fault Zoning Act, identify and require geologic reports in areas adjacent to locally-significant faults.	EQ							X		not applicable for a water agency	
a-4	new	Ensure that development proposed near faults with a history of complex surface rupture (multiple traces, warping, thrusting, etc.) has larger setbacks than the minimum fifty feet.	EQ							X		not applicable for a water agency	
a-5	new	Consider imposing requirements similar to the Alquist-Priolo Earthquake Fault Zoning Act for structures without human occupancy if these buildings are still essential for the economic recovery of the community or region.	EQ							X		not applicable for a water agency	
a-6	a-4	Recognizing that the California Geological Survey has not completed earthquake-induced landslide and liquefaction mapping for much of the Bay Area, identify and require geologic reports in areas mapped by others as having significant liquefaction or landslide hazards.	EQ							X		not applicable for a water agency	
a-7	a-5	Support and/or facilitate efforts by the California Geological Survey to complete the earthquake-induced landslide and liquefaction mapping for the Bay Area.	EQ							X		not applicable for a water agency	

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2009 Strategy Code	Original Strategy Number	Specific Mitigation Strategy	Applicable Hazards	Existing Program	Existing Program, underfunded	Program-Becomes Official on Plan Adoption, no funding needed	High - Actively Looking for Funding	Moderate	Under Study	Not Applicable, Not Appropriate, or Not Cost Effective	Not Yet Considered	Responsible Agency or Department (Required if Existing Program, Existing Program under funded, Very High, High, or Under Study)	Ordinance or Resolution # (if existing program), Estimated Cost and Possible Funding Agency (if high priority), Estimated Date of Completion (if study), WHY if not same as regional priority, OR Other Comments
a-8	a-6	Require that local government reviews of geologic and engineering studies are conducted by appropriately trained and credentialed personnel.	EQ							X		not applicable for a water agency	
LAND - b - Wildland and Structural Fires													
b-1	b-1	Review new development proposals to ensure that they incorporate required and appropriate fire-mitigation measures, including adequate provisions for occupant evacuation and access by emergency response personnel and equipment.	WF							X		not applicable for a water agency	
b-2	b-2	Develop a clear legislative and regulatory framework at both the state and local levels to manage the wildland-urban-interface consistent with <i>Fire Wise</i> and sustainable community principles.	WF							X		not applicable for a water agency	
LAND - c - Flooding													
c-1	c-1	Establish and enforce requirements for new development so that site-specific designs and source-control techniques are used to manage peak stormwater runoff flows and impacts from increased runoff volumes.	FL							X		not applicable for a water agency	
c-2	c-2	Incorporate FEMA guidelines and suggested activities into local government plans and procedures for managing flood hazards.	FL							X		not applicable for a water agency	
c-3	c-3	Provide an institutional mechanism to ensure that development proposals adjacent to floodways and in floodplains are referred to flood control districts and wastewater agencies for review and comment (consistent with the NPDES program).	FL							X		not applicable for a water agency	
c-4	c-4	Establish and enforce regulations concerning new construction (and major improvements to existing structures) within flood zones in order to be in compliance with federal requirements and, thus, be a participant in the Community Rating System of the <i>National Flood Insurance Program</i> .	FL							X		not applicable for a water agency	
c-5	new	Encourage new development near floodways to incorporate a buffer zone or setback from that floodway to allow for changes in stormwater flows in the watershed over time.	FL							X		not applicable for a water agency	
c-6	new	For purposes of creating an improved hazard mitigation plan for the region as a whole, ABAG, and Bay Area cities and counties, jointly request geographically defined repetitive flooding loss data from FEMA for their own jurisdictions.	FL							X		not applicable for a water agency	
LAND - d - Landslides and Erosion													

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d-1	d-1	Establish and enforce provisions (under subdivision ordinances or other means) that geotechnical and soil-hazard investigations be conducted and filed to prevent grading from creating unstable slopes, and that any necessary corrective actions be taken prior to development approval.	LS							X		not applicable for a water agency	
d-2	d-2	Require that local government reviews of these investigations are conducted by appropriately trained and credentialed personnel.	LS							X		not applicable for a water agency	
d-3	d-3	Establish and enforce grading, erosion, and sedimentation ordinances by requiring, under certain conditions, grading permits and plans to control erosion and sedimentation prior to development approval.	LS							X		not applicable for a water agency	
d-4	d-4	Establish and enforce provisions under the creek protection, storm water management, and discharge control ordinances designed to control erosion and sedimentation.	LS							X		not applicable for a water agency	
d-5	d-5	Establish requirements in zoning ordinances to address hillside development constraints, especially in areas of existing landslides.	LS							X		not applicable for a water agency	
LAND - e - Hillside - Multi-Hazard													
e-1	e-1	For new development, require a buffer zone between residential properties and landslide or wildfire hazard areas.	LS WF							X		not applicable for a water agency	
e-2	e-2	Discourage, add additional mitigation strategies, or prevent new construction or major remodels on slopes greater than a set percentage, such as 15%, due to landslide or wildfire hazard concerns.	LS WF							X		not applicable for a water agency	
LAND - f - Smart Growth to Revitalize Urban Areas and Promote Sustainability													
f-1	f-1	Prioritize retrofit of infrastructure that serves urban areas (or urban services areas) over constructing new infrastructure to serve outlying areas.	EQ LS WF FL DR SEC							X		not applicable for a water agency	
f-2	f-2	Work to retrofit homes in older urban neighborhoods to provide safe housing close to job centers.	EQ LS WF FL DR SEC							X		not applicable for a water agency	

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f-3	f-3	Work to retrofit older downtown areas and redevelopment districts to protect architectural diversity and promote disaster-resistance.	EQ LS WF FL SEC							X		not applicable for a water agency	
f-4	f-4	Work with non-profits and through other mechanisms to protect as open space areas susceptible to extreme hazards (such as through land acquisition, zoning, and designation as priority conservation areas).	EQ LS WF FL SEC							X		not applicable for a water agency	
f-5	f-5	Strive to provide preserve existing buffers between development and existing users of large amounts of hazardous materials, such as major industry, due to the potential for catastrophic releases or fires due to an earthquakes, accidents , or terrorism. (Flooding might also result in release or spread of these materials, however it is unlikely.) In areas where buffers do not exist or cannot be created, provide alternative mitigation.	EQ LS WF FL SEC							X		not applicable for a water agency	
LAND - g - Hazard Abatement Districts													
g-1	new	Use hazard abatement districts as a funding mechanism to ensure that mitigation strategies are implemented and enforced over time.	EQ LS WF FL							X		not applicable for a water agency	