

Infrastructure Mitigation Strategies										
		Priority (CHECK ONLY ONE)								
	Specific Mitigation Strategy	Existing Program	Very High	High	Moderate	Under Study	Not Applicable, Not Appropriate, or Not Cost Effective	Not Yet Considered	Responsible Agency or Department (Required if Existing Program, 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) OR Other Comments
INFR - a - Multihazard										
1)	Assess the vulnerability of critical facilities designated by lifeline operators to damage in natural disasters or security threats, including facilities owned outside of the Bay Area that can impact service delivery within the region. Note - Lifeline agencies, departments, and districts are those that operate transportation and utility facilities and networks.	X							San Mateo County Planning, Public Works, OES	
2)	Comply with State of California and federal requirements to assess the vulnerability of dams to damage from earthquakes, seiches, landslides, liquefaction, or security threats.						X			
3)	Encourage the cooperation of utility system providers and cities, counties, and other special districts to develop strong and effective mitigation strategies for infrastructure systems and facilities.	X							San Mateo County OES	
4)	Retrofit or replace critical lifeline facilities and/or their backup facilities that are shown to be vulnerable to damage in natural disasters.			X					San Mateo County Planning & Public Works, Office of Emergency Services	Replacement of County Emergency Operations Center (EOC) and back-up EOC cost TBD. Future FEMA EOC Grant may assist in funding toward facility enhancements or replacement.
5)	Support and encourage efforts of other (lifeline) 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.)						X			
6)	Plan for speeding the repair and functional restoration of lifeline systems through stockpiling of shoring materials, temporary pumps, surface pipelines, portable hydrants, and other supplies, such as those available through the Water Agency Response Network (WARN).	X							CountyFire	No ordinance

7)	Engage in, support, and/or encourage research by others on measures to further strengthen transportation, water, sewer, and power systems so that they are less vulnerable to damage in disasters.						X			
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.	X							Office of Emergency Services, Public Works	4 portable generators positioned in North, Central, South and Coastside OES Zones in 2009
9)	Have back-up emergency power available for critical intersection traffic lights.						X			
10)	Develop unused or new pedestrian rights-of-way as walkways to serve as additional evacuation routes (such as fire roads in park lands).						X			
11)	Coordinate with PG&E and others to investigate ways of minimizing the likelihood that power interruptions will adversely impact vulnerable communities, such as the disabled and the elderly.	X							Office of Emergency Services	Coordination in place since 2000 implemented during PG&E rolling blackouts
12)	Encourage replacing aboveground 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.						X			
13)	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.						X			
14)	Encourage communication between Cal EMA, FEMA, and utilities related to emergencies occurring outside of the Bay Area that can affect service delivery in the region.						X			
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.	X							CountyHealth Services, Emergency Medical Services	The County's 911-ambulance contractor has an internal disaster plan for continuity of operations during disasters. EMS has a resource directory that identifies alternative ambulance and transportation apparatus. Drivers and rigs have mapping capabilities to find alternative routes to destination points.

16)	Effectively utilize the Transportation Management Center (TMC), 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.	X							Cal EMA Coastal	Attend meetings and participate in exercises
INFR - b - Earthquakes										
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.	X							Department of Public Works	
2)	Establish a higher priority for funding seismic retrofit of existing transportation and infrastructure systems (such as BART) than for expansion of those systems.						X			
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).						X			
4)	Install specially-engineered pipelines in areas subject to faulting, liquefaction, earthquake-induced landsliding, or other earthquake hazard.						X			
5)	Replace or retrofit water-retention structures that are determined to be structurally deficient.						X			
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).						X			
7)	Install earthquake-resistant connections when pipes enter and exit bridges.						X			
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.	X							Planning and Building	Division VII Building Regulations

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.						X			
10)	Examine the feasibility of developing a water-borne transportation "system" – comprised mainly of relatively inexpensive barges – 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.						X			
INFR - c - Wildfire										
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.	X							CountyFire	Division VII Building Regulations
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.	X							CountyFire	Recently completed improvements to Pescadero and Skyline water systems
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.	X							CountyFire	Division VII Building Regulations
4)	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.	X							CountyFire	Division VII Building Regulations
5)	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.	X							CountyFire	Division VII Building Regulations

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.	X						CountyFire	Division VII Building Regulations
7)	Ensure adequate fire equipment road or fire road access to developed and open space areas.	X						CountyFire	Division VII Building Regulations (new roads only)
8)	Maintain fire roads and/or public right-of-way roads and keep them passable at all times.	X						CountyFire, Public Works	County Roads - Road Fund, 1/2 cent Transportation Mitigation Fees County Fire lacks funds needed to maintain fire roads
INFR - d - Flooding									
1)	Conduct a watershed analysis of runoff and drainage systems to predict areas of insufficient capacity in the storm drain and natural creek system.					X		Public Works	
2)	Develop procedures for performing a watershed analysis to look at the impact of development on flooding potential downstream, including communities outside of the jurisdiction of proposed projects.	X						Public Works, Planning and Building	Development Review Process, CEQA
3)	Conduct a watershed analysis at least once every three years.					X			
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).	X						Public Works	SFC General Investigation - No resolution yet, working on feasibility cost share study to move into feasibility phase
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.	X						Public Works	SFC General Investigation - No resolution yet, working on feasibility cost share study to move into feasibility phase Including projects for mitigation of flood hazards from Butano Creek in Pescadero.
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.	X						Public Works	Road funds, flood control zones
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.	X						Public Works	

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.	X							Public Works, Planning and Building, Environmental Health	Local Coastal Program, Municipal Regional Permit, Chapter 4.100 of the County Code
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, (3) stream bed depth management using dredging, and (4) removal of out-of-date coffer dams in rivers and tributary streams.	X							Public Works	Existing studies on some watersheds performed as needed with potential road failure
10)	Use reservoir sediment removal as one way to increase storage for both flood control and water supply.					X			Public Works	May be considered for San Francisquito Creek. General investigation still pending.
11)	Elevate critical bridges affected by flooding to increase stream flow and maintain critical access and egress routes.	X							Public Works	Colma Creek - existing program. 50 year event with 2' freeboard. San Mateo Avenue Bridge recently raised.
12)	Provide a 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.	X							Public Works	Maintain levees are along creeks. Routine inspection, maintenance, and emergency maintenance. San Carlos Airport levees recently raised and protocols for inspection and maintenance established.
13)	Ensure that utility systems in new developments are constructed in ways that reduce or eliminate flood damage.	X							Planning and Building	Development Review Procedures, CEQA
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 increasing plant security.	X							Planning and Building	Climate Change and Energy Efficiency General Plan Update
15)	Work cooperatively with water agencies, flood control districts, Caltrans, and local transportation agencies to determine appropriate performance criteria for watershed analysis.	X							Public Works, Planning and Building	
16)	Work for better cooperation among the patchwork of agencies managing flood control issues.	X							Public Works	Bay Area Flood Protection Agencies Association member
17)	Work cooperatively with upstream communities to monitor creek and watercourse flows to predict potential for flooding downstream.	X							Public Works, Office of Emergency Services	Installed and contributed to a number of stream gauge programs and enhancements.

INFR - e - Landslides									
1) Include "areas subject to ground failure" in the list of criteria used for determining a replacement schedule (along with importance, age, and type of construction material, size, condition, and maintenance or repair history) for pipelines.						X			
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.	X							Planning and Building	Geologic Hazard Zoning District Regulations
INFR - f - Building Reoccupancy									
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 structural engineers [1] 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 structural engineer is a California licensed structural engineer with relevant experience.						X			
INFR - g - Public Education									
1) Provide materials to the public related to planning for power outages.	X							Office of Emergency Services	OES web page http://smcready.org/ In support of PG&E
2) Provide materials to the public related to family and personal planning for delays due to traffic or road closures.	X							Office of Emergency Services	OES promotes use of 5-1-1, County's email/text system called SMC ALERT for these notifications. In support of Cal EMA, MTC and CHP
3) Provide materials to the public related to coping with reductions in water supply or contamination of that supply.	X							Public Works, Office of Emergency Services	Information provided as needed / Have an emergency water plan
4) Provide materials to the public related to coping with disrupted storm drains, sewage lines, and wastewater treatment.	X							Office of Emergency Services	In support of Public Works, Health Services on an event by event basis.
5) Facilitate and/or coordinate the distribution of materials that are prepared by others, such as by placing materials in city or utility newsletters, or on community access channels, as appropriate.	X							Office of Emergency Services	Support special districts such as water districts.

6)	Sponsor the formation and training of Community Emergency Response Teams (CERT) for the employees of your agency.	X							Office of Emergency Services	Provide CERT instructors, and equipment for classes countywide. Supplies now sponsored by CalVol (California Volunteers) limited to a maximum of 50 units per course, per CERT program, per year.
7)	Develop and distribute culturally appropriate materials related to disaster mitigation and preparedness	X							Office of Emergency Services	http://smcready.org Get Ready San Mateo County available in Spanish upon request.

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