

8.2 IDENTIFYING MITIGATION ACTIONS

The requirements for the identification and analysis of mitigation actions, as stipulated in DMA 2000 and its implementing regulations, are described below.

DMA 2000 REQUIREMENTS: MITIGATION STRATEGY

Identification and Analysis of Mitigation Actions

Requirement §201.6(c)(3)(ii): [The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

Element

- Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each hazard?
- Do the identified actions and projects address reducing the effects of hazards on new buildings and infrastructure?
- Do the identified actions and projects address reducing the effects of hazards on existing buildings and infrastructure?
- Does the mitigation strategy identify actions related to the participation in and continued compliance with the NFIP?

Source: FEMA 2008.

During the second Planning Team meeting on June 25, 2008, the Planning Team reviewed a draft of the vulnerability analysis and hazard maps as a basis for developing potential mitigation actions. In addition, the Planning Team reviewed the 2 mitigation actions selected in the 2005 HMP (one mitigation action, the seismic retrofit of the Port of San Francisco Agriculture Building, has already been implemented). Using this information, the Planning Team members were asked to develop new and additional potential mitigation actions. Mitigation actions are activities, measures, or projects that help achieve the goals of a mitigation plan. Mitigation actions are usually grouped into six broad categories: prevention, property protection, public education and awareness, natural resource protection, emergency services, and structural projects.

As listed in Table 8-2, the Planning Team developed 33 potential mitigation actions. For each mitigation action, the following information is listed: type of mitigation project; hazard(s) addressed; type of development affected by action; and the source of the mitigation project idea.

Table 8-2 Potential Mitigation Actions

| Goal | Action # | Action Description | Mitigation Type | Hazard(s) Addressed* | Existing or New Development | Project Idea Source |
|--|-----------------|---|----------------------------------|-------------------------------------|------------------------------------|----------------------------|
| Promote disaster-resistant development. | 1.A | Create a coordinated voluntary and mandatory GIS-based pre-application review for new construction and major remodels in hazard areas, such as liquefaction, lateral spread, landslide, or SFHA zones. | Property Protection | Seismic, Flood, Landslide | New & Existing | HMP Planning Team |
| | 1.B | Integrate the ERP and 2008 HMP into the General Plan’s Community Safety Element update process. | Prevention & Property Protection | All | New & Existing | HMP Planning Team |
| Build and support local capacity to enable the City government and the greater San Francisco community to prepare for, respond to, and recover from disasters. | 2.A | Retrofit major utilities or mitigate land (e.g., slope stabilization, vegetation management) around the major utilities so that they can function before, during, and after a disaster. | Prevention | Seismic, Flood, Landslide, Wildfire | Existing | URS |
| | 2.B | Inventory and develop replacement values for all City-owned facilities to help the City better understand the values of assets at risk. | Property Protection | All | Existing | Risk Management Division |
| | 2.C | Replace and/or seismically retrofit the AWSS infrastructure to ensure that emergency water is available during a disaster. | Structural Project | Seismic | Existing | Capital Planning Program |
| | 2.D | Seismically retrofit or replace City-owned bridges and other critical street structures that are categorized as structurally deficient by Caltrans and are necessary for first responders to use during an emergency. | Structural Project | Seismic | Existing | Capital Planning Program |
| | 2.E | Structurally and non-structurally retrofit the future San Francisco Data Center to ensure that City’s emergency communication functions are operable during and after a disaster. | Structural Project | Seismic | Existing | Capital Planning Program |
| | 2.F | Carry out exercises and interdepartmental meetings to ensure that all City plans related to emergency management are integrated and cohesive. | Emergency Services | All | N/A | HMP Planning Team |

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| Goal | Action # | Action Description | Mitigation Type | Hazard(s) Addressed* | Existing or New Development | Project Idea Source |
|--|----------|---|---|----------------------|-----------------------------|-------------------------------|
| Reduce the possibility of damages and losses due to seismic hazards, including ground shaking, ground failure, and tsunami.* | 3.A | Develop a Soft-Story Seismic Retrofit program that provides funding to seismically retrofit soft-story buildings throughout San Francisco. | Property Protection, Structural Project | Seismic | Existing | Planning Department |
| | 3.B | Implement industry guidelines and building codes developed by the PEER Tall Building Initiative. | Structural Project | Seismic | New & Existing | HMP Planning Team |
| | 3.C | Participate in the Tsunami Ready Program. This new program, sponsored by the National Weather Service, is designed to provide communities with incentives to reduce tsunami risks. | Public Education & Awareness | Seismic (Tsunami) | N/A | NOAA |
| | 3.D | Seismically upgrade the Port’s facilities identified in the Port’s Capital Plan. | Structural Project | Seismic | Existing | 2005 HMP |
| | 3.E | Structurally and non-structurally brace the areas of the Veterans Building, including Herbst Theatre and the Green Room, that are most at risk to severe damage during a seismic event. | Property Protection, Structural Project | Seismic | Existing | Capital Planning Program |
| | 3.F | Structurally and non-structurally brace SFUSD facilities as identified in its Capital Improvements Plan. | Property Protection, Structural Project | Seismic | Existing | HMP Planning Team |
| | 3.G | Implement geotechnical stabilization measures to protect the Treasure Island from seismic hazards. | Structural Projects | Seismic | New & Existing | TIDA |
| | 3.H | Seismically upgrade Treasure Island Causeway, which is a critical lifeline access to the island, and to protect the utility corridor that runs under the causeway. | Structural Project | Seismic | Existing | TIDA |
| | 3.I | Seismically retrofit or upgrade Recreation and Parks Department facilities identified as potential shelters. | Structural Project | Seismic | Existing | Parks & Recreation Department |

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| Goal | Action # | Action Description | Mitigation Type | Hazard(s) Addressed* | Existing or New Development | Project Idea Source |
|---|----------|--|---|----------------------|-----------------------------|--|
| Reduce the possibility of damages and losses due to weather-related hazards, including drought, flood, heat, landslide, wildfire, and wind. | 4.A | Upon joining the NFIP, implement the floodplain management ordinance for existing and new development in the SFHA (identify structures/parcels located in the SFHA, incorporate elevation requirements into the development of a permitting process for new or substantially improved properties, and prepare of Elevation Certificates when necessary). | Property Protection | Flood | New & Existing | Port of San Francisco, City Administrator |
| | 4.B | Implement landscape-based stormwater management techniques in San Francisco, including Low Impact Development (LID) projects such as vegetated swales and infiltration basins that can recharge groundwater reserves. | Public Education & Awareness, Natural Resource Protection | Flood (Stormwater) | Existing | SFPUC Stormwater Management Demonstration Projects |
| | 4.C | Implement a grant-funded program for the Voluntary Fire Sprinkler Retrofit program. | Property Protection | Urban Conflagration | Existing | HMP Planning Team |
| | 4.D | Stabilize cliffs susceptible to sliding and failure through bolts, soft netting, and vegetation stabilization methods. | Prevention, Property Protection | Landslide | New & Existing | USGS |
| | 4.E | Develop and implement beach-nourishment projects for San Francisco beaches affected by beach erosion caused by strong El Niños. | Natural Resource Protection | Flood/Wind | Existing | DPW |
| | 4.F | Develop and implement a stormwater systems upgrade to better accommodate stormwater and reduce stormwater ponding and localized flooding. | Prevention | Flood (Stormwater) | Existing | PUC |
| | 4.G | Develop a drought contingency plan to provide an effective and systematic means of assessing drought conditions, develop mitigation actions and programs to reduce risks in advance of drought, and develop response options that minimize hardships during drought. | Prevention, Natural Resource Protection | Drought | N/A | Navajo Nation Drought Contingency Plan |

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| Reduce the possibility of damages and losses due to weather-related hazards, including drought, floods, heat, landslide, wildfire, and wind. (cont.) | 4.H | Carry-out hydrology/hydraulic studies to determine the feasibility of the proposed perimeter flood protection for Treasure Island. | Property Protection | Flood | New and Existing | TIDA |
| | 4.I | Build ring levees around the drainage pump houses (localized flood control projects) to specifically protect the pumps, which are critical elements in the island’s flood control system. This element of construction is separate from the larger flood control project on the island. | Property Protection | Flood | Existing | TIDA |
| | 4.J | Implement a fuel reduction program, such as the collection and disposal of dead fuel, within parks and open spaces. | Prevention, Natural Resource Protection | Wildfire | New and Existing | URS |
| Reduce the possibility of damages and losses due to other hazards, including dam and reservoir failure, urban conflagration, and human-caused hazards. | 5.A | Develop a public outreach and awareness program about heat and human health. Ideas include media announcements, buddy system, heat line, increased emergency medical staff, home visits to the elderly, cooling stations, outreach visits to the homeless, etc. | Public Education & Awareness | Heat | N/A | URS |
| | 5.B | Examine and mitigate City-owned ramps, streets, and bridges that have been identified as being too narrow or having too many tight turns to ensure the safe transportation of truck loads. | Prevention | Hazardous Material Event | Existing | URS |
| | 5.C | Provide an annual training class and exercise for the Pacific Coast Federation of Fishermen’s Associations (San Francisco fishing fleet) to be trained/retrained in boom deployment and oil cleanup. | Natural Resource Protection | Oil Spill | Existing | CA Assembly, Natural Resources Committee |
| | 5.D | Implement recommended Buffer Zone Protection measures for pre-designated critical facilities and infrastructure. | Prevention | WMD/Terrorism | Existing | Northeast States Emergency Consortium |

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| Reduce the possibility of damages and losses due to other hazards, including dam and reservoir failure, urban conflagration, and human-caused hazards. | 5.E | Create a cool roofs grant or incentive program for property owners that meet or exceed the EPA Energy Star Cool Roof Standards. The standards are intended to reduce the urban heat island effect or the warming caused in cities when heat is absorbed by pavement and other dark surfaces. | Prevention | Energy Emergency | Existing and New | EPA |
| | 5.F | Secure funding for small-scale projects of the larger \$4.3 billion retrofit of the Hetch Hetchy system. | Structural Project | Seismic, Reservoir Failure | Existing | SFPUC |

* “Seismic” as listed in the “Hazard(s) Addressed” category of this table refers to both ground shaking and ground failure (earthquake-induced landslide, liquefaction, and/or lateral spread), unless otherwise noted.