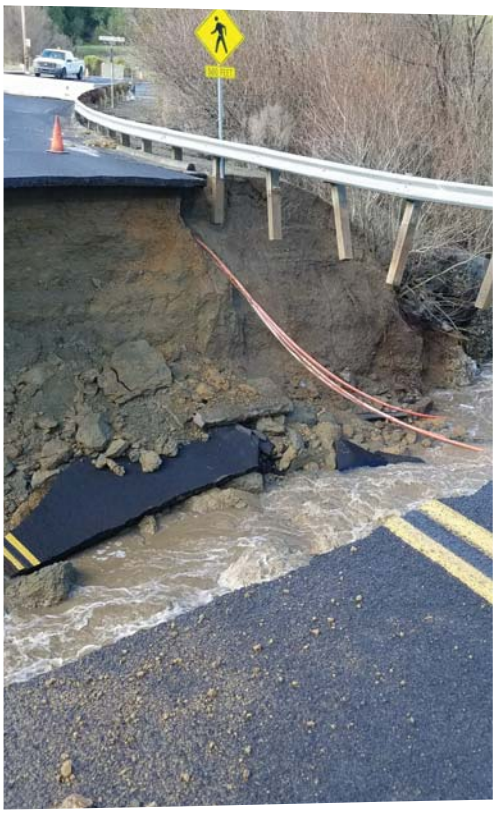
CONTRA COSTA COUNTY HAZARD MITIGATION PLAN

Volume 2—Planning Partner Annexes



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TETRA TECH

Contra Costa County Hazard Mitigation Plan

Volume 2—Planning Partner Annexes

January 2018

PREPARED FOR

Contra Costa County
50 Glacier Drive
Martinez, California 94553

PREPARED BY

Tetra Tech
1999 Harrison Street
Suite 500
Oakland, CA 94612

50 Glacier Drive
Martinez, California 94553

Tetra Tech Project #103S4848
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Appendices

Appendix A. Planning Partner Expectations
Appendix B. Procedures for Linking to Hazard Mitigation Plan
Appendix C. Annex Instructions and Templates

INTRODUCTION

BACKGROUND

The Federal Emergency Management Agency (FEMA) encourages multi-jurisdictional planning for hazard mitigation. All participating jurisdictions must meet the requirements of Chapter 44 of the Code of Federal Regulations (44 CFR):

> "Multi-jurisdictional plans (e.g. watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan." (Section 201.6.a(4))

For the Contra Costa County Hazard Mitigation Plan, a Planning Partnership was formed to leverage resources and to meet requirements of the federal Disaster Mitigation Act (DMA) for as many eligible local governments as possible. The DMA defines a local government as follows:

> "Any county, municipality, city, town, township, public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government; any Indian tribe or authorized tribal organization, or Alaska Native village or organization; and any rural community, unincorporated town or village, or other public entity."

There are two types of Planning Partners that participated in this process, with distinct needs and capabilities:

- Incorporated municipalities (cities, towns and the County)
- Special purpose districts.

Each participating planning partner has prepared a jurisdiction-specific annex to this plan. These annexes, as well as information on the process by which they were created, are contained in this volume.

THE PLANNING PARTNERSHIP

Initial Solicitation and Letters of Intent

The planning team solicited the participation of all eligible municipalities and special purpose districts at the outset of this project. A kickoff meeting was held on December 2, 2015 to identify potential stakeholders and planning partners for this process. The purpose of the meeting was to introduce the planning process to jurisdictions in the County that could have a stake in the outcome of the planning effort. All eligible local governments, including prior and potential planning partners, within the planning area were invited to attend. The goals of the meeting were as follows:

- Provide an overview of the Disaster Mitigation Act.
- Review the 2011 Plan and Planning Partnership
- Outline the work plan for this hazard mitigation plan.

- Describe the benefits of multi-jurisdictional planning.
- Outline planning partner expectations.
- Solicit planning partners.
- Solicit volunteers/recommendations for the steering committee.

From these initial efforts, 48 interested local governments were provided with a list of planning partner expectations developed by the planning team and were informed of the obligations required for participation. Local governments wishing to join the planning effort were asked to provide the planning team with a "notice of intent to participate" that agreed to the planning partner expectations (see Appendix A) and designated a point of contact for their jurisdiction. In all, the planning team received formal commitment from 39 planning partners. Four of these commitments were from new planning partners that did not participate in the 2011 planning effort (Contra Costa Water District, Crockett Community Services District, San Ramon Valley Unified School District and San Ramon Geologic Abatement District). Of these new planning partners, only Contra Costa Water District was covered by a prior hazard mitigation plan. Contra Costa Water District was a participant in the 2011 regional planning effort sponsored by the Association of Bay Area Governments (ABAG). Maps for each participating city are provided in the individual annex for that city in this volume. Maps showing the location of participating special purpose districts by district type are provided at the end of this introduction.

Planning Partner Expectations

The planning team developed the following list of planning partner expectations, which were confirmed at the kickoff meeting held on December 2, 2015 (see Appendix A for details):

- Complete administrative tasks:
  - Complete a letter of intent.
  - Designate points of contact.
  - Approve the steering committee.
- Participate, as able, in additional opportunities:
  - Attend steering committee meetings.
  - Attend or host public meetings or open houses.
  - Participate in and advertise the public review and comment period prior to adoption.
- Support the steering committee.
- Support the public involvement strategy.
- Participate in the critical facility update.
- Complete the jurisdictional annex template:
  - Attend the mandatory workshop.
  - Perform a capability assessment.
  - Review the risk assessment.
  - Review county-wide mitigation recommendations.
  - Develop a mitigation action plan.
- Adopt the plan.

By adopting this plan, each planning partner also agrees to the plan implementation and maintenance protocol established in Volume 1. Failure to meet these criteria may result in a partner being dropped from the partnership by the Steering Committee, and thus losing eligibility under the scope of this plan.

Linkage Procedures

Eligible local jurisdictions that did not participate in development of this multi-jurisdictional plan may comply with DMA requirements by linking to this plan following the procedures outlined in Appendix B.

ANNEX-PREPARATION PROCESS

Templates

Templates were created to help the Planning Partners prepare their jurisdiction-specific annexes. Since special purpose districts operate differently from incorporated municipalities, separate templates were created for the two types of jurisdictions. The templates were created so that all criteria of Section 201.6 of 44 CFR would be met, based on the partners' capabilities and mode of operation. Templates available for the planning partners' use were specific as to whether the partner's annex is an update to a previous hazard mitigation plan or a first-time hazard mitigation plan. Each partner was asked to participate in a technical assistance workshop during which key elements of the template were discussed and subsequently completed by a designated point of contact for each partner and a member of the planning team. The templates were set up to lead each partner through a series of steps that would generate the DMA-required elements that are specific for each partner. The templates and their instructions can be found in Appendix C to this volume.

Workshop

Workshops were held for Planning Partners to address the following topics:

- DMA
- Local plan background
- Mitigation defined
- Local plan guiding principle, goals and objectives
- The templates and the tool kit
- Risk ranking
- Developing your action plan
- Cost/benefit review
- Prioritization protocol
- Next steps.

Four sessions were held, two each on June 7, 2017 and June 14, 2017, to ensure that representatives from all planning partners would be able to attend. The sessions provided technical assistance and an overview of the template completion process. Attendance at this workshop was mandatory under the planning partner expectations established by the Steering Committee. There was 90-percent attendance of the partnership at these sessions.

In the risk-ranking exercise, each planning partner was asked to review the ranked risk specifically for its jurisdiction, based on the impact on its population and/or facilities. Municipalities based this ranking on probability of occurrence and the potential impact on people, property and the economy. Special purpose districts based this ranking on probability of occurrence and the potential impact on their constituency, their vital facilities and the facilities' functionality after an event. The methodology followed that used for the countywide risk ranking presented in Volume 1. The objectives of this exercise were to familiarize the partnership with how to use the risk assessment as a tool to support other planning and hazard mitigation processes and to help prioritize types of mitigation actions that should be considered. Hazards that were ranked as "high" for each jurisdiction as a result of this exercise were considered to be priorities for identifying appropriate mitigation actions, although jurisdictions also identified actions to mitigate "medium" or "low" ranked hazards as appropriate.

Tool Kit

Each planning partner was provided with a tool kit to assist in completing the annex template and developing an action plan. The tool kits, which were used during the workshops and in follow-up work conducted by the planning partners, contained the following:

- The 2011 Contra Costa County Hazard Mitigation Plan and Association of Bay Area Governments Plan
- A catalog of mitigation best practices
- The guiding principle, goals and objectives developed for the update to the plan
- Information on the FEMA Hazard Mitigation Assistance grant program
- Information on past hazard events that have impacted the planning area
- County-wide and jurisdiction-specific maps for hazards of concern
- Special district boundary maps showing the sphere of influence for each special purpose district partner
- The risk assessment results developed for this plan
- Information on climate change and expected impacts in the planning area
- Jurisdiction-specific annex templates, with instructions for completing them
- FEMA guidance on plan integration
- The results of the public survey conducted as part of the public involvement strategy
- A copy of the presentation that was given at the workshop sessions.

A large portion of the workshop focused on how the tool kit should be used to develop the mitigation action plan. Planning partners were specifically asked to review the following to assist in the identification of actions:

- **The Jurisdiction's Capability Assessment—**Reviewed to identify capabilities that the jurisdiction does not currently have but should consider pursuing or capabilities that should be revisited and updated to include best available information; also reviewed to determine how existing capabilities can be leveraged to increase or improve hazard mitigation in the jurisdiction.
- **The Jurisdiction's National Flood Insurance Program Compliance Table**—Reviewed to identify opportunities to increase floodplain management capabilities.
- **The Jurisdiction's Review of Its Adaptive Capacity for Climate Change**—Reviewed to identify ways to leverage or continue to improve existing capacities and to improve understanding of other capacities.
- **The Jurisdiction's Identified Opportunities for Future Integration**—Reviewed to identify specific integration actions to be included in the mitigation strategy.
- **Jurisdiction-Specific Vulnerabilities—**Reviewed to identify actions that will help reduce known vulnerabilities.
- **The Mitigation Best Practices Catalog**—Reviewed to identify actions that the jurisdiction should consider including in its action plan.
- **Public Input**—Reviewed to identify potential actions and community priorities.

Prioritization

44 CFR requires actions identified in the action plan to be prioritized (Section 201.c.3.iii). The planning team and steering committee developed a methodology for prioritizing the action plans that meets the needs of the partnership and the requirements of 44 CFR. All identified actions were prioritized in two categories—implementation and grant pursuit—as defined by the following criteria:

- Implementation priority
    - **High Priority**—Action meets multiple objectives, has benefits that exceed cost, has funding secured or is an ongoing project, and meets eligibility requirements for a grant program. High-priority actions

can be completed in the short term (1 to 5 years). The key factors for high-priority initiatives are that they have funding secured and can be completed in the short term.

- **Medium Priority**—Action meets multiple objectives, has benefits that exceed costs, and does not have funding secured but is eligible for funding. Action can be completed in the short term, once funding is secured. Medium-priority actions will become high-priority actions once funding is secured. The key factors for medium-priority actions are that they are eligible for funding but do not yet have funding secured, and that they can be completed in the short term.
- **Low Priority**—Action mitigates the risk of a hazard, has benefits that do not exceed the costs or are difficult to quantify, does not have funding secured and is not eligible for grant funding, and has a long-term timeline for completion (1 to 10 years). Low-priority initiatives may be eligible for grant funding from programs that have not yet been identified.

- Grant pursuit priority

  - **High Priority**—Action meets grant eligibility requirements, has high benefits, and is listed as high or medium priority. Local funding options are unavailable or available local funds for the action could instead be used for projects that are not eligible for grant funding.
  - **Medium Priority**—Action meets grant eligibility requirements, has medium or low benefits, is listed as medium or low priority. Local funding options are unavailable.
  - **Low Priority**—Action does not meet grant eligibility requirements or has low benefits.

These priority definitions are dynamic and can change from one category to another based on changes to a parameter such as availability of funding. For example, a project might be assigned a medium priority because of the uncertainty of a funding source, but be changed to high priority once a funding source has been identified. The prioritization schedule for this plan will be reviewed and updated as needed annually through the plan maintenance strategy.

Benefit/Cost Review

44 CFR requires the prioritization of the action plan to emphasize a benefit/cost analysis of the proposed actions. Because some actions may not be implemented for up to 10 years, benefit/cost analysis was qualitative and not of the detail required by FEMA for project grant eligibility under the Hazard Mitigation Assistance (HMA) grant program. A review of the apparent benefits versus the apparent cost of each project was performed. Parameters were established for assigning subjective ratings (high, medium, and low) to benefits and costs as follows:

- Benefit ratings:

  - **High—**The action will have an immediate impact on the reduction of risk exposure to life and property.
  - **Medium**—The action will have a long-term impact on the reduction of risk exposure to life and property or will provide an immediate reduction in the risk exposure to property.
  - **Low—**Long-term benefits of the action are difficult to quantify in the short term.

- Cost ratings:

  - **High—**Existing funding levels are not adequate to cover the costs of the proposed action; implementation would require an increase in revenue through an alternative source (for example, bonds, grants, and fee increases).
  - **Medium—**The action could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the action would have to be spread over multiple years.

- **Low—**The action could be funded under the existing budget. The action is part of or can be part of an existing, ongoing program.

Using this approach, projects with positive benefit versus cost ratios (such as high over high, high over medium, medium over low, etc.) are considered cost-beneficial and are prioritized accordingly.

For many of the strategies identified in this action plan, funding might be sought under FEMA's HMA program. This program requires detailed benefit/cost analysis as part of the application process. These analyses will be performed on projects at the time of application preparation. The FEMA benefit-cost model will be used to perform this review. For projects not seeking financial assistance from grant programs that require this sort of analysis, the Partners reserve the right to define "benefits" according to parameters that meet their needs and the goals and objectives of this plan.

Analysis of Mitigation Actions

All planning partners reviewed their recommended actions to classify each action based on the hazard it addresses and the type of mitigation it involves. Mitigation types used for this categorization are as follows:

- **Prevention**—Government, administrative or regulatory actions that influence the way land and buildings are developed to reduce hazard losses. Includes planning and zoning, floodplain laws, capital improvement programs, open space preservation, and stormwater management regulations.
- **Property Protection**—Modification of buildings or structures to protect them from a hazard or removal of structures from a hazard area. Includes acquisition, elevation, relocation, structural retrofit, storm shutters, and shatter-resistant glass.
- **Public Education and Awareness**—Actions to inform citizens and elected officials about hazards and ways to mitigate them. Includes outreach projects, real estate disclosure, hazard information centers, and school-age and adult education.
- **Natural Resource Protection**—Actions that minimize hazard loss and preserve or restore the functions of natural systems. Includes sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- **Emergency Services**—Actions that protect people and property during and immediately after a hazard event. Includes warning systems, emergency response services, and the protection of essential facilities.
- **Structural Projects**—Actions that involve the construction of structures to reduce the impact of a hazard. Includes dams, setback levees, floodwalls, retaining walls, and safe rooms.
- **Climate Resilient**—Actions that incorporate methods to mitigate and/or adapt to the impacts of climate change. Includes aquifer storage and recovery activities, incorporating future-conditions projections in project design or planning, or actions that specifically address jurisdiction-specific climate change risks, such as sea level rise or urban heat island effect.
- **Community Capacity Building**—Actions that increase or enhance local capabilities to adjust to potential damage, to take advantage of opportunities, or to respond to consequences. Includes staff training, memorandums of understanding, development of plans and studies, and monitoring programs.

These categories include categories identified in the Community Rating System (CRS) 2017 *CRS Coordinators Manual* (OMB No. 1660-0022, Figure 510-4). The CRS categories expand on the four categories in FEMA's 2013 *Local Mitigation Handbook*. They provide a more comprehensive range of options, thus increasing integration opportunities. The use of CRS guidance enhances the CRS credit potential for this plan, for the benefit of planning partners who participate in the CRS program.

In addition to the CRS categories, two other categories were included in the analysis. The climate resilient category was added to facilitate the incorporation of climate adaptation planning into hazard mitigation plans in

accordance with California Senate Bill 379 (see Section 4 in Volume 1 of this plan). Community capacity building was added to clearly identify opportunities for expanding on existing capabilities.

COMPATIBILITY WITH PREVIOUS APPROVED PLANS

Of the 48 initially identified potential planning partners, 37 were covered by prior plans approved by FEMA, with more than 500 cumulative mitigation actions identified in their plans. Of these, seven were covered under a 2010 planning effort by ABAG, and the balance were covered under the 2011 Contra Costa County Hazard Mitigation Plan. Table 1 lists all the initial partners and the role this multi-jurisdictional plan will play in achieving compliance and the CRS status, if applicable.

FINAL COVERAGE UNDER THE PLAN

Of the 39 planning partners that submitted letters of intent to participate, 35 fully met the participation requirements specified by the Steering Committee. The principal requirement not met by the other partners was completion of the jurisdictional annex template following the workshops. Only the 35 partners that submitted completed templates are included in this volume and will seek DMA compliance under this plan. The remaining jurisdictions will need to follow the linkage procedures described in Appendix B of this volume. Table 2 lists the jurisdictions that submitted letters of intent and their ultimate status in this plan.

Table 1. Prior Plan Status

	FEMA Approval Date	Will Be Covered by this Multi-Jurisdictional Hazard Mitigation Plan? (Yes/No)	CRS Community (Yes/No)	Multi-Jurisdictional Hazard Mitigation Plan Will Become CRS Plan of Record?(Yes/No)
Contra Costa County	6/28/2011	Yes	Yes	Yes
City of Antioch	11/27/2012	Yes	No	No
City of Brentwood	Not available	Yes	No	No
City of Concord	3/13/2012[a]	Yes	Yes	Yes
Town of Danville	7/19/2011	Yes	No	No
City of El Cerrito	11/8/2011	Yes	No	No
City of Lafayette	2/2/7/2012[a]	Yes	No	No
City of Martinez	9/21//2011	Yes	No	No
Town of Moraga	1/11/2012[a]	Yes	No	No
City of Orinda	9/6/2011[a]	Yes	No	No
City of Pinole	9/20/2011	No	No	No
City of Pleasant Hill	7/6/2012	Yes	Yes	Yes
City of Richmond	11/1/2011	Yes	No	No
City of San Pablo	2/6/2012[a]	Yes	Yes	Yes
City of San Ramon	6/28/2011	Yes	Yes	Yes
City of Walnut Creek	9/20/2011	Yes	Yes	Yes
Antioch Unified School District	8/10/2011	Yes	N/A	N/A
Bethel Island Municipal Improvement District	7/21/2011	Yes	N/A	N/A
Brentwood Union School District	Not available	No	N/A	N/A
Canyon Elementary School District	Not available	No	N/A	N/A
Contra Costa Community College District	6/27/2012	No	N/A	N/A
Contra Costa County Fire Protection District	2/14/2012	Yes	N/A	N/A
Contra Costa Flood Control and Water Conservation District	6/28/2011	Yes	N/A	N/A
Contra Costa County Office of Education	8/17/2011	Yes	N/A	N/A
Contra Costa County Sheriff's Search and Rescue	N/A	No	N/A	N/A
Contra Costa Water District	5/18/2011[a]	Yes	N/A	N/A
Central Contra Costa Sanitary District	8/4/2011	Yes	N/A	N/A
Crockett Community Services District	Not available	Yes	N/A	N/A
Delta Diablo	10/12/2011	Yes	N/A	N/A
Diablo Water District	Not available	Yes	N/A	N/A
Dublin San Ramon Services District	Not available	No	N/A	N/A
East Contra Costa Fire Protection District	10/3/2011	No	N/A	N/A
Eastern Contra Costa Transit Authority (Tri Delta Transit)	Not available	Yes	N/A	N/A
Ironhouse Sanitary District	2/7/2012	Yes	N/A	N/A
Kensington Fire Protection District	1/11/2012	Yes	N/A	N/A
Kensington Police Protection and Community Service District	7/14/2011	Yes	N/A	N/A

	FEMA Approval Date	Will Be Covered by this Multi-Jurisdictional Hazard Mitigation Plan? (Yes/No)	CRS Community (Yes/No)	Multi-Jurisdictional Hazard Mitigation Plan Will Become CRS Plan of Record?(Yes/No)
Knightsen Community Services District	5/19/2011	No	N/A	N/A
Liberty Union High School District	9/14/2011	No	N/A	N/A
Mount Diablo Unified School District	Not available	No	N/A	N/A
Pleasant Hill Recreation and Park District	7/13/2011	Yes	N/A	N/A
Reclamation District 800 (Byron Tract)	10/4/2011	No	N/A	N/A
Reclamation District 830 (Jersey Island)	1/13/2012	Yes	N/A	N/A
Rodeo-Hercules Fire Protection District	8/24/2011	No	N/A	N/A
San Ramon Geological Hazard Abatement District	Not available	Yes	N/A	N/A
San Ramon Valley Fire Protection District	3/28/2012	Yes	N/A	N/A
San Ramon Valley Unified School District	Not available	Yes	N/A	N/A
Walnut Creek School District	9/19/2011	No	N/A	N/A
West Contra Costa Unified School District	9/21/2011	Yes	N/A	N/A

a. Jurisdiction covered under 2010 ABAG Local Hazard Mitigation Plan. Date listed indicates date of adoption; FEMA approval date is not available.

Table 2. Planning Partner Status

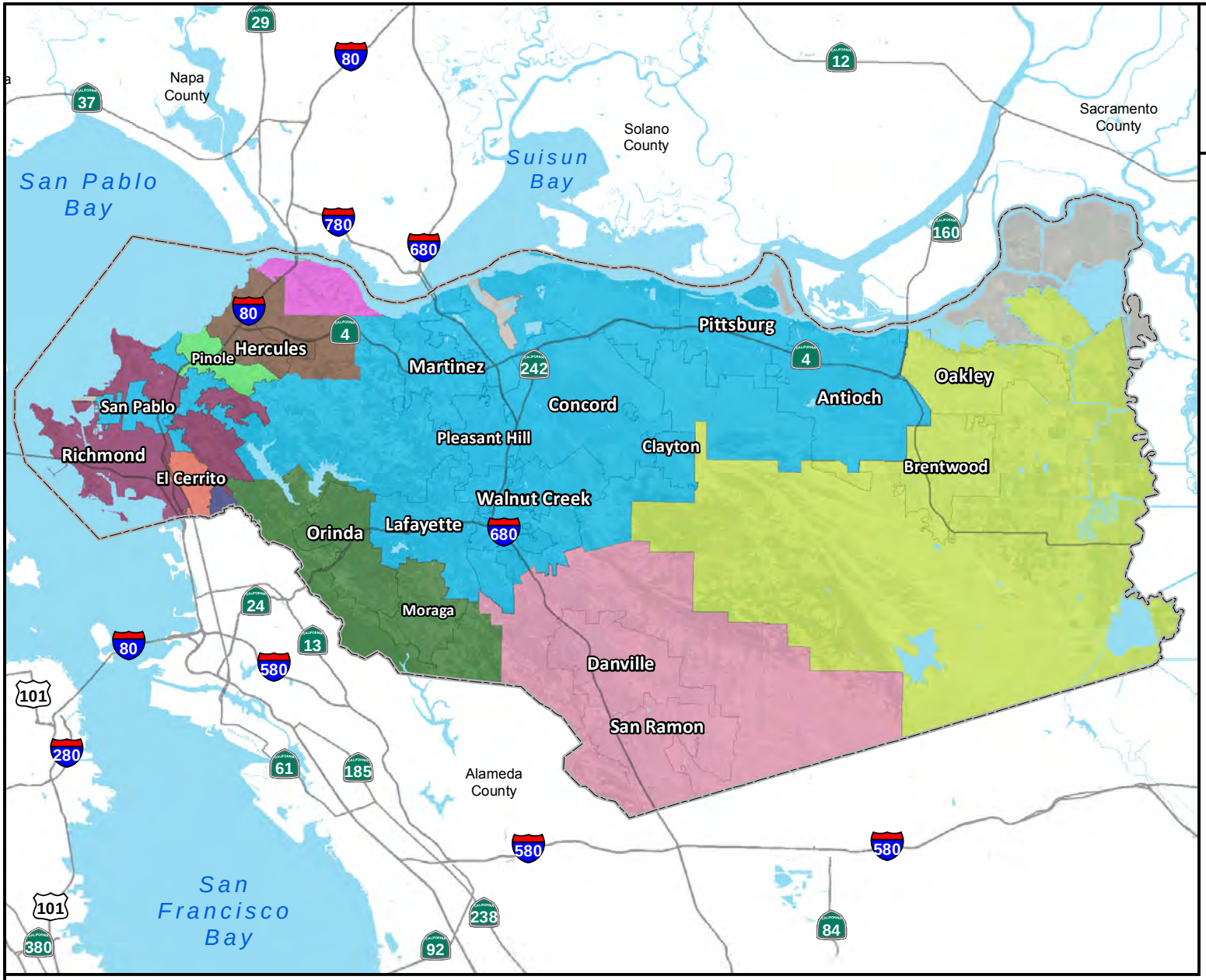
	Letter of Intent Date	Attended Workshop?	Completed Template?	Covered by This Plan?
Municipalities				
City of Antioch	1/21/2016	Yes	Yes	Yes
City of Brentwood	1/11/2016	Yes	Yes	Yes
City of Concord	1/14/2016	Yes	Yes	Yes
Town of Danville	12/8/2015	Yes	Yes	Yes
City of El Cerrito	11/10/2016	Yes	Yes	Yes
City of Lafayette	2/9/2017	Yes	Yes	Yes
City of Martinez	11/10/2016	Yes	Yes	Yes
Town of Moraga	1/13/2016	Yes	Yes	Yes
City of Orinda	2/8/2017	Yes	Yes	Yes
City of Pleasant Hill	1/27/16	No[a]	Yes	Yes
City of Richmond	2/8/2016	Yes	Yes	Yes
City of San Pablo	1/20/2016	Yes	Yes	Yes
City of San Ramon	1/29/2016	Yes	Yes	Yes
City of Walnut Creek	11/10/2016	Yes	Yes	Yes
Contra Costa County	1/25/2016	Yes	Yes	Yes
Fire Districts				
Contra Costa County Fire Protection District	11/10/2016	Yes	Yes	Yes
Kensington Fire Protection District	11/16/2016	Yes	Yes	Yes
Moraga-Orinda Fire Protection District	1/27/2016	No	No	No
Rodeo-Hercules Fire Protection District	11/10/2016	No	No	No
San Ramon Valley Fire Protection District	1/26/2016	Yes	Yes	Yes
School Districts				
Antioch Unified School District	1/14/2016	Yes	Yes	Yes
Contra Costa County Office of Education	1/29/2016	Yes	Yes	Yes
San Ramon Valley Unified School District	12/20/2016	Yes	Yes	Yes
West Contra Costa Unified School District	1/26/2016	Yes	Yes	Yes
Water, Sewer and Utility Districts				
Central Contra Costa County Sanitary District	1/12/2016	Yes	Yes	Yes
Contra Costa Water District	12/2/2016	Yes	Yes	Yes
Delta Diablo	1/18/2016	Yes	Yes	Yes
Diablo Water District	1/15/2016	Yes	Yes	Yes
Dublin San Ramon Services District[b]	2/22/2016	No	No	No
Ironhouse Sanitary District	12/16/2015	Yes	Yes	Yes
Other Districts				
Bethel Island Municipal Improvement District	1/27/2016	Yes	Yes	Yes
Contra Costa County Flood Control and Water Conservation District	2/11/2016	Yes	Yes	Yes
Crockett Community Services District	11/22/2016	Yes	Yes	Yes
Eastern Contra Costa County Transit Authority	12/7/2015	Yes	Yes	Yes
Kensington Police Protection and Community Services District	1/29/2016	Yes	Yes	Yes
Pleasant Hill Recreation and Park District	1/11/2016	Yes	Yes	Yes
Reclamation District 800	1/14/2016	No	No	No
Reclamation District 830	12/16/2015	Yes	Yes	Yes
San Ramon Geological Hazard Abatement District	11/10/2016	Yes	Yes	Yes

a. Due to staffing shortages and vacation schedules, a representative from the City of Pleasant Hill was unable to attend the workshops. One-on-one assistance was provided by a member of the planning team.

b. Dublin San Ramon Services District suspended participation in this planning effort after the Tri-Valley Planning Partnership was formed. A greater portion of the District's service area lies within the planning area for the Tri-Valley effort.

Contra Costa County

Fire Protection Districts



- Contra Costa Fire Protection District
- Crockett-Carquinez Fire Protection District
- East Contra Costa Fire Protection District
- City of El Cerrito Fire Department
- Kensington Fire Protection District
- Morage-Orinda Fire Protection District
- Pinole Fire Protection District
- Richmond Fire Protection District
- Rodeo-Hercules Fire Protection District
- San Ramon Valley Fire Protection District
- No District

- Contra Costa County Boundary
- City Boundaries
- Water Bodies & Channels

Map Data Sources: Contra Costa County, Caltrans, USDA

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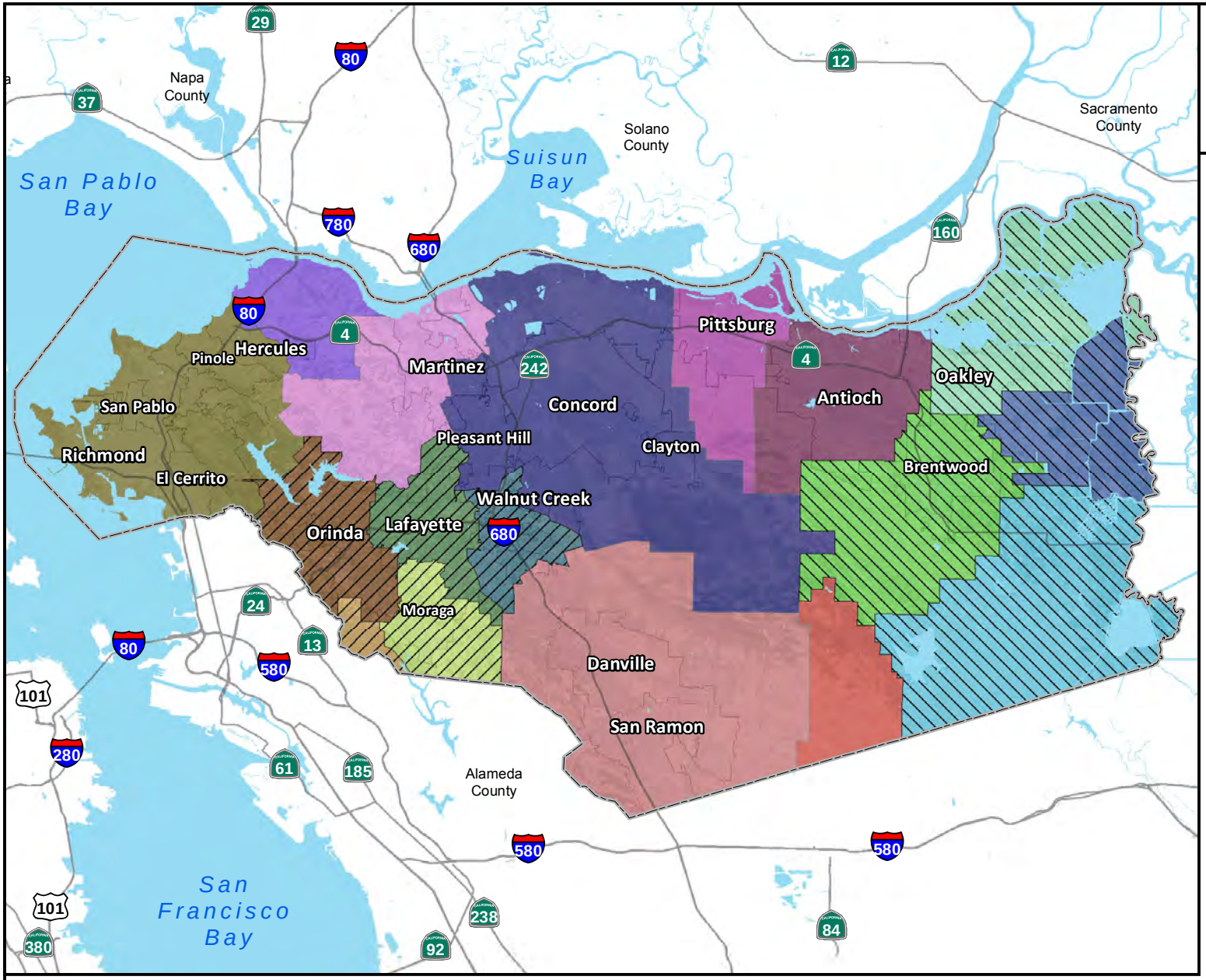
Contra Costa County

School Districts



- Acalanes Union High School District
- Liberty Union High School District
- Antioch Unified School District
- Brentwood Union Elementary School District
- Byron Union Elementary School District
- Canyon Elementary School District
- John Swett Unified School District
- Knightsen Elementary School District
- Lafayette Elementary School District
- Livermore Valley Unified School District
- Martinez Unified School District
- Moraga Elementary School District
- Mt. Diablo Unified School District
- Oakley Union Elementary School District
- Orinda Union Elementary School District
- Pittsburg Unified School District
- San Ramon Valley Unified School District
- Walnut Creek Elementary School District
- West Contra Costa Unified School District

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, USDA

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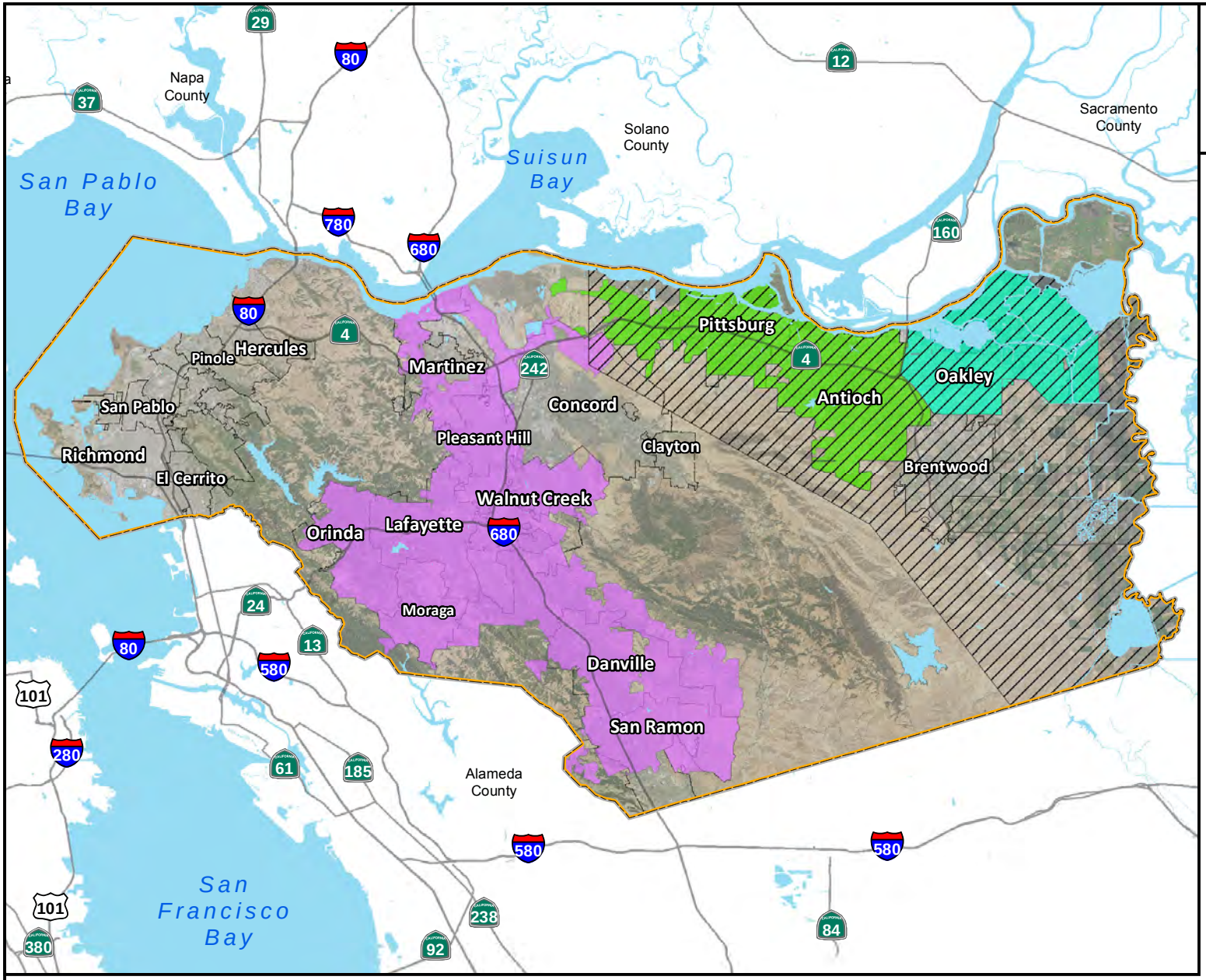
Contra Costa County

Education, Sanitation & Transit Districts



Contra Costa County Office of Education

TriDelta Transit Service Area

Central Contra Costa Sanitary District

Delta Diablo Sanitation District

Ironhouse Sanitary District

Contra Costa County Boundary

City Boundaries

Water Bodies & Channels

Map Data Sources: Contra Costa County, Caltrans, USDA

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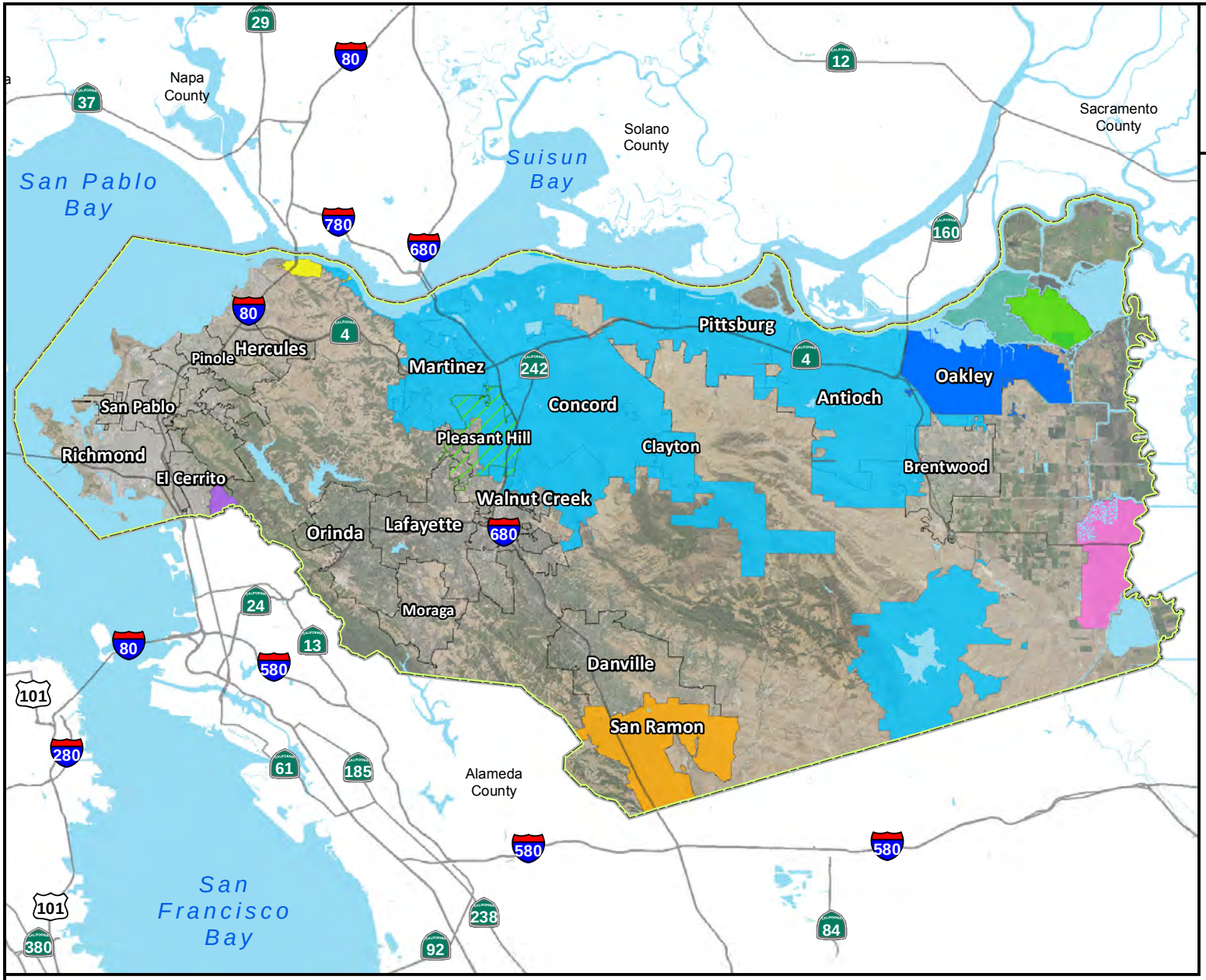
Contra Costa County

Special Districts



Contra Costa County Flood Control & Conservation District

Bethel Island Municipal Improvement District

Pleasant Hill Parks & Recreation District

San Ramon Geologic Hazards Abatement District

Community Services Districts

Crockett Community Services District

Kensington Community Services District

Water Districts

Diablo Water District

Contra Costa Water District

Reclamation Districts

No. 800 (Byron Tract)

No. 830 (Jersey Island)

Contra Costa County Boundary

City Boundaries

Water Bodies & Channels

Map Data Sources: Contra Costa County, Caltrans, USDA

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TETRA TECH

1. UNINCORPORATED CONTRA COSTA COUNTY

1.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Marcelle Indelicato, Senior Emergency Planner
50 Glacier Drive
Martinez, CA 94553
Telephone: 925-313-9609
E-mail Address: minde@so.cccounty.us

Alternate Point of Contact
Rick Kovar, OES Manager
50 Glacier Drive
Martinez, CA 94553
Telephone: 925-313-9621
E-mail Address: rkova@so.cccounty.us

1.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation**—1850
- **Current Population**—1,139,513 as of January 1, 2017 (California Department of Finance)
- **Population Growth**—Contra Costa County should continue to experience a steady rate of growth, with an estimated population increase of 27.6 percent by 2040.
- **Location and Description—**Contra Costa County is major metropolitan area east of San Francisco. The county has a total area of 802 square miles, of which 720 square miles is land and 82 square miles is water. It is bounded on the south and west by Alameda County; on the northwest by San Francisco Bay (San Francisco and Marin Counties); on the north by San Pablo Bay, the Carquinez Strait, and Suisun Bay (Solano and Sacramento Counties); and on the east by the San Joaquin River (San Joaquin County).
- **Brief History**—Contra Costa County was incorporated in 1850 as one of the original 27 counties of the state. The County's Spanish language name translates as "opposite coast," indicating its location opposite San Francisco on San Francisco Bay. The County originally encompassed the entire East Bay area. In 1853 the southern portion of the County was detached to form Alameda County.
  Coal was discovered near Pittsburg in the early 1850s. The Mount Diablo Coal Field was the most extensively mined coal deposit in California. From the 1860s to the beginning of the 20th century, it is estimated that 4 million tons of coal were extracted from the area. Railroads are also an important part of the County's history. In 1901, the Santa Fe Railroad, now BNSF Railway, selected Richmond for its western terminal. During the late 1800s and early 1900s, industry moved into the County: Union Oil constructed a refinery in Rodeo in 1896; a U.S. Steel mill opened in Pittsburg in 1910; Standard Oil, later to become Chevron, moved to Richmond; and Shell Oil built a refinery in Martinez. Great Western Electro-Chemical, which later became Dow, opened in Pittsburg in 1916.
  Contra Costa County played a significant role in World War II. Richmond was a major shipbuilding center, the U.S. Steel mill in Pittsburg produced casting for the shipyards, Camp Stoneman (Pittsburg) was a troop staging area from 1942 to 1957, wartime pilots trained at what is now Concord/Buchanan Field Airport, and Port Chicago was a major munitions depot. Saint Mary's College Pre-Flight School trained approximately 15,000 recruits in Moraga from June 1, 1942, until it was decommissioned on June 30, 1946. Many workers who migrated to the County to work in the shipyards remained after the war ended. Veterans who passed through the County during the war returned to become residents.

Farming has always been an important part of the County's history. Cattle ranching has been a part of the County's economy since the days of the Spanish land grants. Wheat has been grown in the County since the mid-1800s. However, a steady decline in world wheat prices led to a gradual transition from wheat to fields to vineyards and orchards. Prior to Prohibition, Martinez was home to many wineries, including Christian Brothers Wineries, which started crushing grapes for sacramental wine in Martinez in 1882. Today, the County is home to vineyards that produce award-winning wines. The total gross value of agriculture crops and products in 2015 was $128,507,000. Several categories exceeded $1 million in value (in decreasing order): cattle and calves, tomatoes, sweet corn, miscellaneous vegetables, grapes, rangeland, field corn, alfalfa, walnuts, miscellaneous field crops, cherries, peaches, apricots, and wheat. Today, the major industries are petroleum (Chevron being one of the largest employers in the County), chemical, bio-medical, healthcare services, banking, communication, transportation (shipping/rail/pipelines), retail services, higher education (several private colleges), and agriculture. Major employers in the County include the following governmental entities: Contra Costa County, three junior colleges (Diablo Valley, Contra Costa Community, Los Medanos), California State University East Bay, and the Contra Costa Regional Medical Center (one of eight remaining County hospitals in the state).

- **Climate**—In Contra Costa County, average rainfall ranges from 13.25 inches in Antioch (60 feet above sea level) to 23.84 inches at Mount Diablo Junction (2,170 feet above sea level). Martinez (40 feet above sea level) averages 19.32 inches. The average snowfall is 0 inches, except at higher elevations (Mount Diablo Junction averages 1.5 inches per year). The average number of days with precipitation ranges from 55 at Antioch to 66 at Mount Diablo, with Martinez averaging 63. The average number of sunny days (cloud cover less than 8/10) is 260. The average high temperature in July ranges from 71 at Richmond (20 feet above sea level) to 91 in Antioch. The average low in January ranges from 37 at Antioch to 43 at Richmond. The vast majority of rainfall occurs between October and May. Analysis of long-term precipitation records indicates that wetter and drier cycles lasting several years are common in the region. Severe, damaging rainstorms occur in the Bay Area at a frequency of about once every three years. The western United States periodically experiences two distinct weather patterns that can cause severe storms and heavy precipitation:

  - El Nino—A warm ocean current that typically appears around late December and lasts for several months, but may persist into May or June. The warm current influences storm patterns around the globe. As a result, these climate events commonly bring heavy rains and blustery storms and, in some locations, drought. During the past 40 years, nine El Nino events have affected the western coasts of North and South America.
  - Pineapple Express—A Pacific Ocean subtropical jet stream that brings warm moist air from Hawaii into the region. The combination of moisture-laden air, atmospheric dynamics and orographic enhancement that results as this air passes over the mountain ranges of the West Coast cause some of the region's most torrential rains.

- **Governing Body Format—**The Contra Costa County seat is located in Martinez. The County is governed by a five-member Board of Supervisors, each of whom is elected to represent a supervisorial district. In addition to the five Board members, six County department heads are voted into office via County-wide elections: Assessor, Auditor-Controller, Clerk-Recorder, District Attorney, Sheriff-Coroner, and Treasurer-Tax Collector. The Board of Supervisors assumes responsibility for the adoption of this plan; the Contra Costa County Office of Emergency Services will oversee its implementation.

1.3 DEVELOPMENT TRENDS

Table 1-1 presents growth projections for the County. Contra Costa should continue to experience a steady rate of growth, with an estimated population increase of 27.6 percent by 2040.

Table 1-1. Contra Costa County Growth Projections

	2010	2015	2020	2025	2030	2035	2040
Population							
Total County Population	1,049,025	1,085,700	1,123,500	1,172,600	1,224,400	1,280,300	1,338,400
Household Population	1,038,711	1,074,900	1,112,000	1,160,500	1,211,300	1,266,200	1,323,200
Households	375,364	387,870	400,800	416,220	432,430	448,090	464,150
Persons/household	2.77	2.77	2.77	2.79	2.80	2.83	2.85
Employed Residents	455,540	489,750	526,530	539,360	552,720	572,170	592,060
Employment							
Agriculture and Natural Resources	990	1,010	1,020	990	960	930	890
Construction	21,400	25,220	29,490	30,320	31,190	32,350	33,550
Manufacturing and Wholesale	27,980	28,780	29,600	30,040	30,520	31,140	31,840
Retail	44,440	45,270	46,120	46,230	46,290	46,560	46,820
Transportation and Utilities	8,850	9,440	10,060	10,150	10,240	10,400	10,560
Information	10,790	11,450	12,140	12,200	12,260	12,380	12,500
Financial and Leasing	27,270	31,320	35,970	36,220	36,440	37,130	37,790
Professional and Management Services	49,410	56,730	65,220	69,110	73,150	78,170	83,520
Health and Educational Services	52,680	58,780	65,750	69,520	73,510	78,400	83,600
Arts, Recreation, and Other Services	47,600	52,060	56,990	58,810	60,680	63,150	65,720
Government	53,510	54,550	55,450	56,470	57,490	59,030	60,600
Total	344,920	374,610	407,810	420,060	432,730	449,640	467,390

Sources: 2010 demographic data taken directly from the U.S. Census. 2010 employment data are derived from the *California County-Level Economic Forecast, 2011-2040,* California Department of Transportation; *Bay Area Job Growth to 2040: Projections and Analysis,* Center for Continuing Study of the American Economy; *1989-2009 National Establishment Times-Series (NETS) Database,* Walls & Associates using Dun and Bradstreet data; and labor force data from U.S. Bureau of Labor and Statistics and the U.S. Census Bureau's 2005-2009 American Community Survey.

As a primarily suburban county, Contra Costa's development pattern is sprawling, with single-family homes and low-intensity commercial uses being predominant. From 1990-2010, approximately 47 percent of the population growth in Contra Costa County occurred in the East County cities of Pittsburg, Antioch, Oakley, and Brentwood. Significant growth also occurred along the I-680 corridor in the cities of Danville and San Ramon. Most of this growth followed the traditional development pattern.

The Association of Bay Area Governments (ABAG) foresees continued population and job growth in the county through 2040. However, unlike in previous decades, most growth is projected to occur within 38 Priority Development Areas (PDAs) designated throughout the county. Growth in the PDAs is anticipated to consist primarily of transit-oriented multi-family residential or mixed uses. As only five PDAs are located in the unincorporated area, most growth is planned within the 19 incorporated cities in the county.

California law requires counties and cities to prepare and adopt a "general plan," a comprehensive long-range plan to guide community development. The general plan must contain seven state-mandated "elements" (land use, housing, circulation, safety, open space, conservation, and noise) and may contain additional elements as a jurisdiction sees fit. The general plan must comprise an integrated and internally consistent set of goals, policies, and implementation measures. County actions related to land use such as zoning, subdivisions, design review, and capital improvements, must be consistent with the plan. The Contra Costa County General Plan was originally adopted in 1990, with the last major update occurring in January 2005. Future growth and development in the unincorporated areas of the County will be managed as identified in the County General Plan.

Table 1-2 summarizes development trends in the performance period since development of the previous hazard mitigation plan and expected future development trends.

Table 1-2. Recent and Expected Future Development Trends

Criterion	Response
Has your jurisdiction annexed any land since the development of the previous hazard mitigation plan? • If yes, give the estimated area annexed and estimated number of parcels or structures.	No N/A
Is your jurisdiction expected to annex any areas during the performance period of this plan?	No
Are any areas targeted for development or major redevelopment in the next five years? • If yes, please briefly describe	Yes Already-approved subdivisions consisting of several hundred homes in the Discovery Bay and Bethel Island areas may be constructed over the next five years. High-density multi-family development is expected to continue in the vicinity of the Pleasant Hill BART Station.
How many building permits for new construction were issued in your jurisdiction since the development of the previous hazard mitigation plan?	

	2012	2013	2014	2015	2016
Single-Family	343	428	432	632	494
Multi-Family	0	0	0	12	13
Other (commercial, mixed-use, etc.)	7	7	5	7	10

Please provide the number of permits for each hazard area or provide a qualitative description of where development has occurred.	While development occurred throughout the unincorporated areas of the county during the performance period of this plan, the vast majority of new construction (over 2,100 permits) occurred in the communities of Discovery Bay (392 permits) and Alamo (83 permits), unincorporated pockets of the cities of Martinez (208 permits) and Danville (301 permits), and the Dougherty Valley area (1,146 permits), which was subsequently annexed into the City of San Ramon. In Discovery Bay, primary hazards of concern are flooding and liquefaction. In Alamo, Martinez, Danville, and San Ramon, the primary concerns are landslides and/or wildfires. All new development was consistent with applicable General Plan policies, the requirements of the zoning and building codes, and project-specific mitigation measures adopted for the purpose of reducing risk associated with natural hazards. Very little development occurred in unincorporated areas at risk from tsunami or dam failure.

1.4 CAPABILITY ASSESSMENT

Contra Costa County performed an inventory and analysis of existing capabilities, plans, programs and policies that enhance its ability to implement mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of legal and regulatory capabilities is presented in Table 1-3.
- Development and permitting capabilities are presented in Table 1-4.
- An assessment of fiscal capabilities is presented in Table 1-5.
- An assessment of administrative and technical capabilities is presented in Table 1-6.
- An assessment of education and outreach capabilities is presented in Table 1-7.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 1-8.
- Classifications under various community mitigation programs are presented in Table 1-9.
- The community's adaptive capacity for the impacts of climate change is presented in Table 1-10.

Table 1-3. Legal and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, and Requirements				
Building Code	Yes	No	Yes	Yes
Comment: County Ordinance Code Title 7 – Building Regulations (incorporates by reference and is based upon the 2016 California Building Code, 2016 California Residential Code, 2016 California Green Building Standards Code, and 2016 California Existing Building Code [all codified in California Code of Regulations, Title 24]); adopted October 25, 2016.				
Zoning Code	Yes	No	Yes	Yes
Comment: County Ordinance Code Title 8 – Zoning; originally adopted March 17, 1947; last updated July 11, 2017.				
Subdivisions	Yes	No	No	Yes
Comment: County Ordinance Code Title 9 – Subdivisions; originally adopted October 2, 1933; last updated 2015.				
Stormwater Management	Yes	Yes	Yes	Yes
Comment: County Ordinance Code Title 10 – Public Works and Flood Control; last updated in 2005.				
Post-Disaster Recovery	Yes	Yes	Yes	Yes
Comment: California Disaster Assistance Act Title 2, Division 1, Chapter 7.5; California Code of Regulations Title 19, Division 2, Article 1 State Public Assistance Program.				
Real Estate Disclosure	No	Yes	Yes	No
Comment: California State Civil Code 1102 requires full disclosure on natural hazard exposure of the sale/re-sale of any and all real property.				
Growth Management	Yes	Yes	Yes	No
Comment: County General Plan 2005–2020 includes a Growth Management Element; originally adopted in 1990; Cal. Gov. Code §65300 et seq.				
Site Plan Review	Yes	No	No	Yes
Comment: County Ordinance Code Titles 7, 8, 9, and 10, see previous entries				
Environmental Protection	Yes	Yes	Yes	Yes
Comment: California Environmental Quality Act (CEQA) and County CEQA Guidelines.				
Flood Damage Prevention	Yes	No	Yes	Yes
Comment: County Ordinance Code Titles 8 and 10; see the Hazard Mitigation Plan Jurisdictional Annex for the Contra Costa Flood Control and Water Conservation District.				
Emergency Management	Yes	Yes	Yes	Yes
Comment: County Ordinance Code Title 4 – Health and Safety, General Article 42-2.2; last updated in 2001.				
Climate Change	Yes	No	Yes	Yes
Comment: California Senate Bill 379				
Planning Documents				
General Plan	Yes	No	Yes	Yes
Is the plan compliant with Assembly Bill 2140? Yes				
Comment: The Safety Element was amended in June 2011 to incorporate the Local Hazard Mitigation Plan by reference.				
Capital Improvement Plan	Yes	Yes	No	Yes
How often is the plan updated? Every other year during the odd years.				
Comment: Contra Costa County Public Works Department-Capital Road Improvement and Preservation Program (CRIPP) Fiscal Year 2015/2016 to Fiscal Year 2021/2022; originally adopted by the Board of Supervisors on May 19, 1989.				
Floodplain or Watershed Plan	Yes	No	Yes	Yes
Comment: Managed by the Public Works Department/Flood Control & Water Conservation District				
Stormwater Plan	Yes	No	Yes	Yes
Comment: Managed by the Public Works Department/Flood Control & Water Conservation District. SB 790 Stormwater Resources Act effective January 1, 2010.				
Urban Water Management Plan	No	Yes	Yes	No
Comment: Responsibility rests with local water districts.				
Habitat Conservation Plan	Yes	Yes	No	No
Comment: East Contra Costa County Habitat Conservation Plan; adopted May 9, 2007.				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Economic Development Plan *Comment: No plan exists.*	Yes	No	No	No
Shoreline Management Plan *Comment: No local plan exists.*	No	No	No	No
Community Wildfire Protection Plan *Comment: Local fire districts/departments are responsible for implementation*	No	Yes	No	No
Forest Management Plan *Comment: No local plan exists.*	No	No	No	No
Climate Action Plan *Comment: Adopted by Board of Supervisors in December 2015*	Yes	No	No	Yes
Comprehensive Emergency Management Plan *Comment: Emergency Operations Plan (EOP), adopted by the Board of Supervisors in May 2015*	Yes	No	No	Yes
Threat & Hazard Identification & Risk Assessment (THIRA) *Comment: Last capability assessment review conducted April 12, 2017.*	Yes	Yes	Yes	Yes
Post-Disaster Recovery Plan *Comment: Plan to be developed in the future.*	Yes	Yes	No	No
Continuity of Operations Plan *Comment: Draft Template Completed 2017.*	Yes	Yes	No	No
Public Health Plan *Comment: Administered by County Health Services Department.*	Yes	Yes	Yes	No
Other: Debris Management Plan *Comment: Approved by FEMA in December 2016.*	Yes	Yes	Yes	No

Table 1-4. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? • If no, who does? If yes, which department?	Yes Department of Conservation and Development issues permits for grading and construction on private property. Public Works Department issues permits for construction on public property or in public rights-of-way.
Does your jurisdiction have the ability to track permits by hazard area?	No
Does your jurisdiction have a buildable lands inventory? • If yes, please briefly describe. • If no, please quantitatively describe the level of buildout in the jurisdiction.	No N/A The County does not maintain a list or database of buildable lands. By voter-approved initiative, no more than 35 percent of all land in the County, including land within the incorporated cities, can be developed with urban uses. Currently approximately 30 percent of the land has been developed with such uses.

Table 1-5. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Unknown
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	Yes

Table 1-6. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Department of Conservation and Development and Public Works Department
Engineers or professionals trained in building or infrastructure construction practices	Yes	Department of Conservation and Development and Public Works Department
Planners or engineers with an understanding of natural hazards	Yes	Emergency Services Division/Office of Emergency Services- Senior Emergency Planners, Public Works Department- Engineers
Staff with training in benefit/cost analysis	Yes	Public Works Department
Surveyors	Yes	Public Works Department
Personnel skilled or trained in GIS applications	Yes	Department of Information Technology (DOIT), Public Works Department, and Department of Conservation and Development
Scientist familiar with natural hazards in local area	Yes	Flood Control and Water Conservation Control District- Hydrologist Department of Conservation and Development- Geologist
Emergency Manager	Yes	Emergency Services Division/Office of Emergency Services - OES Manager
Grant writers	Yes	Emergency Services Division/Office of Emergency Services - OES Manager, Public Works Department, Department of Conservation and Development, Health Services Department, Contra Costa Fire District
Other	Yes	Department of Conservation and Development and Public Works Department

Table 1-7. Education and Outreach Capability

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe.	Yes Adopted Hazard Mitigation Plan information is available on the County website
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe.	Yes Utilize Facebook, Twitter, and NextDoor
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly describe.	No N/A
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe.	Yes Contra Costa Fire Districts participate in the Diablo Fire Safe Council planning and outreach efforts.
Do you have any established warning systems for hazard events? • If yes, please briefly describe.	Yes Community Warning System

Table 1-8. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Public Works Department/Flood Control and Water Conservation District
Who is your floodplain administrator? (department/position)	Public Works Department/Flood Control and Water Conservation District-Assistant Chief Engineer & Floodplain/Watershed Manager
Are any certified floodplain managers on staff in your jurisdiction?	Yes
What is the date that your flood damage prevention ordinance was last amended?	2016
Does your floodplain management program meet or exceed minimum requirements? • If exceeds, in what ways?	Exceeds Requires freeboard, deed restrictions, grant deed of development rights for creek structure setbacks
When was the most recent Community Assistance Visit or Community Assistance Contact?	2014
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? • If so, please state what they are.	No N/A
Do your flood hazard maps adequately address the flood risk within your jurisdiction? • If no, please state why.	Yes N/A
Does your floodplain management staff need any assistance or training to support its floodplain management program? • If so, what type of assistance/training is needed?	No N/A
Does your jurisdiction participate in the Community Rating System (CRS)? • If yes, is your jurisdiction interested in improving CRS Classification? • Is your jurisdiction interested in joining the CRS program?	Yes No N/A

Criterion	Response
How many Flood Insurance policies are in force in your jurisdiction?[a] • What is the insurance in force? • What is the premium in force?	1,793 $ 444,846,900 $ 2,056,371
How many total loss claims have been filed in your jurisdiction?[a] • How many claims were closed without payment/are still open? • What were the total payments for losses?	323 158/2 $ 1,871,843

a. According to FEMA statistics as of December 31, 2016

Table 1-9. Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	Yes	6	05/01/2001
Building Code Effectiveness Grading Schedule	Yes	2	2016
Public Protection	N/A	N/A	N/A
Storm Ready	Yes	Current	2016
Firewise	No	N/A	N/A

Table 1-10. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: None provided*	Low
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: None provided*	Low
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: None provided*	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: Greenhouse gas inventory was completed in 2015.*	Medium
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: None provided*	Low
Participation in regional groups addressing climate risks *Comments/Additional Information: None provided*	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: None provided*	Low
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: Climate Action Plan was adopted in December 2015.*	Medium
Identified strategies for adaptation to impacts *Comments/Additional Information: Adapting to Rising Tides Program*	Low
Champions for climate action in local government departments *Comments/Additional Information: None provided*	Medium

Criterion	Jurisdiction Rating[a]
Political support for implementing climate change adaptation strategies *Comments/Additional Information: None provided*	Medium
Financial resources devoted to climate change adaptation *Comments/Additional Information: None provided*	Low
Local authority over sectors likely to be negatively impacted *Comments/Additional Information: As the agency with land use jurisdiction over the unincorporated areas, Contra Costa County has authority to impose reasonable requirements aimed at reducing risks associated with climate change. However, certain land uses, particularly those of a heavy industrial nature (i.e., refineries, chemical plants, ports) and/or located along the shoreline, often fall under the jurisdiction of one or more state or federal agencies.*	Low
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: None provided*	Medium
Local residents support of adaptation efforts *Comments/Additional Information: None provided*	Low
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

1.5 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

1.5.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, Contra Costa County made progress on integrating hazard mitigation goals, objectives, and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **Capital Improvement Plan**—The capital improvement plan includes projects that can help mitigate potential hazards. The County will strive to ensure consistency between the hazard mitigation plan and the current and future capital improvement plan. The hazard mitigation plan may identify new possible funding sources for capital improvement projects and may result in modifications to proposed projects based on results of the risk assessment.
- **Building Code**—The County's adoption of the 2016 California Building Code incorporated local modifications addressing seismic and fire hazards.

- **General Plan 2020**—The County General Plan includes a Safety Element to protect the community from unreasonable risk by establishing policies and actions to avoid or minimize the following hazards:
  - Geologic and seismic hazards
  - Fire hazards
  - Hazardous materials
  - Flooding
- **Climate Action Plan**—The County's Climate Action Plan includes projects for reducing greenhouse gas emissions.
- **County Debris Management Plan**—The County of Contra Costa Disaster Debris Management Plan (DDMP) provides a comprehensive framework for management of debris following a disaster for all debris-generating hazards. It addresses the roles and responsibilities of government organizations as well as private firms and non-governmental organizations that might have a role in debris operation.

Resources listed in Section 1.11 were used to provide information for this annex on hazard events and local capabilities within the jurisdiction.

1.5.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, Contra Costa County will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans, and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan in actions related to plan integration. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Flood Control Capital Improvement Plan**—Capital improvement project proposals may take into consideration hazard mitigation potential as a means of evaluating project prioritization.
- **Capital Road Improvement and Preservation Plan**—Capital improvement project proposals may take into consideration hazard mitigation potential as a means of evaluating project prioritization.
- **County General Plan**—The County is conducting a comprehensive update to its General Plan. The opportunity to incorporate additional hazard mitigation and abatement measures will be contemplated for inclusion into the updated General Plan.
- **County Emergency Operations Plan (EOP)**—The County EOP establishes the emergency organization, assigns tasks, specifies polices and general procedures, and provides for coordination of planning efforts of the various emergency staff and service elements utilizing Standardized Emergency Management System (SEMS). The EOP and the hazard mitigation plan are currently integrated and will continue to be integrated as appropriate. **Post-Disaster Recovery Plan**—The County does not have a recovery plan and intends to develop one as a mitigation planning action during the next five years. The plan will build on the mitigation goals and objectives identified in the mitigation plan.

1.6 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 1-11 lists past occurrences of natural hazards for which specific damage was recorded in unincorporated Contra Costa County. Other hazard events that broadly affected the entire planning area, including unincorporated Contra Costa County, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 1-11. Past Natural Hazard Events

Type of Event	Disaster #	Date	Damage Assessment
Flooding	DR-4308	2/1/2017-2/23/2017	$7,000,000
Flooding	DR-4305	1/18/2017-1/23/2017	$250,000
Flooding	DR-4301	1/3/2017-1/12/2017	$7,800,000
Moraga Sinkhole	14767	3/13/2016	-
Drought	SBA #14122	9/17/2014	-
Drought	USDA S #3743	1/1/2014	-
Cherry Crop	-	11/1/2013-5/31/2014, 8/19/2014	$3,200,000
Morgan Territory Fire	-	9/8/2013-9/14/2013	-
Agriculture	-	8/5/2013	-
Agricultural Drought	USDA S #3558 SBA 13693	6/4/2013-7/29/2013	$500,000
Drought	-	2012-2016 (2014)	-
Marsh Creek Road Sinkhole	-	12/18/2012	-
Lafayette Winter Storm	-	2012	-
Agricultural Drought	-	Fall 2011	-
Excessive Rain	USDA #3159 SBA #12829	5/1/2011-6/28/2011	-
Winter Storms	-	2011	-
Agricultural Freeze	USDA #3109 SBA #12488	11/25/2010-11/26/2010	$500,000
Salmon Fishery	12513	4/10/2010-9/30/2010	-
Drought	-	2007-2009	Conditions resulted in $3.6 million loss of forage value and $1.3 million cattle production
Landslide	-	4/6/2006	$5,500,000 Property
Flooding	-	12/31/2005–1/1/2006	$22,000,000 Property/$8,710,359 Crop
Drought	-	3/2004	Rangeland forage: $6,564,946; dryland hay: $72,425
Wind	-	12/31/2002	$120,000 Property
Wind	-	11/7/2002	$200,000 Property
Drought	-	9/2002	Reduced rangeland due to drought estimated loss $1,114296
Severe Weather	-	7/10/2002	$25,000 Property
Wind	-	11/24/2001	$700,000 Property
Wind (High Wind)	-	12/18/2000	$550,000 Property
Flooding (Flash Flood)	-	02/14/2000	$100,000 Property
Wind (High Wind)	-	12/21/1999	$62,500 Property
Wind (High Wind)	-	2/9/1999	$200,000 Property
Wind (High Wind)	-	12/16/1998	$25,000 Property
Tornado	-	12/5/1998	$200,000 Property
Tornado	-	02/19/1998	$50,000 Property
Landslide (El Nino)	-	1/1/1997	$27,000,000 Property
Severe Weather	-	12/9/1995	$6,000,000 Property/$500,000 Crop Damage
Severe Weather	-	2/21/1994	$128,000 Property
Severe Weather	-	12/11/1993	$344,828 Property
Wind (High Wind)	-	11/14/1993	$62,500 Property
Wind (High Wind)	-	2/19/1993	$50,000 Property

Type of Event	Disaster #	Date	Damage Assessment
Flooding (Flash Flood)	-	1/20/1993	$12,500 Property
Flooding (Flash Flood)	-	1/13/1993	$5,555,556 Property/Crops
Severe Weather	-	1/10/1993	$8,333,333 Property
Flooding/Severe Weather	-	12/11/1992	$131,579 Property
Severe Weather	-	12/7/1992	$1525 Property
Flooding-Severe Weather	-	02/14/1992	$9,090.91 Property
Flooding-Severe Weather	-	02/11/1992	$11,627.91 Property
Severe Weather	-	02/09/1992	$89,286
Severe Weather	-	12/20/1990	$86,206 Property/Crops
Flooding (Flash Flood)	-	5/28/1990	$500,000 Property
Earthquake (Loma Prieta)	-	10/17/1989	$25,000.000
Wind	-	12/14/1988	$50,000 Property
Drought	-	1987-1992	
Flooding (Flash Flood)	-	2/17/1986	$5,000,000 Property
Levee Failure, High Winds, High Tides, Floods, Storm, Wind Driven Water	-	12/9/1983	Public-$7,240,785; private- $2,669 million; agriculture $1 million
Severe Weather	-	12/3/1983	$312,500 Property
Flood-Severe Weather	-	1/25/1983	$384,165 Property
Wind	-	12/22/1982	$1,041,666 Property
Flooding	-	3/30/1982	$166,667 Property
Flood-Severe Weather	-	1/3/1982	$7,142,857 Property
Delta Levee Break Holland & Webb Levee breaks	-	1/23/1980	Public-$11,158,700; private-$1,479,500; agriculture-$3,887,195; Total-$17,388,013
Drought	-	2/13/1976	Damage Statewide $888.5 million
Eucalyptus Tree Freeze	-	4/4/1973	Federal Disaster 2 Counties Contra County & Alameda- removal of approximately $2 million dead trees $8-10 million
Flood-Severe Storm/Thunder	-	1/16/1973	$86,206 Property
Flood-Severe Storm/Thunder	-	1/18/1969	$862,068 Property

Notes: In 1973, 1982, and 1986, one or more Delta island levees failed or were overtopped, including summertime breaks that did not occur at time of high storm runoff. Some islands in the Delta have flooded two or three times since 1980.

Sources: Spatial Hazard Events and Losses Database for the United States (SHELDUS); Cal EMA Disasters 1950 – 1999; OES files

1.7 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for the jurisdiction.

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 12
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: 1

Other noted vulnerabilities include the following:

- Discrepancies between FEMA's printed and digital Flood Insurance Rate Maps.
- Low community understanding of risks associated with hazards.
- Throughout the County there is a general risk related to creek bank erosion.
- Limited available funding sources or funding shortfalls may affect the completion of projects or continuation of programs aimed at mitigating hazards.
- Facilities approaching their end of useful life may begin to fail due to age, limiting their ability to mitigate hazards.
- Completion and implementation of County facility upgrades in a timely manner may limit their ability to mitigate hazards.
- Some unincorporated communities, such as Canyon and Morgan Territory, have limited ingress and egress routes that may present access issues during and after a hazard event.
- There are a number of facilities in the County that store and utilize extremely hazardous materials, such as the Nuclear Reactor facility in San Ramon. Secondary impacts associated with the release of these materials may complicate response and recovery efforts during and after an event.
- Major transportation corridors and rail lines are vulnerable to disruption, particularly from the earthquake hazard.
- Additional consideration needs to be given to venues for mass gathering, such as concert venues, given the implications for emergency response agencies, should a large event occur at the same time as a scheduled event.

1.8 HAZARD RISK RANKING

Table 1-12 presents a local ranking for unincorporated Contra Costa County of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 1-12. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake[b]	54	High
2	Landslide[e]	48	High
3	Wildfire[e]	39	High
4	Severe weather	30	Medium
5	Dam and levee failure[a]	18	Medium
5	Flood[c]	18	Medium
6	Sea level rise[d]	12	Low
7	Drought	9	Low
8	Tsunami	6	Low

a. Based on the level of detail conducted in the risk assessment, the risk ranking for this hazard is focused solely on dam failure impacts. See Chapter 6.4 of Volume 1 for combined dam inundation list on which this assessment is based.
b. "HayWired" M7.05 event was used to assign probability and impacts
c. 1-percent annual chance event was used to assign probability and impacts
d. 2100 upper range estimates and extreme tide are used to assign probability and impacts
e. Very High and High Severity Zones were used to assign probability and impacts

1.9 STATUS OF PREVIOUS PLAN ACTIONS

Table 1-13 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 1-13. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
CCC-1—Support County-wide initiatives identified in Volume 1. *Comment: Supported throughout the performance period of the plan*	X			
CCC-2—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Volume 1. *Comment:*			X	CCC-3
CCC-3—Continue to maintain compliance and good standing under the National Flood Insurance Program. *Comment: Ongoing*	X		X	CCC-4
CCC-4—Continue to maintain/enhance the County's classification under the Community Rating System. *Comment: Ongoing*	X		X	CCC-5
CCC-5—Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan. *Comment: The Safety Element was amended in June 2011 to incorporate the Local Hazard Mitigation Plan by reference.*	X		X	CCC-2
CCC-6—Upgrade Emergency Operations Center (EOC) HVAC. *Comment: Completed 2013*	X			
CCC-7—Develop and Conduct a Multi-Hazard Seasonal Public Awareness Program to Include Exercises. *Comment: Action unclear*		X		
CCC-8—Annually Provide California State Training Institute (CSTI) "Earthquake" Class to Essential County Personnel. *Comment: Ongoing*	X		X	CCC-6
CCC-9— Support Mass Care and Shelter Drills conducted by Red Cross, which involve both County Employees, Non-Government Agencies, CERT volunteers, and the public. *Comment: Ongoing*	X		X	CCC-7
CCC-10—County participates in annual statewide emergency planning exercises. *Comment: Ongoing*	X		X	CCC-8
CCC-11—FCC P-25 East Bay Regional Communications System (Alameda & Contra Costa County- At built out, the East Bay Regional Communications System will be a 36-site, 2 county P-25 compliant communication system designed to provide fully interoperable communications to all public agencies within Alameda and Contra Costa counties. Refer to website www.ebrcsa.org for complete project description. *Comment: Roll out over two year period 2012-2013, went live*	X		X	CCC-9
CCC-12—Update existing network in the EOC to support full activation to include Wi-Fi. *Comment: Completed 2015*	X			

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
CCC-13—Retrofit antenna mast to support the addition of additional antennas, and protect from impacts from seismic and severe weather hazards. *Comment: Action unclear*		X		
CCC-14—Continue to maintain and develop the existing County-wide Community Warning System (CWS) by identifying and implementing new technology as it becomes available. *Comment: Ongoing*	X		X	CCC-10
CCC-15—Community Warning System to continue outreach for their "Cell Phone Alert" program which allows individuals to register their cell phones with the CWS and to be notified via cell phone during an emergency incident in their geographic location. *Comment: Ongoing*	X		X	CCC-11
CCC-16—Update/enhance existing flood hazard mapping to better reflect current conditions. *Comment: Ongoing*	X		X	CCC-12
CCC-17—Canal Road Bridge Replacement. *Comment: Construction to begin Summer 2017*			X	CCC-13
CCC-18—Marsh Creek Road Bridge over Marsh Creek. *Comment: Construction to begin Summer 2019*			X	CCC-14
CCC-19—Bethel Island Road retrofit-widen to four lane arterial standard from East Cypress Road to Gateway Road including realignment of curve, Road elevation, and construction of new bridge. *Comment: Completed in 2012*	X			
CCC-20—Center Avenue (Pacheco Boulevard to Blackwood Drive) Relocate Fire Station, widen bridge, and construct 2 additional lanes (4 lanes total). *Comment: On Capital Road Improvement and Preservation Plan (CRIPP)*			X	CCC-16
CCC-21—Boulevard Way at Las Trampas Creek Scour Repair - Bridge on Boulevard Way crossing Las Trampas Creek - Repair of the scouring is needed to maintain the bridge's structural integrity. *Comment: Construction anticipated for 2017/2018*			X	CCC-17
CCC-22—Retrofit Marsh Drive Bridge over Walnut Creek. *Comment: Construction anticipated for 2022*			X	CCC-18
CCC-23—Orwood Road Bridge Replacement - the existing bridge is approaching the end of its useful life and is not designed to for earthquake loading. Project # 0662-6R4076 *Comment: Completed 2017*	X			
CCC-24—Pomo Street Arch Culvert Repair. *Comment: Completed 2011*	X			
CCC-25—San Pablo Avenue Bridge over Rodeo Creek - bridge replacement. *Comment: Completed 2015*	X			
CCC-26—Update of four Dam Emergency Plans (EAP): Deer Creek, Dry Creek, Marsh Creek, and Pine Creek. *Comment: Completed 2016*	X			

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
CCC-27—Adoption of Fire and Resource Assessment Program (FRAP) Maps - Very High Fire Hazard Severity Zone Maps developed by Cal Fire. *Comment: Contra Costa Fire Protection District is the responsible agency.*		X		
CCC-28—Enhance/Improve County Ordinance Code language and enforcement including: County Building Codes to Increase Compliance with SB 1369 Defensible Space and Other Fire Safe Requirements in the Unincorporated County. *Comment:*			X	CCC-23
CCC-29—Improve, expand and develop new programs that increase awareness of and reduce risk to wildfires including: Support Fire District Chipper Program. *Comment: Diablo Fire Safe Council is the responsible agency.*		X		
CCC-30—Implementation of projects listed in the Community Wildfire Protection Plan (CWFPP). *Comment: None of the listed projects are under Contra Costa County's authority to implement.*		X		
CCC-31—Participate in Annual Multi-Agency Wildland Fire Drill *Comment: Local fire districts participate, not the County.*		X		
CCC-32—Continue and Maintain Noxious Weed Eradication Program - Department of Agriculture & California Department of Forestry. *Comment: Action unclear*		X		
CCC-33—Participate in the bi-annual CAER Group Coastal Region Hazardous Materials Response Organization (CHMRO) Hazardous Materials Transportation Conference 2011. *Comment: Completed 2011*	X			
CCC-34—Address deferred maintenance of County owned facilities as identified in the 2007 "Contra Costa County Facility Condition Analysis (FCA)." The FCA project included the inspection of 93 buildings, totaling over 2,900,000 square feet. Facilities inspected fall into critical infrastructure/key resources categories. *Comment:*			X	CCC-24
CCC-35—Where appropriate, support retrofitting, purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. *Comment:*			X	CCC-1
CCC-36— Sponsor the formation and training of Community Emergency Response Teams (CERT) training through partnerships with local businesses. *Comment: This action is not feasible with currently available resources.*		X		
CCC-37— Better inform residents of comprehensive mitigation activities, for all hazards of concern 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. *Comment:*			X	CCC-25

1.10 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 1-14 lists the actions that make up the Unincorporated Contra Costa County hazard mitigation action plan. Table 1-15 identifies the priority for each action. Table 1-16 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 1-14. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
CCC-1—Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	Public Works	High	HMGP, PDM, FMA	Short-term
CCC-2—Integrate the hazard mitigation plan into other plans, ordinances, and programs that dictate land use decisions in the community, including the County General Plan, County Zoning Ordinance, and County Capital Road Improvement and Preservation Plan.						
New and Existing	All Hazards	1, 3, 4, 5, 7, 11, 12, 14, 17, 18	Conservation and Development*, Public Works	Low	Staff time/department funds	Ongoing
CCC-3—Actively support and participate in implementation, monitoring, maintenance, and updating of this Plan, as outlined and defined in Volume 1.						
New and Existing	All Hazards	3, 8, 16	OES	Low	Staff time, HMGP	Short-term
CCC-4—Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: • Enforce the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts.						
New and Existing	Flood	3, 5, 6, 9, 10, 11, 15	Public Works/Flood Control District	Low	Staff time/department funds	Ongoing
CCC-5—Continue to maintain/enhance the County's classification under the Community Rating System.						
New and Existing	Flood	3, 4, 5, 7, 9	Public Works/Flood Control District	Low	General Fund	Ongoing
CCC-6—Annually Provide California State Training Institute (CSTI) "Earthquake" Class to Essential County Personnel.						
N/A	Earthquake	2, 6, 13	OES	Low; $50,000	EMPG, SHSGP	Ongoing
CCC-7—Support Mass Care and Shelter Drills conducted by Red Cross, which involve County Employees, Non-Government Agencies, CERT volunteers, and the public.						
N/A	All Hazards	2, 3	Red Cross* and City*, OES	Medium; $50,000	Staff Time, General Funds	Ongoing
CCC-8—Continue to participate in annual statewide emergency planning exercises.						
N/A	All Hazards	2, 6, 13	OES	Low; $50,000	UASI, CDPH	Ongoing
CCC-9—FCC P-25 phase 2 compliance East Bay Regional Communications System (Alameda & Contra Costa Counties - at built out, the East Bay Regional Communications System will be a 36-site, two county, P-25 compliant communication system designed to provide fully interoperable communications to all public agencies within Alameda and Contra Costa Counties. (Refer to website www.ebrcsa.org for complete project description).						
New and Existing	All Hazards	1, 2	JPA*, Sherriff's Office IT	High; $9 Million	Multiple Federal Grants	Ongoing
CCC-10—Continue to maintain and develop the existing County-wide Community Warning System (CWS) by identifying and implementing new technology as it becomes available.						
New and Existing	All Hazards	2, 3	OES	Low	CUPA Fees	Ongoing

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
CCC-11—Community Warning System will continue to educate and outreach on all registration tools (cell phones, social media, sirens, etc.).						
Existing	All Hazards	2, 3	OES	Low	CUPA Fees	Ongoing
CCC-12—Update/enhance existing flood hazard mapping to better reflect current conditions.						
Existing	Flood	3, 6, 12, 16	Public Works/Flood Control District	Medium	FEMA/Public Works Floodplain Determination Fees; FEMA Risk-MAP program	Short-term; Ongoing
CCC-13—Canal Road Bridge Replacement (Bridge No. 28C0376) – The existing bridge is approaching the end of its useful life.						
Existing	Flood/ Earthquake	1, 7, 15	Public Works	$3 Million Medium	HBP, Prop 111 Gas Tax	Short-term
CCC-14—Marsh Creek Road Bridge over Marsh Creek (Bridge No. 28C141) – The existing bridge is approaching the end of its useful life.						
Existing	Flood/ Earthquake	1, 7, 15	Public Works	$5 Million Medium	HBP, Prop 111 Gas Tax	Short-term; Anticipated completion date 2019
CCC-15—Byron Highway Bridge Replacement over California Aqueduct (Bridge No. 28C0121) – The existing bridge is approaching the end of its useful life.						
Existing	Flood/ Earthquake	1, 7, 15	Public Works	$15 Million, High	DWR, HBP, Prop 111 Gas Tax	Short-term; Anticipated completion date 2020
CCC-16—Center Avenue and Pacheco Boulevard Intersection Improvements – Relocate fire station, widen bridge, and construct intersection improvements.						
Existing	Flood/ Earthquake	1, 7, 15	Public Works	$7.6 Million, High	FEMA Hazard Mitigation Grant funding for FS relocation. Pacheco Area of Benefit Funds and Prop 111 Gas Tax for road work	Long-term; Depends on funding
CCC-17—Boulevard Way at Las Trampas Creek Scour Repair- Bridge on Boulevard Way crossing Las Trampas Creek- Repair of the scouring is needed to maintain the bridge's structural integrity.						
Existing	Flood/ Earthquake	1, 7, 15	Public Works	$500,000, Medium	HBP, Prop 111 Gas Tax	Short-term; 2017/2018
CCC-18—Retrofit Marsh Drive Bridge over Walnut Creek (Bridge No. 28C0442) – The existing bridge is approaching the end of its useful life.						
Existing	Flood/ Earthquake	1, 7, 15	Public Works	$8 Million, High	HBP, Prop 111 Gas Tax	Short-term; Anticipated completion date 2022
CCC-19—Marsh Creek Road Bridge over Marsh Creek (Bridge No. 28C143) – The existing bridge is approaching the end of its useful life.						
Existing	Flood/ Earthquake	1, 7, 15	Public Works	$4 Million Medium	HBP, Prop 111 Gas Tax	Short-term; Anticipated completion date 2020

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
CCC-20—Marsh Creek Road Bridge over Marsh Creek (Bridge No. 28C145) – The existing bridge is approaching the end of its useful life.						
Existing	Flood/ Earthquake	1, 7, 15	Public Works	$4 Million Medium	HBP, Prop 111 Gas Tax	Short-term; Anticipated completion date 2020
CCC-21—Del Monte Drive Bridge Replacement (Bridge No. 28C0207) – The existing bridge is approaching the end of its useful life.						
Existing	Flood/ Earthquake	1, 7, 15	Public Works	$4 Million Medium	HBP, Prop 111 Gas Tax	Long-term; Depends on funding
CCC-22—Pacific Avenue Bridge Replacement (Bridge No. 28C0379) – The existing bridge is approaching the end of its useful life.						
Existing	Flood/ Earthquake	1, 7, 15	Public Works	$4 Million Medium	HBP, Prop 111 Gas Tax	Long-term; Depends on funding
CCC-23—Enhance/Improve County Ordinance Code language and enforcement including: County Building Codes to Increase Compliance with SB 1369 Defensible Space and Other Fire Safe Requirements in the Unincorporated County.						
New	Wildfire	5, 7, 11, 12	Conservation and Development	$20,000 Low	Staff time/department funds	Long-term, Unknown; depends on FRAP map adoption
CCC-24—Address deferred maintenance of County owned facilities as identified in the 2007 "Contra Costa County Facility Condition Analysis (FCA)." The FCA project included the inspection of 93 buildings, totaling over 2,900,000 square feet. Facilities inspected fall into critical infrastructure/key resources categories.						
Existing	All Hazards	3, 7, 15	Public Works	$251 Million High	Grants and General Funds when they become available	Long-term; depends on funding
CCC-25—Through publications and social media, better inform residents of comprehensive mitigation strategies for all hazards of concern, including but not limited to, elevating appliances above expected flood levels, using fire-resistant roofing and defensible space in high wildfire threat and wildfire-urban interface areas, structural retrofitting techniques for older homes, and using intelligent grading techniques.						
New	All Hazards	3, 5, 7	Conservation and Development	Low	Staff time/department funds	Short-term; Ongoing
CCC-26—Construct new EOC and obtain Leadership in Energy and Environmental Design (LEED) certification.						
New	All Hazards	1, 2, 18	Sheriff's Office	Low	Capital budget	Short-term; 2018/2019
CCC-27—Hazardous Materials Emergency Program (HMEP) Adapting to Rising Tides shoreline data overlay hazardous materials rail transportation data to look at the impact that disruption from flooding/sea level rise could or would cause to Contra Costa County.						
Existing	Flood	1, 6, 18	HazMat Division, Health Department	High	HMGP	Short-term

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
CCC-28—Review and revise, as necessary, General Plan Safety Element policies and maps related to landslide hazards based on information contained in Seismic Hazard Zone (SHZ) Reports prepared by the California Department of Conservation.						
New	Landslide	5, 6, 7, 12, 14	Conservation and Development	Low	Staff time/department funds	Long-term, Unknown; depends on state's completion of SHZ Reports
CCC-29—Implement the North Richmond Watershed Connections Project that includes a suite of multiple-benefit urban greening projects to improve water quality and enhance the health of San Pablo and Wildcat Creeks and their watersheds, while expanding the urban forest and reducing heat islands, and providing Green Infrastructure.						
New	Flood	1, 3, 10, 14, 17	Public Works	$900,000 Medium	State Coastal Conservancy Urban Greening Grant	Short-term; Early 2018 to 2020
CCC-30—North Richmond Stormwater Pump Station Retrofit.						
Existing	Flood	1, 10	Public Works/Flood Control District	Low	Flood Control District/County Funds	Short-term

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 1-15. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
CCC-1	8	High	High	Yes	Yes	No	Medium	High
CCC-2	9	Medium	Low	Yes	No	Yes	High	Low
CCC-3	3	Low	Low	Yes	No	Yes	High	Low
CCC-4	7	Medium	Low	Yes	No	Yes	High	Low
CCC-5	5	Low	Low	Yes	No	Yes	High	Low
CCC-6	3	High	Low	Yes	Yes	Yes	Medium	High
CCC-7	2	High	Medium	Yes	No	No	Medium	Low
CCC-8	3	High	Low	Yes	Yes	Yes	Medium[b]	Medium
CCC-9	2	High	High	Yes	Yes	Yes	High	High
CCC-10	2	Medium	Low	Yes	No	Yes	High	Low
CCC-11	2	High	Low	Yes	No	Yes	High	Low
CCC-12	4	Medium	Medium	Yes	Yes	No	Medium	Medium
CCC-13	3	High	Medium	Yes	Yes	No	Medium	High
CCC-14	3	High	Medium	Yes	Yes	No	Medium	High
CCC-15	3	High	High	Yes	Yes	No	Medium	High
CCC-16	3	High	High	Yes	Yes	No	Medium	High
CCC-17	3	High	Medium	Yes	Yes	Yes	High	High
CCC-18	3	High	High	Yes	Yes	No	Medium	High
CCC-19	3	High	Medium	Yes	Yes	No	Medium	High
CCC-20	3	High	Medium	Yes	Yes	No	Medium	High

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
CCC-21	3	High	Medium	Yes	Yes	No	Medium	High
CCC-22	3	High	Medium	Yes	Yes	No	Medium	High
CCC-23	4	Medium	Low	Yes	No	Yes	High	Low
CCC-24	3	High	High	Yes	Yes	No	Medium	Medium
CCC-25	3	Medium	Low	Yes	No	Yes	High	Low
CCC-26	3	Medium	Low	Yes	No	Yes	High	Low
CCC-27	3	Medium	High	Yes	Yes	No	Medium	High
CCC-28	5	Medium	Low	Yes	No	Yes	High	Low
CCC-29	5	Medium	Medium	Yes	Yes	Yes	Medium	Medium
CCC-30	2	Medium	Low	Yes	Yes	Yes	Medium	High

a. See the introduction to this volume for explanation of priorities.
b. Several drills are held throughout the year and are attended as staff resources are available.

Table 1-16. Analysis of Mitigation Actions

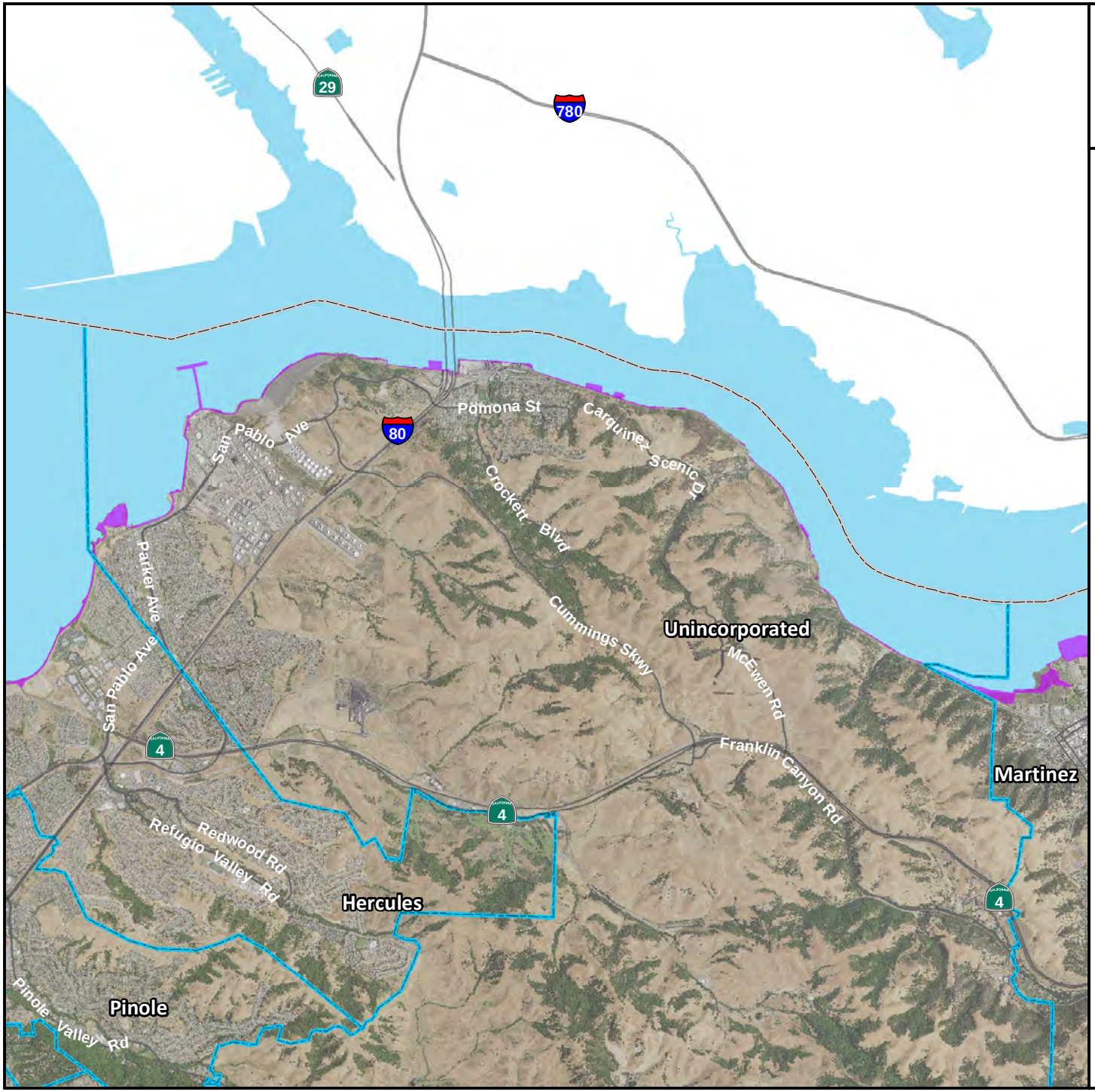
Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	CCC-2 CCC-25	CCC-2 CCC-25	CCC-2, CCC-9, CCC-10, CCC-11 CCC-25	CCC-2	CCC-2, CCC-8, CCC-9, CCC-10	CCC-2	CCC-2 CCC-25	CCC-2, CCC-7, CCC-9, CCC-10 CCC-25
Dam and levee failure								
Drought								
Earthquake		CCC-13 CCC-14 CCC-15 CCC-16 CCC-17 CCC-18 CCC-19 CCC-20 CCC-21 CCC-22			CCC-6	CCC-13 CCC-14 CCC-15 CCC-16 CCC-17 CCC-18 CCC-19 CCC-20 CCC-21 CCC-22		
Flood	CCC-5 CCC-12 CCC-29	CCC-5 CCC-13 CCC-14 CCC-15 CCC-16 CCC-17 CCC-18 CCC-19 CCC-20 CCC-21 CCC-22	CCC-5 CCC-12	CCC-5 CCC-29	CCC-5	CCC-13 CCC-14 CCC-15 CCC-16 CCC-17 CCC-18 CCC-19 CCC-20 CCC-21 CCC-22 CCC-29	CCC-29 CCC-30	CCC-30
Landslide	CCC-28	CCC-28						
Severe weather								
Tsunami								
Wildfire	CCC-23	CCC-23						CCC-23

a. See the introduction to this volume for explanation of mitigation types.

1.11 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Contra Costa County General Plan**—The General Plan was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **Contra Costa County Ordinance Code**—The ordinance code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **Contra Costa County Floodplain Management Ordinance**—The Floodplain Management Ordinance was reviewed for compliance with the National Flood Insurance Program.
- **Contra Costa County Capital Road Improvement and Preservation Plan (CRIPP)**—The CRIPP was reviewed for identifying projects that address hazards.
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.



Rodeo / Crockett Unincorporated Area

Tsunami Inundation Zones

Tsunami Evacuation Planning Scenario

Contra Costa County Boundary

City Boundaries

Water Bodies

This tsunami inundation map was prepared to assist cities and counties in identifying their tsunami hazard. It is intended for local jurisdictional, coastal evacuation planning uses only.

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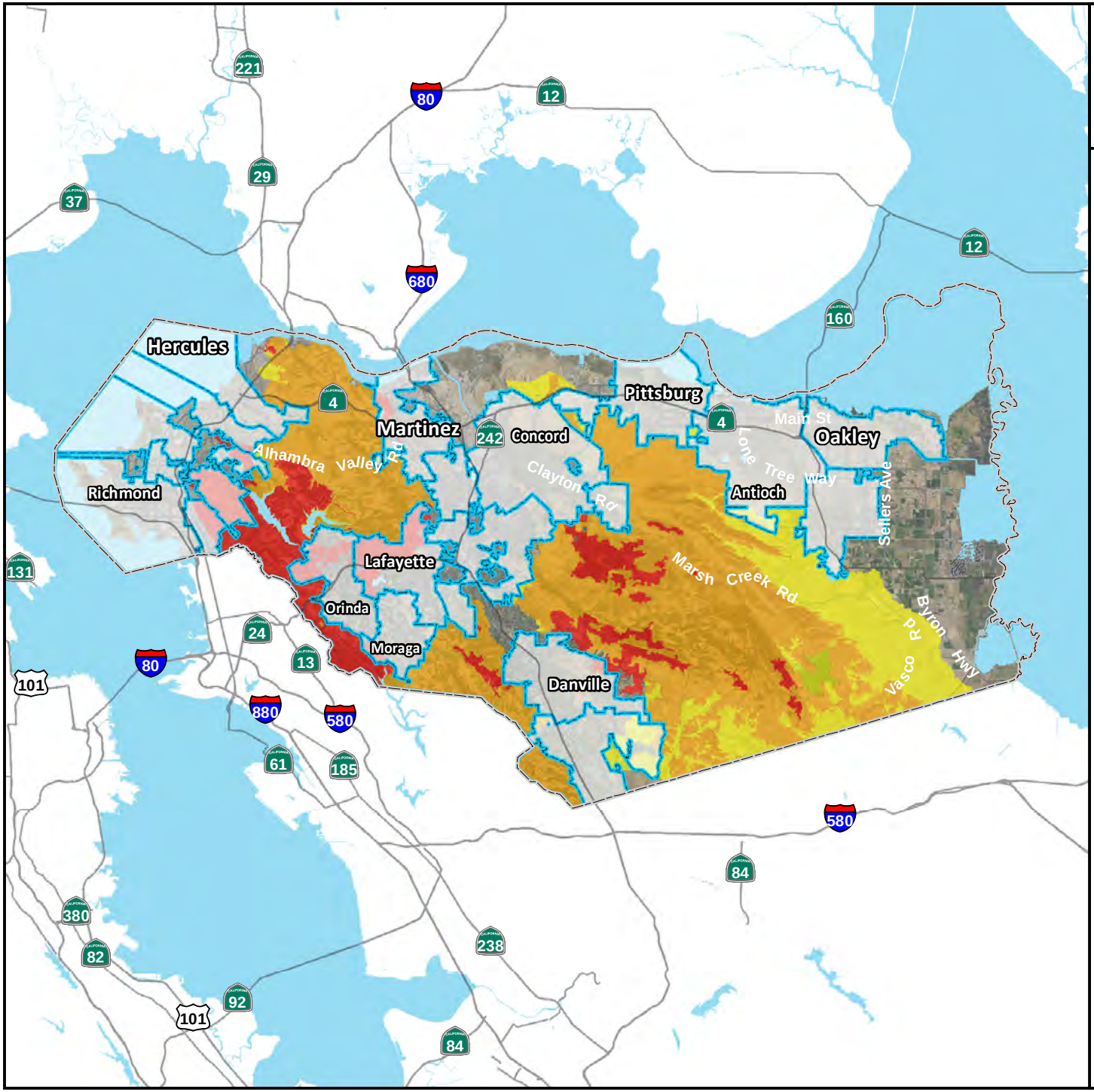
Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, ABAG, USDA, USGS



Unincorporated

Wildfire Severity Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Wildfire Severity Zone

Moderate

High

Very High

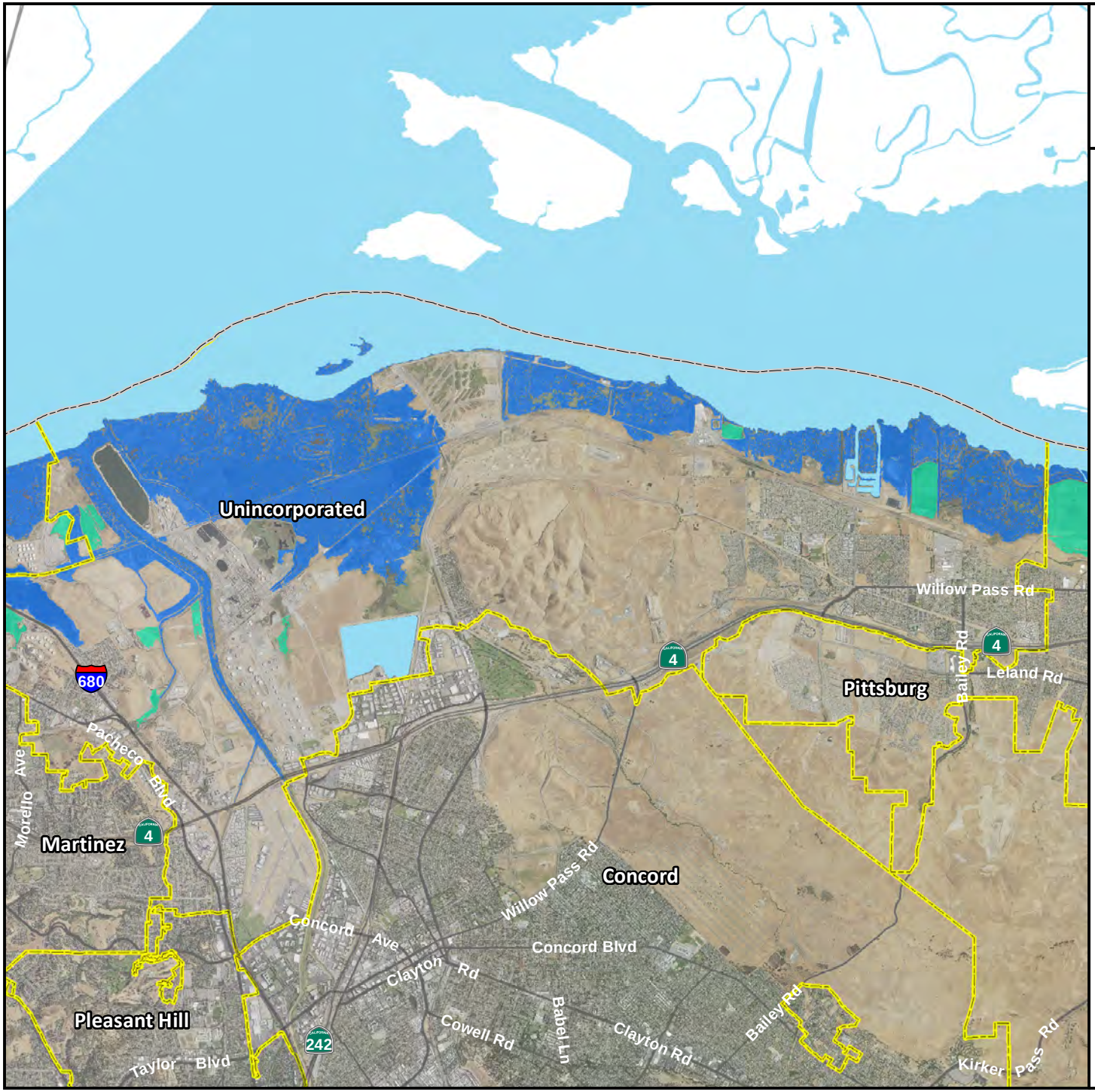
0 3.75 7.5 15

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, CalFIRE, USDA



Vine Hill / Bay Point Unincorporated Area

Sea Level Rise - Mean Higher High Water Scenario Inundation Zones

- 12" Mean Higher High Water Scenario
- Low Lying Areas
- Contra Costa County Boundary
- City Boundaries

The inundation maps and the associated analyses are intended as planning level tools to illustrate the potential for inundation and coastal flooding under future SLR scenarios and (they) do not represent the exact location or depth of flooding or shoreline overtopping. The maps are based on model outputs and do not account for all of the complex and dynamic Bay processes or future conditions such as erosion, subsidence, future construction or shoreline protection upgrades, or other changes to San Francisco Bay or the region that may occur in response to SLR. For more context about the maps and analyses, including a description of the data and methods used, please see Adapting to Rising Tides: Transportation Vulnerability and Risk Assessment Pilot Project, Technical Report, November 2011.

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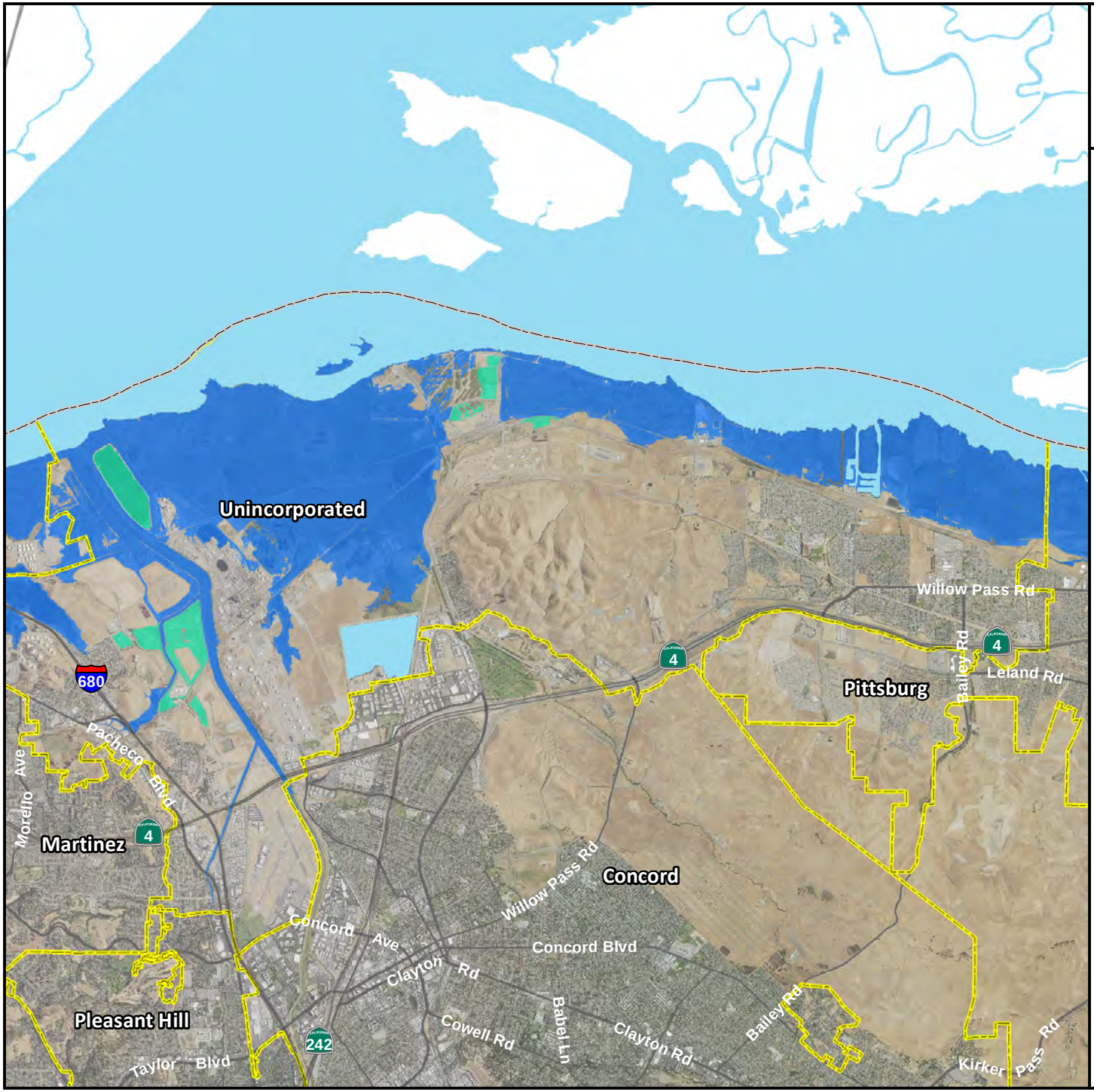
Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, SFBCDC, USDA, USGS



Vine Hill / Bay Point Unincorporated Area

Sea Level Rise - Mean Higher High Water Scenario Inundation Zones

- 12" Mean Higher High Water Plus 100-Year Extreme Tide
- Low Lying Areas
- Contra Costa County Boundary
- City Boundaries

The inundation maps and the associated analyses are intended as planning level tools to illustrate the potential for inundation and coastal flooding under future SLR scenarios and (they) do not represent the exact location or depth of flooding or shoreline overtopping. The maps are based on model outputs and do not account for all of the complex and dynamic Bay processes or future conditions such as erosion, subsidence, future construction or shoreline protection upgrades, or other changes to San Francisco Bay or the region that may occur in response to SLR. For more context about the maps and analyses, including a description of the data and methods used, please see Adapting to Rising Tides: Transportation Vulnerability and Risk Assessment Pilot Project, Technical Report, November 2011.

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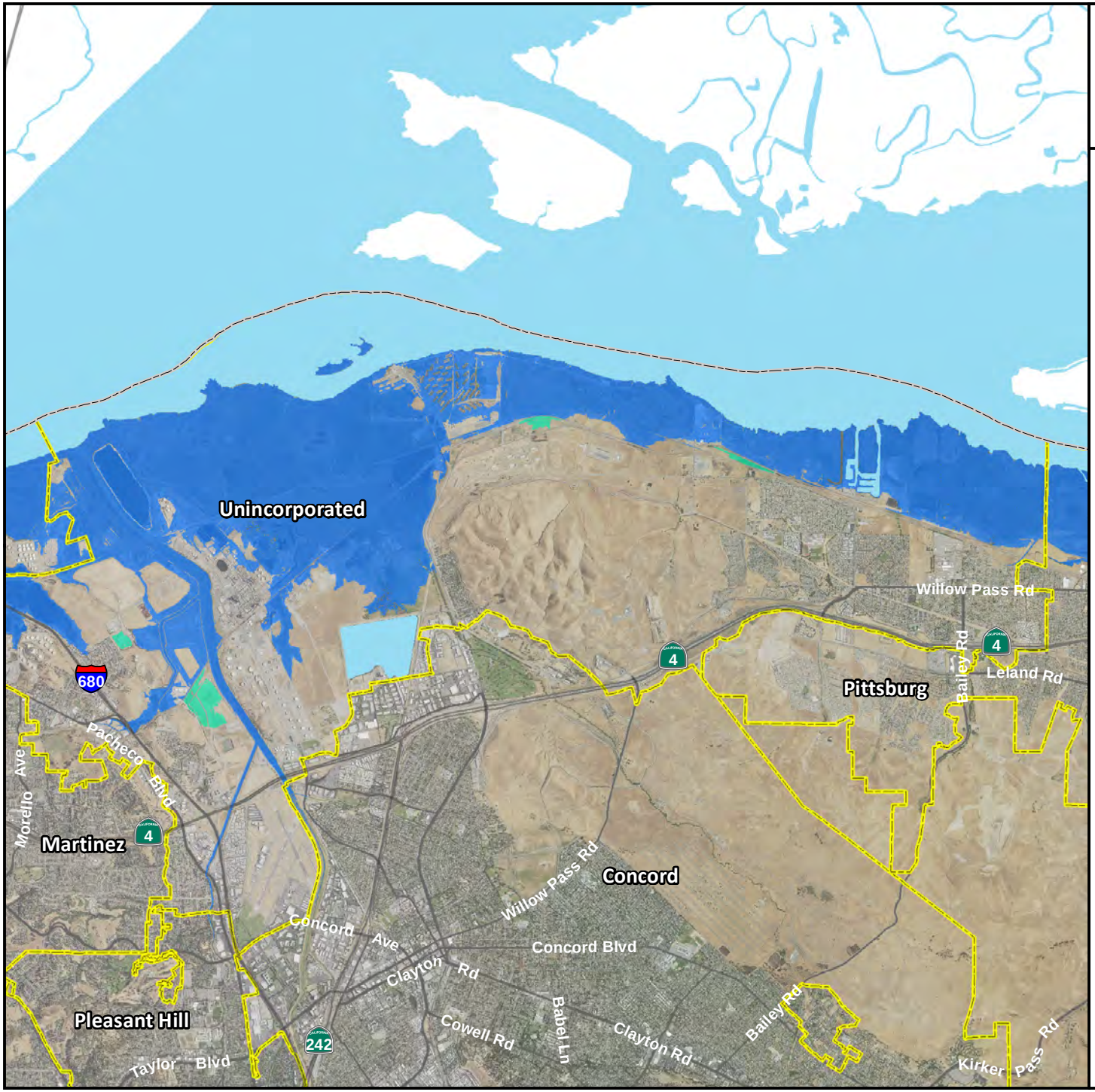

Vine Hill / Bay Point Unincorporated Area

Sea Level Rise - Mean Higher High Water Scenario Inundation Zones

- 66" Mean Higher High Water Scenario
- Low Lying Areas
- Contra Costa County Boundary
- City Boundaries

The inundation maps and the associated analyses are intended as planning level tools to illustrate the potential for inundation and coastal flooding under future SLR scenarios and (they) do not represent the exact location or depth of flooding or shoreline overtopping. The maps are based on model outputs and do not account for all of the complex and dynamic Bay processes or future conditions such as erosion, subsidence, future construction or shoreline protection upgrades, or other changes to San Francisco Bay or the region that may occur in response to SLR. For more context about the maps and analyses, including a description of the data and methods used, please see Adapting to Rising Tides: Transportation Vulnerability and Risk Assessment Pilot Project, Technical Report, November 2011.

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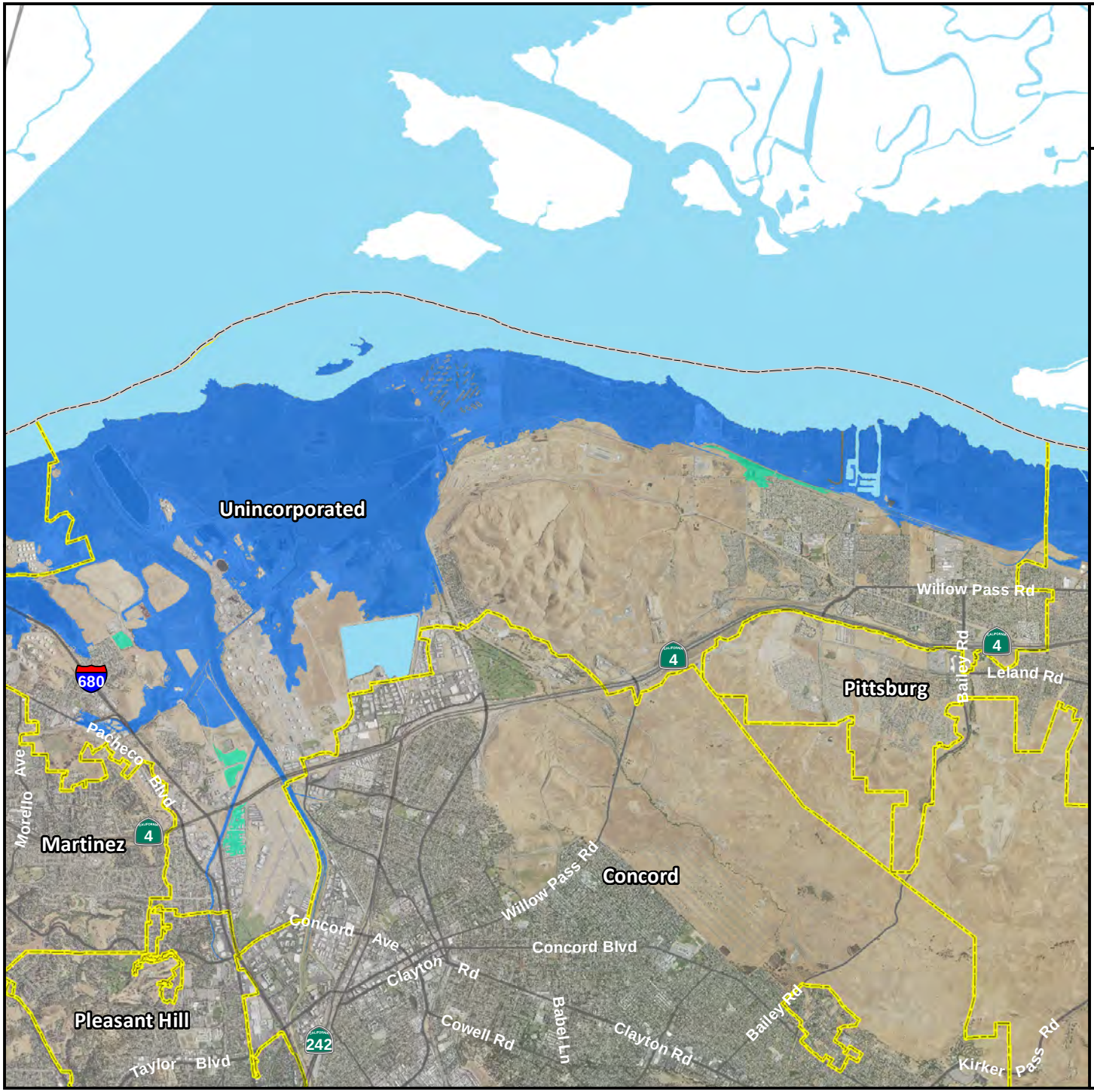
Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, SFBCDC, USDA, USGS



Vine Hill / Bay Point Unincorporated Area

Sea Level Rise - Mean Higher High Water Scenario Inundation Zones

- 66" Mean Higher High Water Plus 100-Year Extreme Tide
- Low Lying Areas
- Contra Costa County Boundary
- City Boundaries

The inundation maps and the associated analyses are intended as planning level tools to illustrate the potential for inundation and coastal flooding under future SLR scenarios and (they) do not represent the exact location or depth of flooding or shoreline overtopping. The maps are based on model outputs and do not account for all of the complex and dynamic Bay processes or future conditions such as erosion, subsidence, future construction or shoreline protection upgrades, or other changes to San Francisco Bay or the region that may occur in response to SLR. For more context about the maps and analyses, including a description of the data and methods used, please see Adapting to Rising Tides: Transportation Vulnerability and Risk Assessment Pilot Project, Technical Report, November 2011.

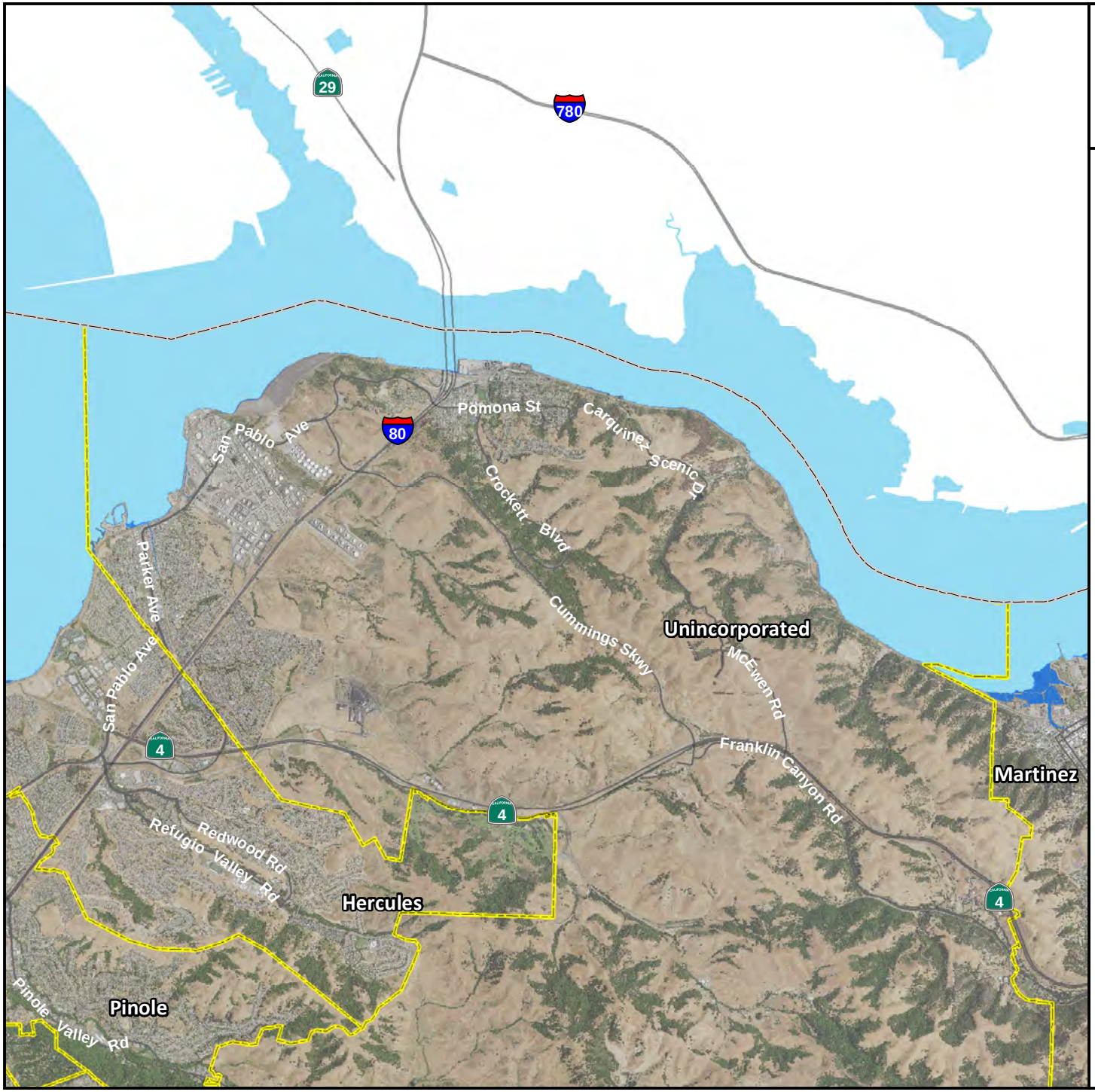
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, SFBCDC, USDA, USGS



Rodeo / Crockett Unincorporated Area

Sea Level Rise - Mean Higher High Water Scenario Inundation Zones

- 12" Mean Higher High Water Scenario
- Low Lying Areas
- Contra Costa County Boundary
- City Boundaries

The inundation maps and the associated analyses are intended as planning level tools to illustrate the potential for inundation and coastal flooding under future SLR scenarios and (they) do not represent the exact location or depth of flooding or shoreline overtopping. The maps are based on model outputs and do not account for all of the complex and dynamic Bay processes or future conditions such as erosion, subsidence, future construction or shoreline protection upgrades, or other changes to San Francisco Bay or the region that may occur in response to SLR. For more context about the maps and analyses, including a description of the data and methods used, please see Adapting to Rising Tides: Transportation Vulnerability and Risk Assessment Pilot Project, Technical Report, November 2011.

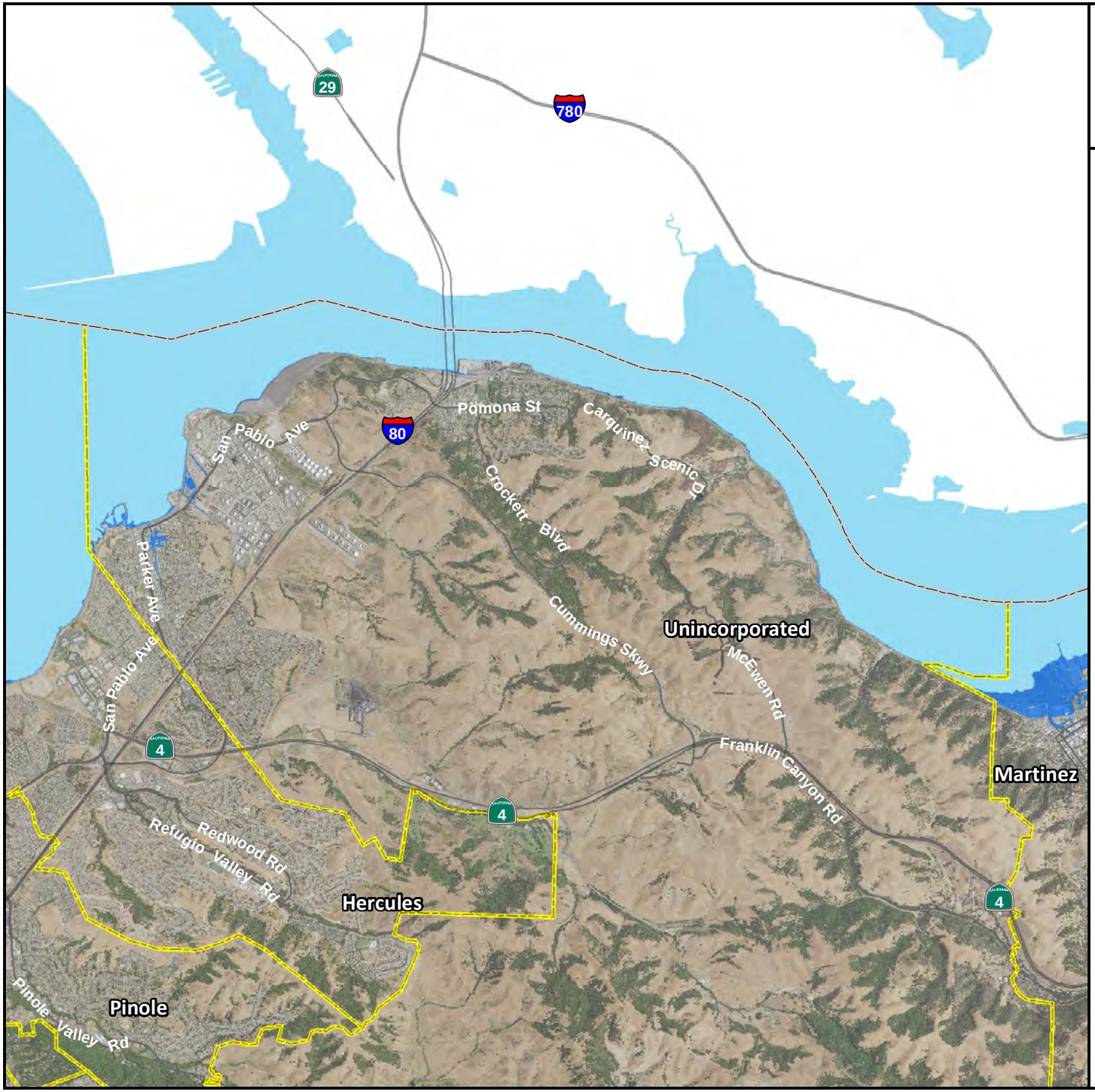
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, SFBCDC, USDA, USGS



Rodeo / Crockett Unincorporated Area

Sea Level Rise - Mean Higher High Water Scenario Inundation Zones

- 12" Mean Higher High Water Plus 100-Year Extreme Tide
- Low Lying Areas
- Contra Costa County Boundary
- City Boundaries

The inundation maps and the associated analyses are intended as planning level tools to illustrate the potential for inundation and coastal flooding under future SLR scenarios and (they) do not represent the exact location or depth of flooding or shoreline overtopping. The maps are based on model outputs and do not account for all of the complex and dynamic Bay processes or future conditions such as erosion, subsidence, future construction or shoreline protection upgrades, or other changes to San Francisco Bay or the region that may occur in response to SLR. For more context about the maps and analyses, including a description of the data and methods used, please see Adapting to Rising Tides: Transportation Vulnerability and Risk Assessment Pilot Project, Technical Report, November 2011.

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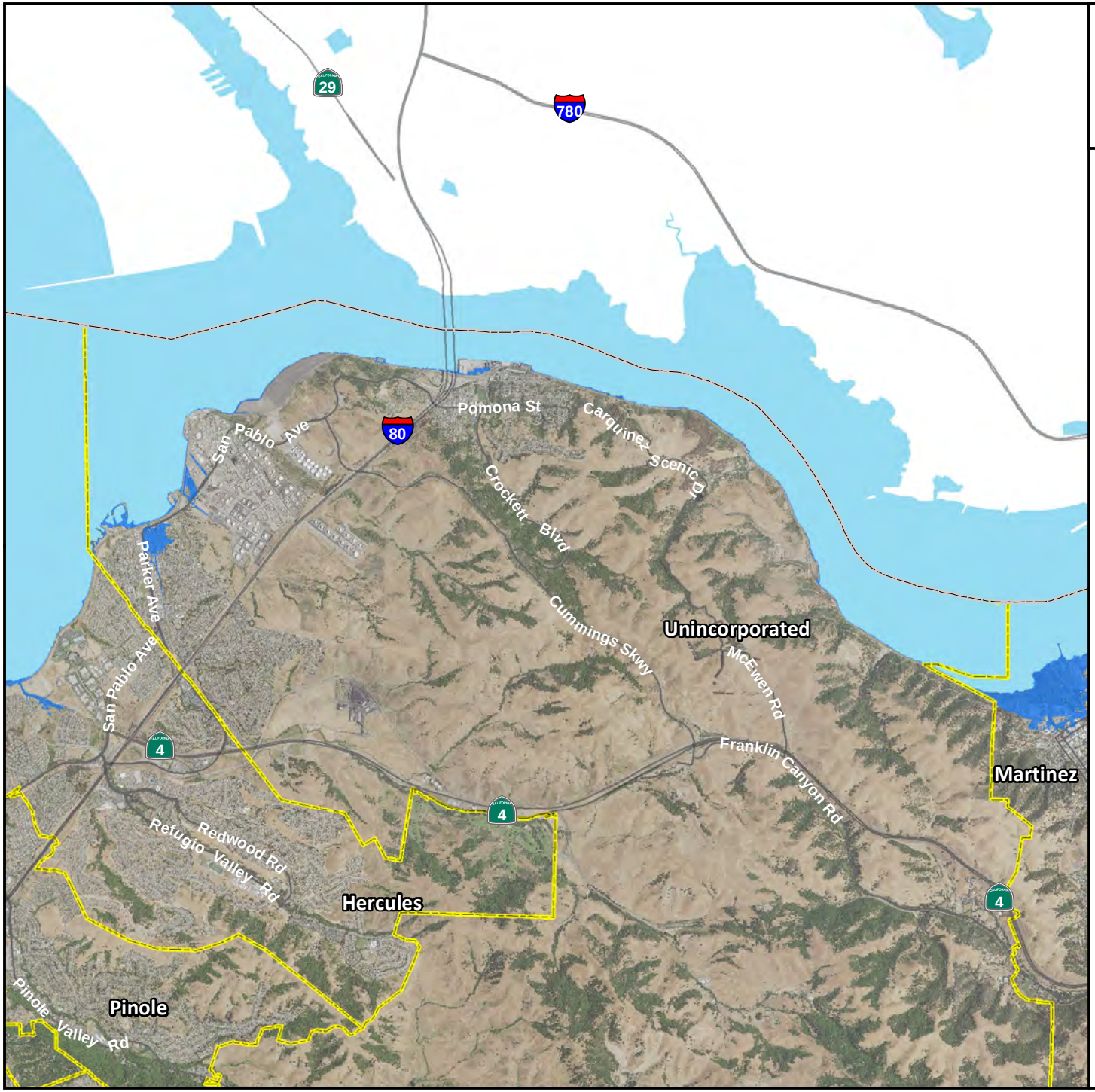

Rodeo / Crockett Unincorporated Area

Sea Level Rise - Mean Higher High Water Scenario Inundation Zones

66" Mean Higher High Water Scenario

Low Lying Areas

Contra Costa County Boundary

City Boundaries

The inundation maps and the associated analyses are intended as planning level tools to illustrate the potential for inundation and coastal flooding under future SLR scenarios and (they) do not represent the exact location or depth of flooding or shoreline overtopping. The maps are based on model outputs and do not account for all of the complex and dynamic Bay processes or future conditions such as erosion, subsidence, future construction or shoreline protection upgrades, or other changes to San Francisco Bay or the region that may occur in response to SLR. For more context about the maps and analyses, including a description of the data and methods used, please see Adapting to Rising Tides: Transportation Vulnerability and Risk Assessment Pilot Project, Technical Report, November 2011.

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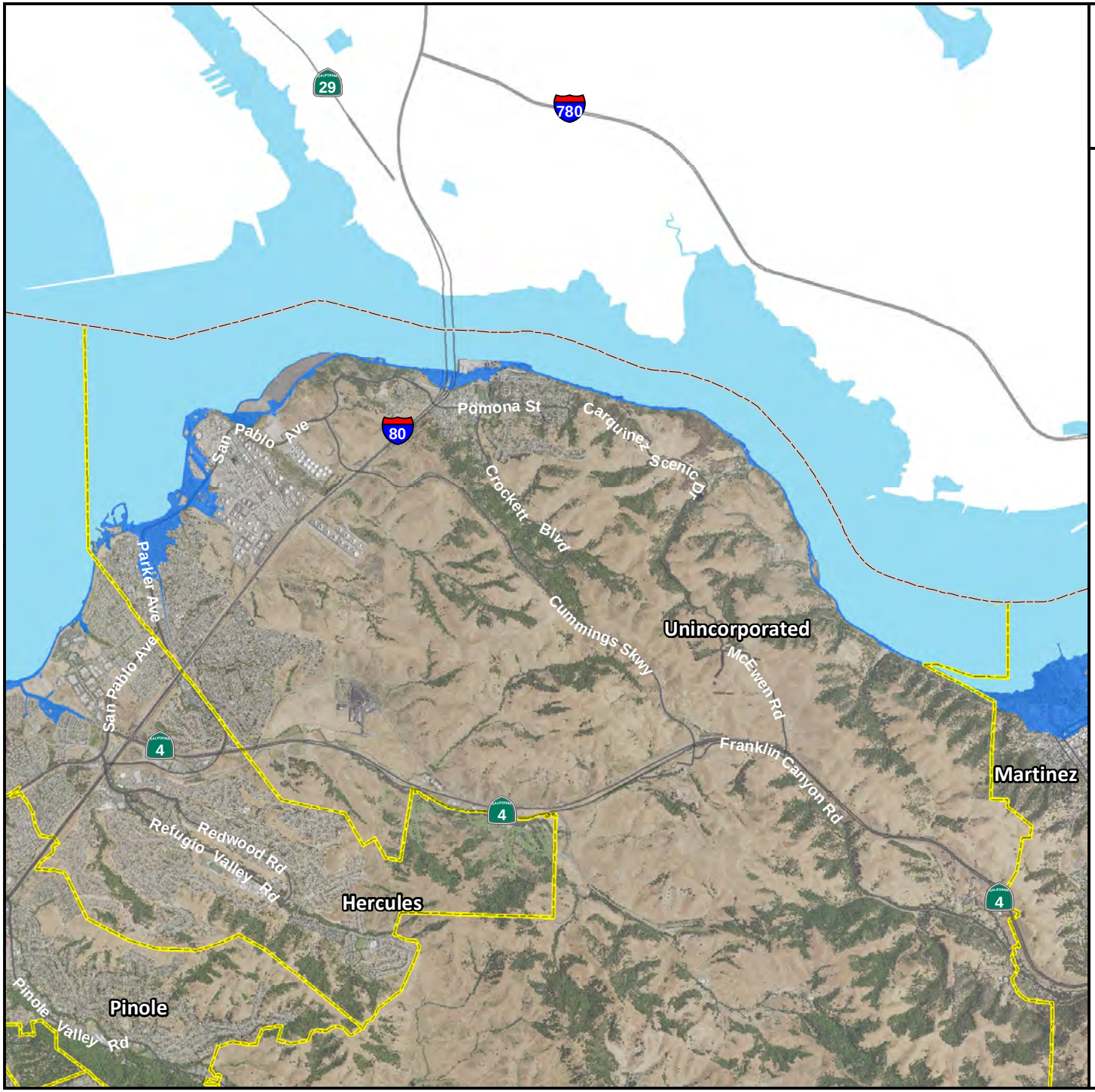


Rodeo / Crockett Unincorporated Area

Sea Level Rise - Mean Higher High Water Scenario Inundation Zones

66" Mean Higher High Water Plus 100-Year Extreme Tide

Low Lying Areas

Contra Costa County Boundary

City Boundaries

The inundation maps and the associated analyses are intended as planning level tools to illustrate the potential for inundation and coastal flooding under future SLR scenarios and (they) do not represent the exact location or depth of flooding or shoreline overtopping. The maps are based on model outputs and do not account for all of the complex and dynamic Bay processes or future conditions such as erosion, subsidence, future construction or shoreline protection upgrades, or other changes to San Francisco Bay or the region that may occur in response to SLR. For more context about the maps and analyses, including a description of the data and methods used, please see Adapting to Rising Tides: Transportation Vulnerability and Risk Assessment Pilot Project, Technical Report, November 2011.

0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, SFBCDC, USDA, USGS

2. CITY OF ANTIOCH

2.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Lynne Filson
Assistant City Engineer II
200 H Street
Antioch, CA 94509
Telephone: 925-779-7025
e-mail Address: lfilson@ci.antioch.ca.us

Alternate Point of Contact
Julie Haas-Wajdowicz
Environmental Resource Coordinator
200 H Street
Antioch, CA 94509
Telephone: 925-779-7097
e-mail Address: jhaaswajdowicz@ci.antioch.ca.us

2.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation**—February 6, 1872
- **Current Population**—114,241 as of January 1, 2017 (California Department of Finance, 2017)
- **Population Growth**—Based upon U.S. Census and California Department of Finance data, City of Antioch's population growth rates have slowed significantly since the 2000 – 2010 Census. Overall population growth in that decade was 13.1 percent. From 2010 to 2017, however, growth slowed to 0.11 percent, and between January 1, 2016 and January 1, 2017 the annual increase was 0.7 percent.
- **Location and Description**—Antioch is a city in the East Bay region of the San Francisco Bay area at the confluence of the Sacramento and San Joaquin Rivers, at the gateway to the agriculturally rich San Joaquin Delta. The city is slightly more than 50 miles east of San Francisco and 55 miles southwest of Sacramento (at 38°00'N, 121°48'21"W). The City has a total area of 28.16 square miles.

  Antioch is home to 31 parks covering 310 acres, with an additional 600 acres of City-owned open space. It has 11 miles of walking paths connecting communities to parks and schools. Within its boundaries, Antioch has Contra Loma Regional Park, the Antioch/Oakley Regional Shoreline and a portion of the Black Diamond Mines Regional Park, and the Mokelumne Coast to Crest Trail and Delta De Anza Regional Trail. These three parks cover 6,493 acres; approximately 38 percent of Antioch's total area. Just outside Antioch's city limit is the 2,024-acre Round Valley Regional Preserve. In addition, established in 1980, the Antioch Dunes National Wildlife Refuge was the first national wildlife refuge in the country established for the purpose of protecting endangered plants and insects. It is located on the south shore of the San Joaquin River in Antioch.

- **Brief History**—In 1849, the town was founded by brothers William and Joseph Smith, who named the town Smith's Landing. On February 5, 1850, Joseph Smith died of malaria and his brother moved to a higher ground overlooking the river. On July 4, 1851, William Smith held a picnic for the town residents on the bluff near his home. They discussed naming the community and Smith finally suggested the biblical name of Antioch, a town in Syria where the Christians were first named. Antioch was the name chosen and dedicated to the memory of Joseph. Around 1859, coal was discovered in the hills south of

Antioch, and coal mining formed the first substantial business in the area apart from farming and dairying. In 1872, Antioch incorporated as a General Law city. The town continued to prosper into the 1900s, becoming a "blue collar" factory community also supporting a fishing and commercial boating industry. In the latter part of the 1900s, as the factories began to close or move elsewhere, Antioch began to take on a new look. Today, Antioch is mainly a "bedroom" community, with most adults working in central Contra Costa County and larger cities toward Oakland and San Francisco. The City has seen an enormous amount of growth in the last 25 years as the population of the greater Bay Area grew. The City will continue to grow as real estate prices force families to move toward the suburbs.

- **Climate**—The climate is mild, with annual temperatures ranging between a high of 96°F and a low of 34°F. Humidity levels are generally low and the City's riverfront location often provides cooling breezes. Annual rainfall is just over 15.4 inches, the majority of which falls between October and May. Average annual snowfall is essentially zero.

- **Governing Body Format**—The City of Antioch has a Council/Manager form of government. Policy making and legislative authority is vested in a five-member City Council consisting of a Mayor and four Council Members. The four Council Members are elected to four-year overlapping terms. The Mayor is directly elected to a four-year term. The City Council assumes responsibility for adoption of this plan, and the City Manager will oversee its implementation.

  The City Council presides over and adopts the City's annual budget and financial affairs; appoints commissions and committees; and hires and supervises the City Manager and City Attorney. City Council members are directly responsible for service to the citizens, businesses and policies of the City. The City Manager advises City Council; supervises personnel and all City departments; enforces ordinances and programs approved by City Council; and, oversees day-to-day city government operations.

2.3 DEVELOPMENT TRENDS

Over the last few years, the City of Antioch has been recovering from the crash of the housing market and the great recession. The pace of residential development in the Bay Area and the State has continued to show consistent positive growth, with generally positive results for local economies reliant on housing construction. Antioch's economy has not seen the same level of growth from the housing market increase as some of our neighboring communities. The focus of development since 2003 has been primarily commercial development. The new office, commercial and flex-space developments have created the opportunity for well over 5,000 new jobs within the City. Over time new jobs will lead to growth in the local economy. The recent Northeast Annexation of some-750 acres has created the opportunity for waterfront development for the properties that front the San Joaquin River. The property is mixed-use commercial, industrial, retail and residential.

A rise in the housing market and a significantly better economy have contributed to economic expansion and vitality. Even with the improved economy, Antioch has suffered from a low number of sworn police officers. In November 2013, the community passed Measure C, a ½ cent sales tax increase, which the City Council dedicated 100 percent to increasing our Police Department and Code Enforcement budgets. This prioritization of public safety and health enabled the City to hire more police officers and code enforcement staff. The results have been a decrease in the crime rate; reduced response times; and, increases in code enforcement and cleanup activities. In 2014, the community passed Measure O to ensure that residential landlords paid a fair business license tax. This revenue has been used to improve City hours of operation and reduce the City's budget deficit.

In spite of increased revenues, the City maintains a focus on continuing to find ways to improve efficiency, seek new ideas for savings and revenue generation, and continue with economic development.

Of significant community and economic value to Antioch are recent completion of the widening State Highway 4 from Loveridge Road to Hillcrest Avenue; completion of the Highway 4/Highway 160 interchange; and, the soon

to be completed Hillcrest eBART station, which will connect Antioch and East Contra Costa County with the Pittsburg/Bay Point BART Station. The recently completed Antioch Community Center at the Prewett Family Park has been a well-received amenity for the community and southeast Antioch. The City Council has other projects and plans that will enrich the City and make Antioch an even better place to live, work and play. In striving to continue positive "development trends," the following projects will be of focus:

- Complete the Downtown Specific Plan to revitalize the Rivertown area.
- Bring a well-established restaurant to the Antioch Marina.
- Revitalize the Amtrak station and surrounding area.
- Establish a water transit system.
- Protect the City's water rights from state proposals.
- Initiate long-term infrastructure planning.
- Seek grants as possible alternative funding for City projects.
- Remain committed to construction of a full-scale library facility at Prewett Park.

Table 2-1 summarizes development trends in the performance period since development of the previous hazard mitigation plan and expected future development trends.

Table 2-1. Recent and Expected Future Development Trends

Criterion	Response					
Has your jurisdiction annexed any land since the development of the previous hazard mitigation plan? • If yes, give the estimated area annexed and estimated number of parcels or structures.	Yes Approximately 759 acres of mixed-use county unincorporated real property has recently been annexed to the City of Antioch. Planning is in its earliest stages for this new property. Approximately 144 parcel.					
Is your jurisdiction expected to annex any areas during the performance period of this plan?	No					
Are any areas targeted for development or major redevelopment in the next five years? • If yes, please briefly describe	Yes • Sand Creek Focus Area—2783 Acres, 4000 Residential Units • East Lone Tree Area—approx. 800 Acres, 241.3 Acres residential, 98.3 Employment, 113.2 Acres Retail, 11.3 Acres School, 10.7 Public Facilities, remaining acreage parks, open space, roads • Hillcrest Station Area—Transit Oriented Development, Mixed Use -- Max 2,500 residential units Portions of these areas are in known hazard areas. Development will mitigate or avoid hazard areas.					
How many building permits for new construction were issued in your jurisdiction since the development of the previous hazard mitigation plan?		2012	2013	2014	2015	2016
	Single Family	263	240	83	68	42
	Multi-Family	0	0	0	0	1[a]
	Other (commercial, mixed use, etc.)	2	2	4	7	2
Please provide the number of permits for each hazard area or provide a qualitative description of where development has occurred.	• Special Flood Hazard Areas: 0 • Landslide: 20 Landslide vulnerability is described as "scattered small landslides" and slide locations are mapped in locations with primarily very low development. All development required to have a soils report and mitigate hazard. • High Liquefaction Areas: 0 • Dam Failure Inundation Area: 1 [a] • Wildfire Risk Areas: 0					

a. One permit for two buildings for a total of 85 apartments

2.4 CAPABILITY ASSESSMENT

The City of Antioch performed an inventory and analysis of existing capabilities, plans, programs and policies that enhance its ability to implement mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of legal and regulatory capabilities is presented in Table 2-2.
- Development and permitting capabilities are presented in Table 2-3.
- An assessment of fiscal capabilities is presented in Table 2-4.
- An assessment of administrative and technical capabilities is presented in Table 2-5.
- An assessment of education and outreach capabilities is presented in Table 2-6.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 2-7.
- Classifications under various community mitigation programs are presented in Table 2- 8.
- The community's adaptive capacity for the impacts of climate change is presented in Table 2- 9.

Table 2-2. Legal and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code	Yes	No	Yes	Yes
Comment: 2016 California Building Code and Local Amendments Am. Ord, 2122 C-S and 2123 C-s, passed 1-10-17				
Zoning Code	Yes	No	Yes	Yes
Comment: Ord. 897-C-S, passed 10-25-94; latest Am Ord.2121 C-S, passes 1-10-17				
Subdivisions	Yes	No	Yes	Yes
Comment: Ord. 275-C-S, passed 3-11-75				
Stormwater Management	Yes	No	Yes	Yes
Comment: Ord. 1035-C-S, passed 9-12-04				
Post-Disaster Recovery	Yes	No	No	Yes
Comment: ('66 Code, § 4-2.08) (Ord. 222-C-S, passed 7-26-73; Am. Ord. 911-C-S, passed 9-12-95)				
Real Estate Disclosure	No	Yes	Yes	Yes
Comment: Ca. State Civil Code 1102 requires full disclosure on natural hazard exposure of the sale/re-sale of any and all real property				
Growth Management	Yes	No	Yes	Yes
Comment: Transportation Systems Management Measure C Growth Management Program Ord. 932-C-S, passed 12-9-97; Cal. Gov. Code §65300 et seq.				
Site Plan Review	Yes	No	No	Yes
Comment: Adopted with Zoning Ordinance Ord. 897-C-S, passed 10-25-94; Am. Ord. 2023-C-S, passed 4-14-09				
Environmental Protection	Yes	Yes	Yes	Yes
Comment: California Environmental Quality Act				
Flood Damage Prevention	Yes	No	Yes	Yes
Comment: Floodplain Management Ord. 708-C-S, passed 5-12-88. Am. Ord. 2025-C-S, passed 5-12-09				
Emergency Management	Yes	Yes	Yes	Yes
Comment: Ord. 222-C-S, passed 7-26-73; Disaster Council				
Climate Change	Yes	Yes	Yes	Yes
Comment: SB-379: Land Use: General Plan: Safety Element, no Antioch specific climate change related codes				
Other:	N/A	N/A	N/A	N/A
Comment: None identified				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Planning Documents				
General Plan	Yes	No	Yes	Yes
Is the plan compliant with Assembly Bill 2140? No				
Comment: Adopted November 24, 2003				
Capital Improvement Plan	Yes	No	Yes	Yes
How often is the plan updated? CIP is a 5-year program updated annually with a 2-year budget				
Comment: Antioch Capital Improvement Plan				
Floodplain or Watershed Plan	Yes	Yes	No	Yes
Comment: Contra Costa County Flood Control and Water Conservation District				
Stormwater Plan	No	No	No	No
Comment: None identified				
Urban Water Management Plan	Yes	No	Yes	Yes
Comment: UWMP 2015				
Habitat Conservation Plan	No	No	No	Yes
Comment: Currently being developed by the City of Antioch Community Development Department				
Economic Development Plan	No	No	No	No
Comment: The City does not have and Economic Development Plan				
Shoreline Management Plan	Yes	No	No	Yes
Comment: Adopted with the General Plan November 24, 2003				
Community Wildfire Protection Plan	No	No	No	No
Comment: None identified				
Forest Management Plan	No	No	No	No
Comment: None identified				
Climate Action Plan	Yes	No	No	Yes
Comment: CAPs adopted by Resolution 2001/39				
Comprehensive Emergency Management Plan	Yes	Yes	Yes	Yes
Comment: The Emergency Management Plan is currently being updated by the City Manager (appointed in April 2017) who is, by Code, the Director of Emergency Services				
Threat & Hazard Identification & Risk Assessment (THIRA)	No	No	No	No
Comment: None identified				
Post-Disaster Recovery Plan	Yes	No	No	Yes
Comment: The Emergency Management Plan is currently being updated by the City Manager (appointed in April 2017) who is, by Code, the Director of Emergency Services				
Continuity of Operations Plan	No	No	No	Yes
Comment: None identified				
Public Health Plan	No	Yes	No	No
Comment: Public Health provided by Contra Costa County.				
Other:	N/A	N/A	N/A	N/A
Comment: None identified				

Table 2-3. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? • If no, who does? If yes, which department?	Yes Community Development/Building
Does your jurisdiction have the ability to track permits by hazard area?	No, permits by hazard areas were determined by comparing hazard areas with locations of new development
Does your jurisdiction have a buildable lands inventory? • If yes, please briefly describe. • If no, please quantitatively describe the level of buildout in the jurisdiction.	Yes The majority of the buildable land can be found in Southeast Antioch and is referred to as the Sand Creek Focus Area. There are additional buildable lands in the East Lone Tree Specific Plan Area and those lands involve infill and some parcels in the Northeast. N/A

Table 2-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes, for Water and Sewer
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	Yes

Table 2-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Community Development & Public Works Departments/staff
Engineers or professionals trained in building or infrastructure construction practices	Yes	Community Development & Public Works Departments/staff
Planners or engineers with an understanding of natural hazards	Yes	Community Development & Public Works Departments/staff
Staff with training in benefit/cost analysis	No	
Surveyors	No	
Personnel skilled or trained in GIS applications	Yes	Community Development & Public Works Departments/staff
Scientist familiar with natural hazards in local area	No	
Emergency Manager	Yes	City Manager and Police Lieutenant/Office of Emergency Services (OES) Coordinator
Grant writers	No	City Manager, Community Development & Public Works Departments/staff
Other	No	

Table 2-6. Education and Outreach Capability

Criterion	Response
Do you have a Public Information Officer or Communications Office?	No
Do you have personnel skilled or trained in website development?	No
Do you have hazard mitigation information available on your website? • If yes, please briefly describe.	Yes A Citizen Guide to Disaster Preparedness includes creating a disaster plan, planning how a family will stay in contact if separated by a disaster, references to other websites, emergency planning for children, emergency planning for people with special needs, creating a medical emergency information list, how to turn off utilities, what should be in a disaster supply kit, emergency preparedness checklist, and disaster preparedness for pets.
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe.	No Departments have very recently created individual Facebook accounts. Police and Public Works can provide disaster related safety items
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly describe.	Yes The Planning Commission acts on land use issues which regulate development in hazard prone areas.
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe.	No N/A
Do you have any established warning systems for hazard events? • If yes, please briefly describe.	Yes The Emergency Internet Notification System (EINS) is a system for informing Antioch residents of significant emergency events impacting the entire City. If an event such as a large earthquake occurs, causing considerable damage to buildings and highways, the intent would be to send an email to all persons who have subscribed to EINS. The email would tell residents what has occurred and if there are actions residents should take.

Table 2-7. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Public Works
Who is your floodplain administrator? (department/position)	Assistant City Engineer
Are any certified floodplain managers on staff in your jurisdiction?	No
What is the date that your flood damage prevention ordinance was last amended? Am. Ord 2025-C-S	May 12, 2009
Does your floodplain management program meet or exceed minimum requirements? • If exceeds, in what ways?	Meets N/A
When was the most recent Community Assistance Visit or Community Assistance Contact?	Unknown
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? • If so, please state what they are.	No N/A
Do your flood hazard maps adequately address the flood risk within your jurisdiction? • If no, please state why.	Yes, although may request update N/A
Does your floodplain management staff need any assistance or training to support its floodplain management program? • If so, what type of assistance/training is needed?	Yes Due to recent retirements, need basic training on all aspects of floodplain management.
Does your jurisdiction participate in the Community Rating System (CRS)? • If yes, is your jurisdiction interested in improving CRS Classification? • Is your jurisdiction interested in joining the CRS program?	No N/A Possibly
How many Flood Insurance policies are in force in your jurisdiction?[a] • What is the insurance in force? • What is the premium in force?	127 $ 38,300,800 $ 133,360
How many total loss claims have been filed in your jurisdiction?[a] • How many claims were closed without payment/are still open? • What were the total payments for losses?	59 13/0 $ 1,400,712

a. According to FEMA statistics as of December 31, 2016

Table 2-8. Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	No	N/A	N/A
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A

Table 2-9. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: Sea level rise study is needed for Antioch Shoreline*	Low
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: Currently not occurring, studies and projections are needed for this region*	Low
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: Some tools available through ICLEI membership*	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: GHG inventories every 5 years*	Medium
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: None provided*	Low
Participation in regional groups addressing climate risks *Comments/Additional Information: Contra Costa Climate Leaders, County Sustainability Exchange*	Medium
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: None provided*	Low
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: See Climate Actions Plans*	Medium
Identified strategies for adaptation to impacts *Comments/Additional Information: Study needed*	Low
Champions for climate action in local government departments *Comments/Additional Information: Environmental Resource Coordinator*	Low
Political support for implementing climate change adaptation strategies *Comments/Additional Information: None provided*	Low
Financial resources devoted to climate change adaptation *Comments/Additional Information: None provided*	Low
Local authority over sectors likely to be negative impacted *Comments/Additional Information: None provided*	Low
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: None provided*	Low
Local residents support of adaptation efforts *Comments/Additional Information: None provided*	Low
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: Unknown, survey is needed.*	Low
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: Unknown, survey is needed*	Low
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: Unknown, study is needed.*	Low

a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

Note: As noted in the Final Synthesis Report of the City of Antioch's March 2017 Resilience Dialogues, facilitated by GlobalChange.gov, (U.S. Global Change Research Program), "Antioch is interested in building civic engagement by linking climate resilience to community values and integrating sea-level rise and flooding projects into hazard mitigation planning."

2.5 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

2.5.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the City of Antioch made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **Climate Action Plans, 2010—**Highlights potential programs that could be implemented to reduce greenhouse gas emissions and discusses possible impacts of climate change.
- **Capital Improvement Plan**—The Capital Improvement Plan includes projects that can help mitigate potential hazards. The City will act to ensure consistency between the hazard mitigation plan and the current and future capital improvement plans. The hazard mitigation plan may identify new possible funding sources for capital improvement projects and may result in modifications to proposed projects based on results of the risk assessment.

Resources listed in Section 2.12 were used to provide information for this annex on hazard events and local capabilities within the jurisdiction.

2.5.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the City of Antioch will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan in actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **General Plan**—The Environmental Hazards Element contains an evaluation of natural and manmade conditions which may pose certain health and safety hazards to life and property in Antioch, along with a comprehensive program to mitigate those hazards. Inherent in this Element is a determination of “acceptable risk.” This determination is based on defining how safe is safe enough, balancing the severity of the hazard, costs and feasibility of hazard mitigation, and expected benefits. In most cases, the level of acceptable risk is widely shared throughout the State and nation. For example, the standard for protection from flooding is a national standard. Standards for protection of structures from earthquake damage are based on the provisions of the Uniform Building Code. The Environmental Hazards Element addresses constraints to development from geologic and seismic conditions, noise, wildland fire, flooding and hazardous materials. Portions of the LHMP with the associated mapping will be considered for inclusion into the General Plan as an Appendix and referenced in this Element. Also, update will include assuring compliance with AB 2140 and SB 379.

- **Urban Water Master Plan**—Chapter 8 of the 2015 UWMP describes the City's water shortage contingency plan (WSCP) for emergency preparedness and plans for a catastrophic event. Portions of the LHMP with the associated mapping will be considered for inclusion into the next UWMP.
- **Zoning Code**—Mitigation can be integrated into future zoning code updates to inform appropriate use of property within the City. Portions of the LHMP with the associated mapping will be considered for inclusion into the next Zoning Code update.
- **Subdivision Ordinance**—The Subdivision Ordinance restricts development in hazard areas. Portions of the LHMP with the associated mapping will be considered for inclusion into the next Subdivision Ordinance update.
- **The Sanitary Sewer Management Plan—**The City of Antioch conveys waste water, but treatment is provided by a special district, Delta Diablo. The 2015 Sanitary Sewer Management Plan provides an inventory of the City's Sewer infrastructure and response procedures for first responders, recovery and cleanup in the case of overflow or backups. Portions of the LHMP with the associated mapping will be considered for inclusion into the next Sanitary Sewer Management Plan update.
- **Emergency Management—**The Emergency Management Plan and Post-Disaster Recovery Plan are currently being updated by the City Manager (appointed in April 2017) who is, by Code, the Director of Emergency Services. Portions of the LHMP with the associated mapping will be considered for inclusion into the next updates of the various plans.
- **Habitat Conservation Plan**—The City is currently preparing a Habitat Conservation Plan . The opportunity to incorporate additional mitigation and abatement measures will be contemplated for inclusion in the plan.
- **Capital Improvement Plan—**Portions of the LHMP with the associated mapping will be considered for inclusion into future Capital Improvement Plans. Capital improvement project proposals may take into consideration hazard mitigation potential as a means of evaluating project prioritization.
- **Northeast Annexation Infrastructure Plan**—The City is in the process of identifying and prioritizing the infrastructure improvements needed in the NE Annexation. Portions of the area have a high chance of flooding. The residential area is generally on well water and septic tanks with soft soils. In the far northern portion of the area the liquefaction susceptibility is very high. In addition to the needs of the property owners, the opportunity to prioritize construction and provide condition specific design for the infrastructure due to potential hazards exists. The City will consider hazards in the plan.

2.6 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 2-10 lists past occurrences of natural hazards for which specific damage was recorded in the City of Antioch. Other hazard events that broadly affected the entire planning area, including the City of Antioch, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

2.7 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for the jurisdiction. Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 11
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 3
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: Unknown

In addition, the NE Annexation area has vulnerabilities that are not new, but result from a change in jurisdiction only. Portions of the area have a high chance of flooding. The residential area is generally on well water and septic tanks with soft soils. In the far northern portion of the area the liquefaction susceptibility is very high.

Table 2-10. Past Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Flooding	FEMA-4308-DR	February 1-23, 2017	No estimates available. Flooding resulted in road closures, downed trees and flooding to some residences. This is a problem that has occurred multiple times and usually occurs in the O Street corridor.
Flooding	N/A	10/13/2009	No estimates available. Flooding resulted in road closures and flooding to some residences. This is a problem that has occurred multiple times and usually occurs in the O Street corridor.
Flooding	FEMA 1628 CDAA-2006-01 Winter Storm 2006"	December 17, 2005 – January 3, 2006	$ 66,912 Total Maximum 75% reimbursement for a net of $50,184. Citywide clean-up in four (4) locations – road, debris and mud removal. Citywide; James Donlon Blvd. and Tabora Drive – road, mud repairs; Empire Mine Rd. & Lone Tree Way road clean-up;
Flooding	CA Office of Emergency Services (OES) PA (No. 013-02252)(PW 523-15) "El Nino 98"	February 1998	$189,475 Citywide clean-up in seven (7) locations Villa Medanos Apts. $55k) – creek washout; Fairgrounds – sewer blowout $35k; Antioch marina north breakwater riprap $25k; Fulton Shipyard Road flow gate blowout $18k; James Donlon – east of Tabora Dr. – uphill mud slide $10k; Rodeo Court #511 mud on right-of-way $10k; Flood emergency response - $36,475.)
Severe Weather[a]	N/A	Unknown	No estimates available
Earthquake[a]	N/A	Unknown	No estimates available
Wildfire[a]	N/A	Unknown	No estimates available
Landslide[a]	N/A	Unknown	No estimates available
Drought[a]	N/A	Unknown	No estimates available

a. The City of Antioch has had natural hazard events in this category, however no specifics are available. There is no documentation at the City or County level that provides data as to dates, number of occurrences, monetary damage assessments or any other supporting documentation. Known past impacts of the hazards has been minimal as it relates to major property damages and financial losses.

2.8 HAZARD RISK RANKING

Table 2-11 presents a local ranking for the City of Antioch of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 2-11. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake[b]	48	High
2	Severe weather	30	Medium
3	Landslide[e]	27	Medium
4	Flood[c]	18	Medium
5	Drought	9	Low
6	Dam and levee failure[a]	6	Low
6	Wildfire[f]	6	Low
7	Sea level rise[d]	6	Low
7	Tsunami	0	None

a. Based on the level of detail conducted in the risk assessment, the risk ranking for this hazard is focused solely on dam failure impacts. See Chapter 6.4 of Volume 1 for combined dam inundation list on which this assessment is based.
b. Haywired M7.05 event was used to assign probability and impacts
c. 1-percent annual chance event was used to assign probability and impacts
d. The sea level rise data used for this analysis did not indicate any risk to the City of Antioch; however, Adapting to Rising Tides Initiative will update Sea Level Rise risks. (See Action 20)
e. Very High and High severity zones were used to assign probability and impacts
f. There is no mapped risk within the jurisdiction; however, a score was given due to potential impacts to people and the economy from smoke

2.9 STATUS OF PREVIOUS PLAN ACTIONS

Table 2-12 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 2-12. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
A-1—Construct West Antioch Creek channel improvements, 4- new box culverts, to eliminate property and environmental damage caused by flooding.			√	A-1
Comment: This is now phase 1 of a multiphase project. See Action A-14. Design complete. Right of way being secured. Utilities being relocated. Construction anticipated to begin in spring of 2018.				
A-2—Finish construction of the Oakley/Trembath Detention Basin			√	A-2
Comment:				
A-3—Construct Wilbur Avenue Culvert Crossing			√	A-3
Comment: No Funding Source Currently Identified.				
A-4—Complete construction of the Municipal Corporation Yard improvements		√		
Comment: Project no longer being considered and is no longer considered feasible.				
A-5—Seismic retrofit the City owned Historical Hard House building			√	A-4
Comment: No Funding Source Currently Identified				
A-6—Construct Water Reservoir Maintenance Improvement projects			√	A-5
Comment: Some Reservoirs have had improvements completed. Others still needed. Additional seismic retrofits analyzed in Seismic Study 2014. Ongoing.				
A-7—Construct Water and Sewer pipeline projects to strengthen system and to ensure safe and reliable provisions of public water and sewer services			√	A-6
Comment: Some projects completed. Ongoing				
A-8—Update Emergency Operations Plan			√	A-7
Comment: Plan Update anticipated in 2017-2018 Fiscal Year				
A-9—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Volume 1.			√	A-8
Comment: Ongoing				
A-10—Continue to maintain compliance and good standing under the National Flood Insurance Program (NFIP) • Enforce the flood damage prevention ordinance • Participate in floodplain identification and mapping updates • Provide public assistance/information on floodplain requirements and impacts			√	A-9
Comment: Ongoing				
A-11—Consider participation in the Community Rating System (CRS).			√	A-10
Comment: New staff to initiate participation in the CRS.				
A-12—Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan			√	A-11
Comment: Full update of the General Plan anticipated in the next several years.				
A-13—Where appropriate, support retrofitting, purchase, or relocation of structures in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority.			√	A-12
Comment: No funding source has been identified.				

2.10 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 2-13 lists the actions that make up the City of Antioch hazard mitigation action plan. Table 2-14 identifies the priority for each action. Table 2-15 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 2-13. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
A-1—Construct West Antioch Creek channel improvements, 4- new box culverts, to eliminate property and environmental damage caused by flooding						
Existing	Flood	1, 2, 3, 9, 10, 13, 17	City of Antioch Public Works Dept.	High	HMGP, PDM, FMA	Short-term
A-2—Finish construction of the Oakley/Trimbath Detention Basin						
New and Existing	Flood	3, 5, 6, 9, 10, 15	City of Antioch Public Works Dept./CCC Flood Control District*	Medium	Development Fees and HMGP, PDM, FMA	Short-term
A-3—Construct Wilbur Avenue Culvert Crossing						
Existing	Flood	3, 6, 9, 10, 15	City of Antioch Public Works Dept./CCC Flood Control District*	High	HMGP, PDM, FMA	Short-term
A-4—Seismic retrofit the City owned Historical Hard House building.						
Existing	Earthquake	3, 15	City of Antioch Community Development Dept.	High	HMGP, PDM, FMA	Long-term
A-5—Construct Water Reservoir Maintenance Improvement projects						
Existing	All Hazards	1, 2, 3, 13	City of Antioch Public Works Dept.	Medium	Water fund and HMGP, PDM, FMA	Ongoing
A-6—Construct Water and Sewer pipeline projects to strengthen systems and to ensure safe and reliable provisions of public water and sewer services						
Existing	All Hazards	1, 2, 3, 13	City of Antioch Public Works Dept.	Low	Water and Sewer funds and HMGP, PDM, FMA	Ongoing
A-7—Update Emergency Operations Plan						
Existing	All Hazards	2, 3, 16	City of Antioch Office of Emergency Services (City Manager)	Medium	General Fund and HMGP	Ongoing
A-8—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Volume 1						
Existing and New	All Hazards	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18	City of Antioch Office of Emergency Services (City Manager)	Low	General Funds, Staff Time HMGP, PDM (for update)	Ongoing
A-9—Continue to maintain compliance and good standing under the National Flood Insurance Program (NFIP) • Enforce the flood damage prevention ordinance • Participate in floodplain identification and mapping updates • Provide public assistance/information on floodplain requirements and impacts						
Existing and New	Flood	3, 5, 6, 9, 10, 11, 15	City of Antioch Public Works Dept.	Low	General Fund	Ongoing

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
A-10—Consider participation in the Community Rating System; (CRS)						
Existing and New	All Hazards	9	City of Antioch Community Development Dept.	Low	General Fund	Ongoing
A-11—Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan						
Existing and New	All Hazards	1, 4, 5, 7, 11, 12, 14, 17	City of Antioch Community Development Dept.	Low	Developer Fees	Short-term
A-12—Where appropriate, support retrofitting, purchase, or relocation of structures in hazard-prone areas to protect structures from future damage, with repetitive loss and sever repetitive loss properties as priority						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	City of Antioch Community Development Dept.	High	HMGP, PDM, FMA	Long-term
A-13—West Antioch Flood Creek Mitigation and Restoration						
Existing and New	Flood	1, 2, 3, 9, 10, 13, 17	City of Antioch Public Works Dept.*/CCC Flood Control District	High	HMGP, PDM, FMA	Long-term
A-14—Update Inundation Analysis						
Existing and New	Dam and Levee Failure	3, 5, 6	City of Antioch Public Works Dept.*/CC Water District	Medium	Water Fund and HMGP	Short-term
A-15—NE Annexation Infrastructure Improvements						
Existing and New	All Hazards	1, 2, 3, 6, 9, 10, 16, 17	City of Antioch Public Works Dept.*/CCC	High	City/County agreement and HMGP, PDM, FMA	Ongoing
A-16—Request FEMA to Update flood Maps						
Existing and New	Flood	3, 4, 5, 6, 7, 10, 12, 14	FEMA/City of Antioch*	Medium	General Funds	Short-term
A-17—NE Annexation Infrastructure Improvements						
Existing and New	All Hazards	1, 2, 3, 6, 9, 10, 16, 17	City of Antioch Public Works Dept.	High	HMGP, PDM, FMA	Ongoing
A-18—Study, Design and Implement project for settlement of the Marina and the L Street approach (north of 2nd Street)						
Existing	All Hazards	1, 2, 3, 9, 10, 13, 17	City of Antioch Public Works Dept.	High	HMGP, PDM, FMA	Long-term
A-19—Participation in the Adapting to Rising Tides Initiative						
Existing and New	Flood	3, 5, 6, 10, 11, 12, 16, 18	Antioch Community Development Dept.	Low	City General Fund, HMGP	Ongoing
A-20—Implement program to track dates, number of occurrences, monetary damage assessments of disasters						
Existing and New	All Hazards	3, 6, 12, 13, 14	City of Antioch Office of Emergency Services (City Manager)	Medium	HMGP	Long-term
A-21—Update/Create various Plans such as Emergency Management, Post-Disaster Recovery, and/or Continuity of Operation						
Existing and New	All Hazards	3, 5, 6, 10, 11, 12, 16, 18	Antioch Office of Emergency Services (City Manager)	Medium	City General Fund, HMGP	Ongoing

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 2-14. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
A-1	7	High	High	Yes	Yes	No	Medium	High
A-2	6	Medium	Medium	Yes	Yes	No	Medium	Low
A-3	5	Medium	High	No	Yes	No	Low	Low
A-4	2	Medium	High	No	Yes	No	Low	Low
A-5	4	High	Medium	Yes	Yes	No	Medium	High
A-6	4	Low	Low	Yes	Yes	Yes	High	High
A-7	3	Low	Low	Yes	Yes	No	Medium	High
A-8	18	Low	Low	Yes	No	Yes	High	Low
A-9	7	Medium	Low	Yes	No	Yes	High	Low
A-10	1	Low	Low	Yes	No	Yes	Medium	Low
A-11	8	Medium	Low	Yes	No	Yes	High	Low
A-12	8	High	High	Yes	Yes	No	Low	High
A-13	7	High	High	Yes	Yes	No	Medium	High
A-14	3	Low	Medium	No	Yes	No	Medium	High
A-15	8	Medium	High	No	Yes	No	Medium	High
A-16	8	Medium	Medium	Yes	No	Yes	High	Low
A-17	8	High	High	Yes	Yes	No	Medium	High
A-18	7	Medium	High	No	Yes	No	Low	Medium
A-19	8	Medium	Low	Yes	Yes	Yes	High	Medium
A-20	5	Low	Medium	No	Yes	No	Low	Low
A-21	8	Medium	Medium	Yes	Yes	No	Medium	Medium

a. See the introduction to this volume for explanation of priorities.

Table 2-15. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	A-8, A-12, A-14, A-17, A-18	A-8, A-11, A-14, A-17, A-18, A-20	A-8, A-20	A-8	A-7, A-8, A-20	A-8	A-8	A-8
Dam and Levee failure		A-14			A-14			
Drought								
Earthquake	A-15	A-5, A-6, A-15			A-5, A-6	A-4, A-5, A-15		
Flood	A-1, A-2, A-3, A-13	A-1, A-2, A-3, A-9, A-10, A-13	A-16	A-1, A-13	A-1, A-13		A-19	
Landslide								
Severe weather								
Tsunami								
Wildfire								

a. See the introduction to this volume for explanation of mitigation types.

2.11 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

In 2012-2013 FEMA conducted a Risk Mapping, Assessment and Planning (Risk MAP) Program nationwide. The purpose of this Risk MAP program was to improve flood hazard information for the National Flood Insurance Program (NFIP); promote increased national awareness and understanding of flood risk; and, support Federal, State, and local mitigation actions to further reduce risk.

FEMA's Final Discovery Report was published in 2013, and covered all of Contra Costa County, to include the Suisun Bay, San Pablo Bay, San Joaquin Delta, and San Francisco Bay watersheds and coastlines.

In March of 2017, the City of Antioch hosted Resilience Dialogues, facilitated by GlobalChange.gov, (U.S. Global Change Research Program), to explore Antioch's risk from climate variability and change. Quoting the Resilience Dialogues Final Synthesis Report, "Antioch is interested in building civic engagement by linking climate resilience to community values and integrating sea-level rise and flooding projects into hazard mitigation planning."

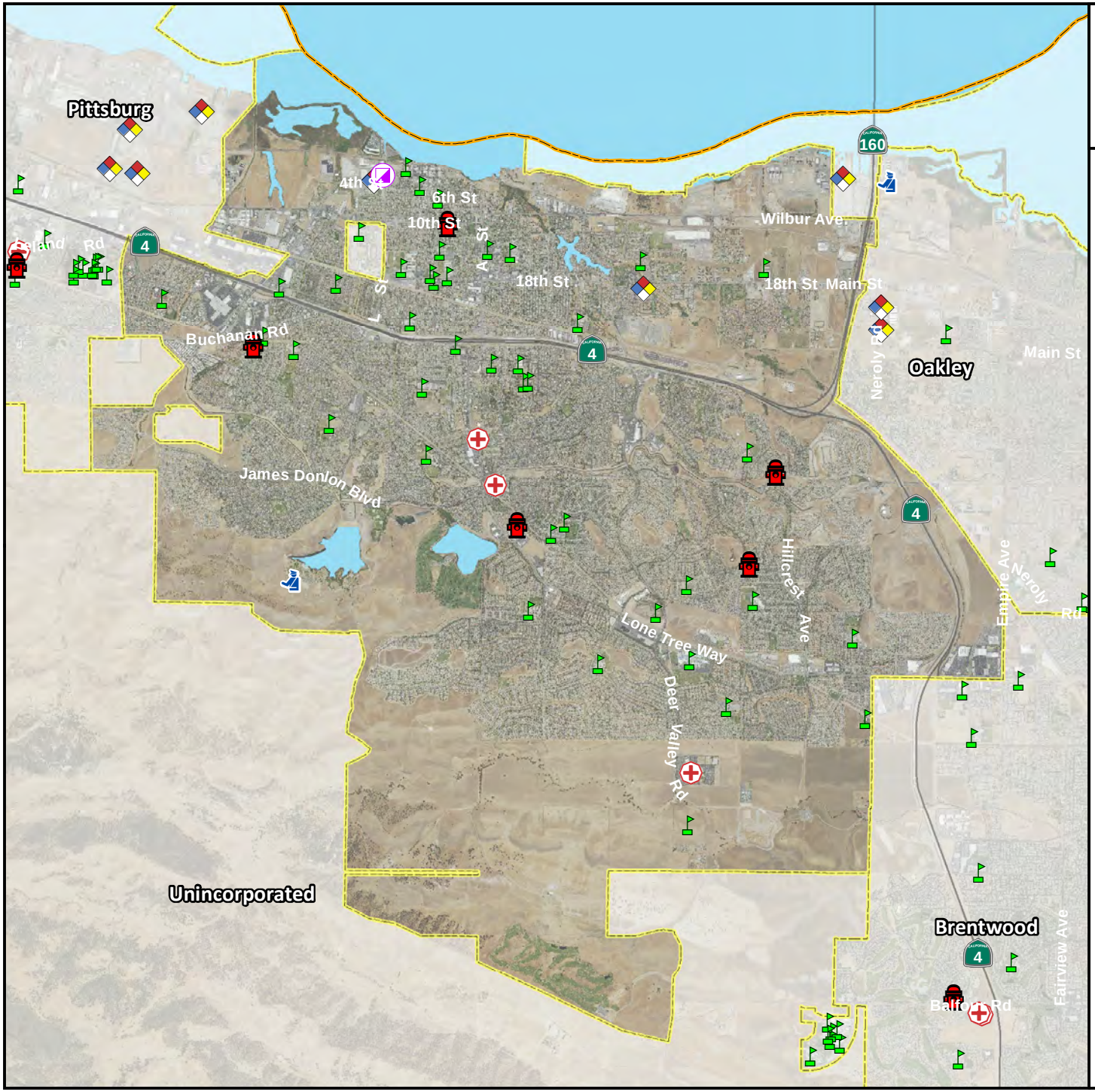
The City also annexed 759 acres of mixed use (commercial, industrial and residential) land with frontage on the water.

These research documents, taken together with the need to plan on behalf of annexed land, and ongoing need to update research and data for the Local Hazard Mitigation suggests an excellent opportunity to integrate these assets and build on local understanding of risks and vulnerabilities.

2.12 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **City of Antioch Municipal Code—**The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Antioch Flood Damage Prevention Ordinance**—The flood damage prevention ordinance was reviewed for compliance with the National Flood Insurance Program.
- **Community and Municipal Climate Action Plans**—Plans were reviewed to verify that climate related hazards were discussed
- **Urban Water Management Plan, 2015**—Plan was reviewed for discussion of drought forecasting and planning. Also used to review the City's water shortage contingency plan (WSCP) for emergency preparedness and plans for a catastrophic event.
- **City of Antioch General Plan**—Plan was reviewed to see where improvements could be made relative to Hazard Mitigation.
- **Resilience Dialogues and Final Report –**March 2017—Online conference/dialogue intended to better understand risks in communities and plan for long-term resilience. Dialogue included participants representing: Community leaders & citizens; specialist in climate change and environmental policy; community network leaders; public sector staff and elected officials. Facilitated by U.S. Global Change Research Program. Assisted in determining potential action items related to Climate Change.
- **California Department of Finance website**—Used to provide information on City population (http://www.dof.ca.gov)
- **Technical Reports and Information—**The following **o**utside resources and references were reviewed:
    - **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.
    - **News archives, Internet search, documentable oral and written local histories**—Archived newspaper articles; media coverage in general; public sector staff and citizens; historical society accounts; photo collections; etc. are utilized for past hazard events when reliable.
    - **Neighboring County and Local Hazard Mitigation Plans (LHMP)**—Proximity to 'neighbor' hazards; differences in points of view and analysis; mutual aid issues in disaster; etc.



The City of Antioch

Critical Facilities

- Emergency Operations Centers (Government)
- Fire Stations (Protective Functions)
- Hazardous Materials
- Medical Facilities
- Police Stations (Protective Functions)
- Schools & Educational Facilities
- Contra Costa County Boundary
- City Boundaries

0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA

The City of Antioch

Critical Infrastructure

- Airports (Other Critical Functions)
- Bus Facilities (Other Infrastructure)
- Communication Facilities
- Electric Power Facilities
- Highway Bridges
- Highway Tunnels (Other Infrastructure)
- Light Rail (Other Infrastructure)
- Natural Gas (Other Infrastructure)
- Port Facilities (Other Critical Functions)
- Water Supply Facilities
- Rail Facilities (Other Infrastructure)
- Wastewater Facilities
- Contra Costa County Boundary
- City Boundaries

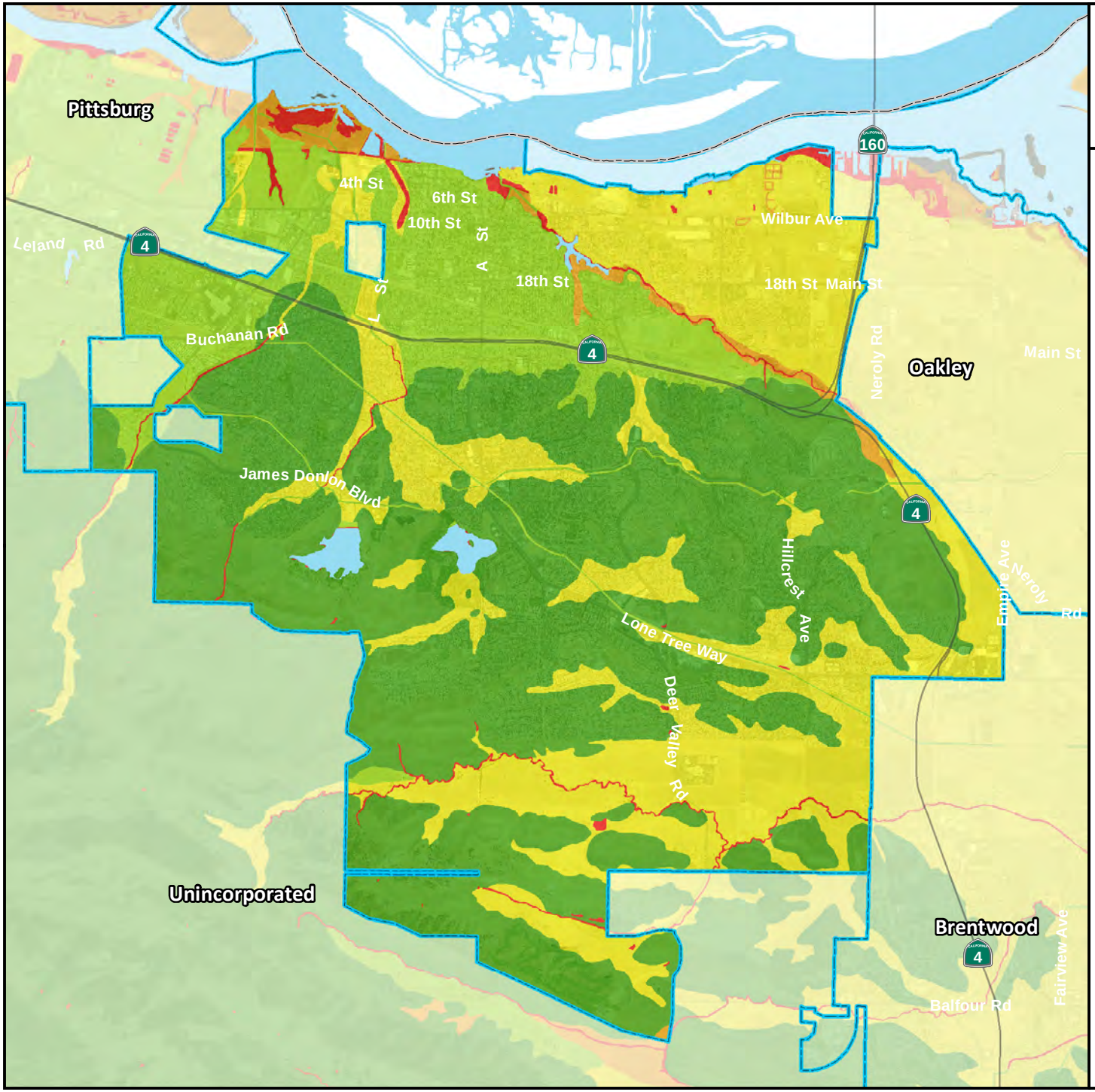
0 0.5 1 2

Miles

N
W E
S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of Antioch

Liquefaction Susceptibility

Contra Costa County Boundary
City Boundaries
Water Bodies

Susceptibility to Liquefaction

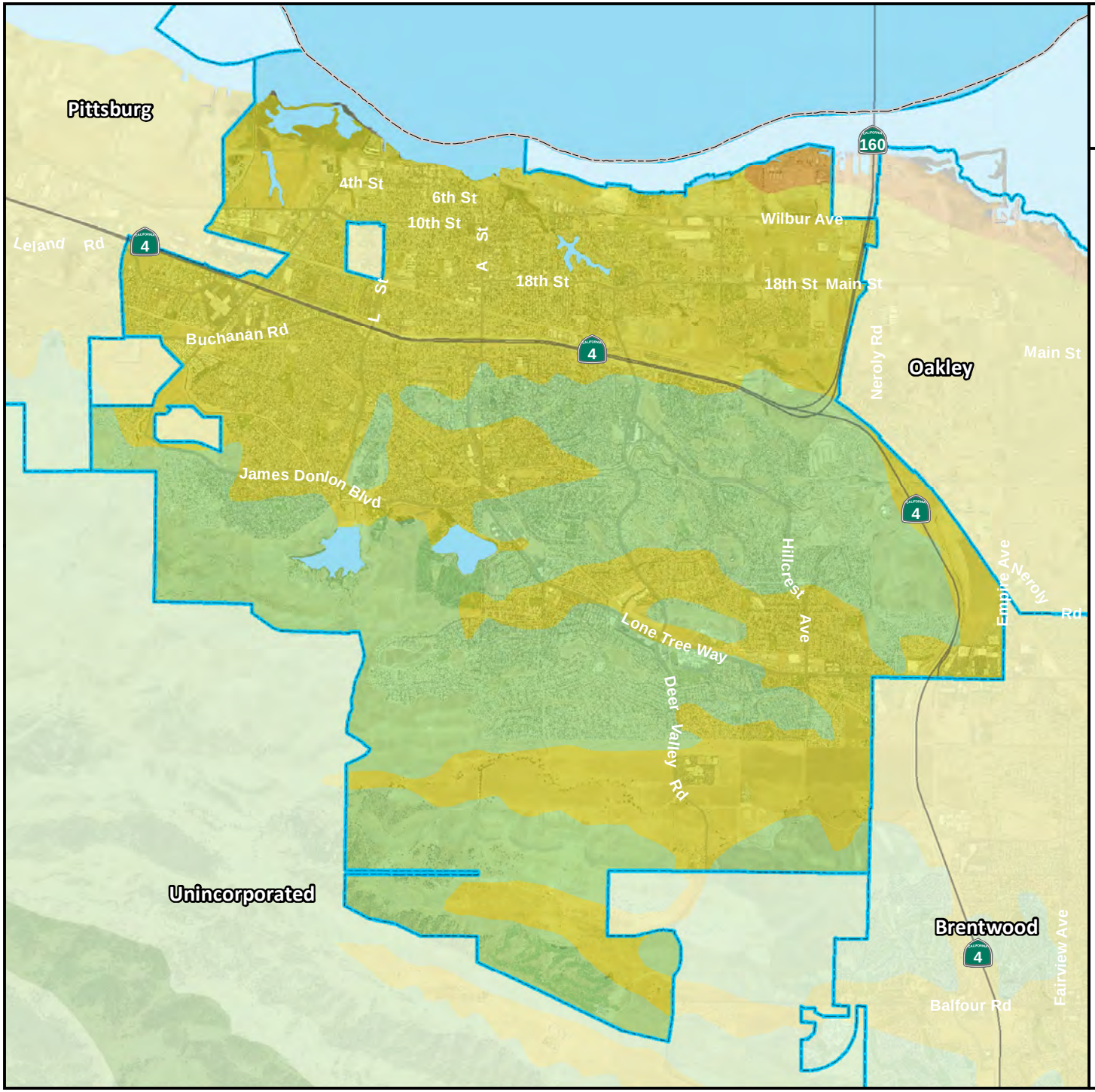
Very Low
Low
Medium
High
Very High
No Liquefaction Data Available

0 0.5 1 2
Miles

N
W E
S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The City of Antioch

National Earthquake Hazard Reduction Program (NEHRP) Soil Class

Contra Costa County Boundary

City Boundaries

Water Bodies

NEHRP Site Class / Soil Profile

B / Rock

C / Very Dense Soil - Soft Rock

D / Stiff Soil

E / Soft Soil

No Soil Data Available

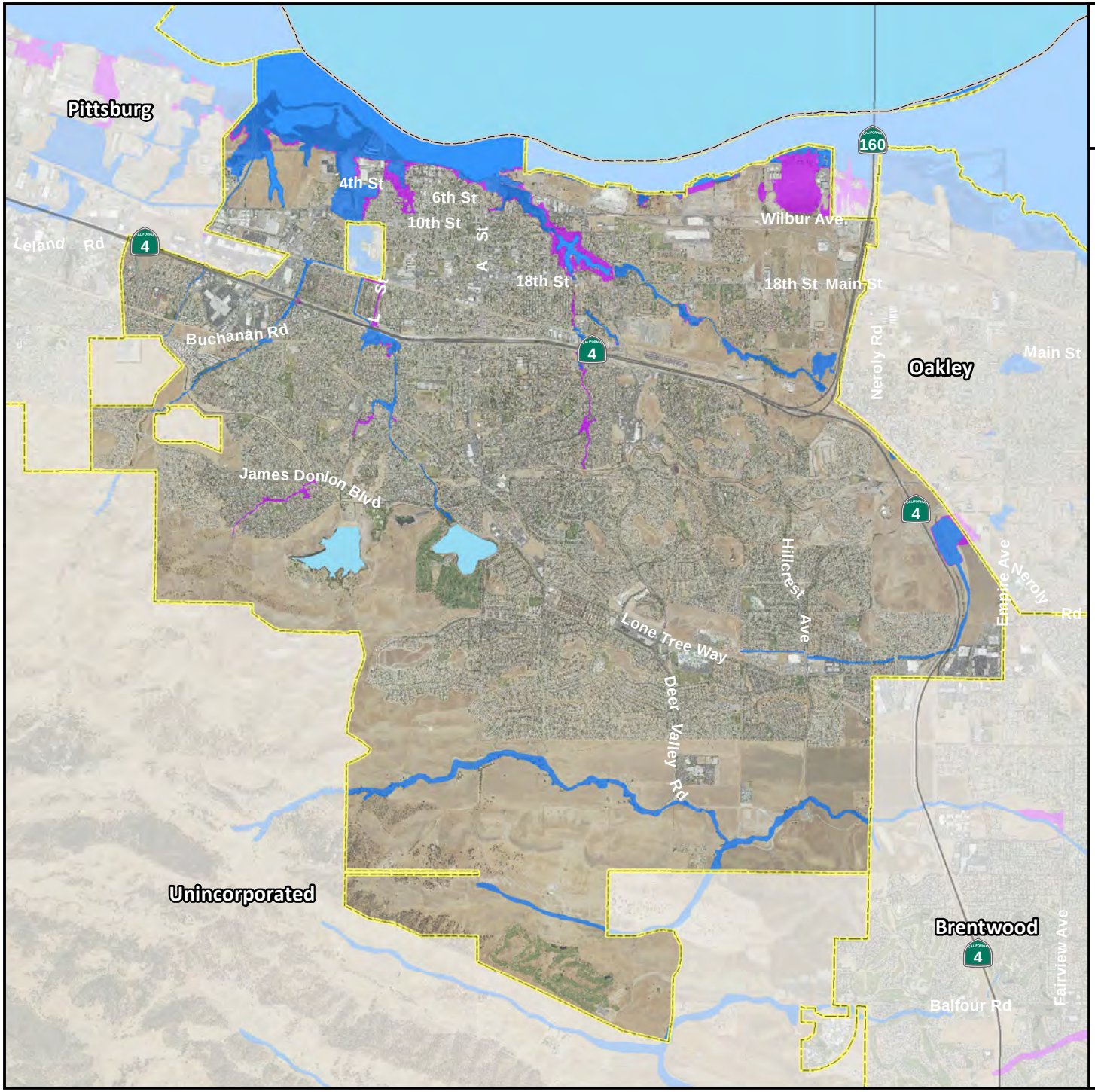
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Department of Conservation, USDA



The City of Antioch

FEMA DFIRM Flood Hazard Areas

- 1% Annual Chance (100-Year) Flood Zone
- 0.2% Annual Chance (500-Year) Flood Zone
- Contra Costa County Boundary
- City Boundaries
- Water Bodies

Flood hazard areas as depicted on Effective FEMA Digital Flood Insurance Rate Maps (DFIRM)

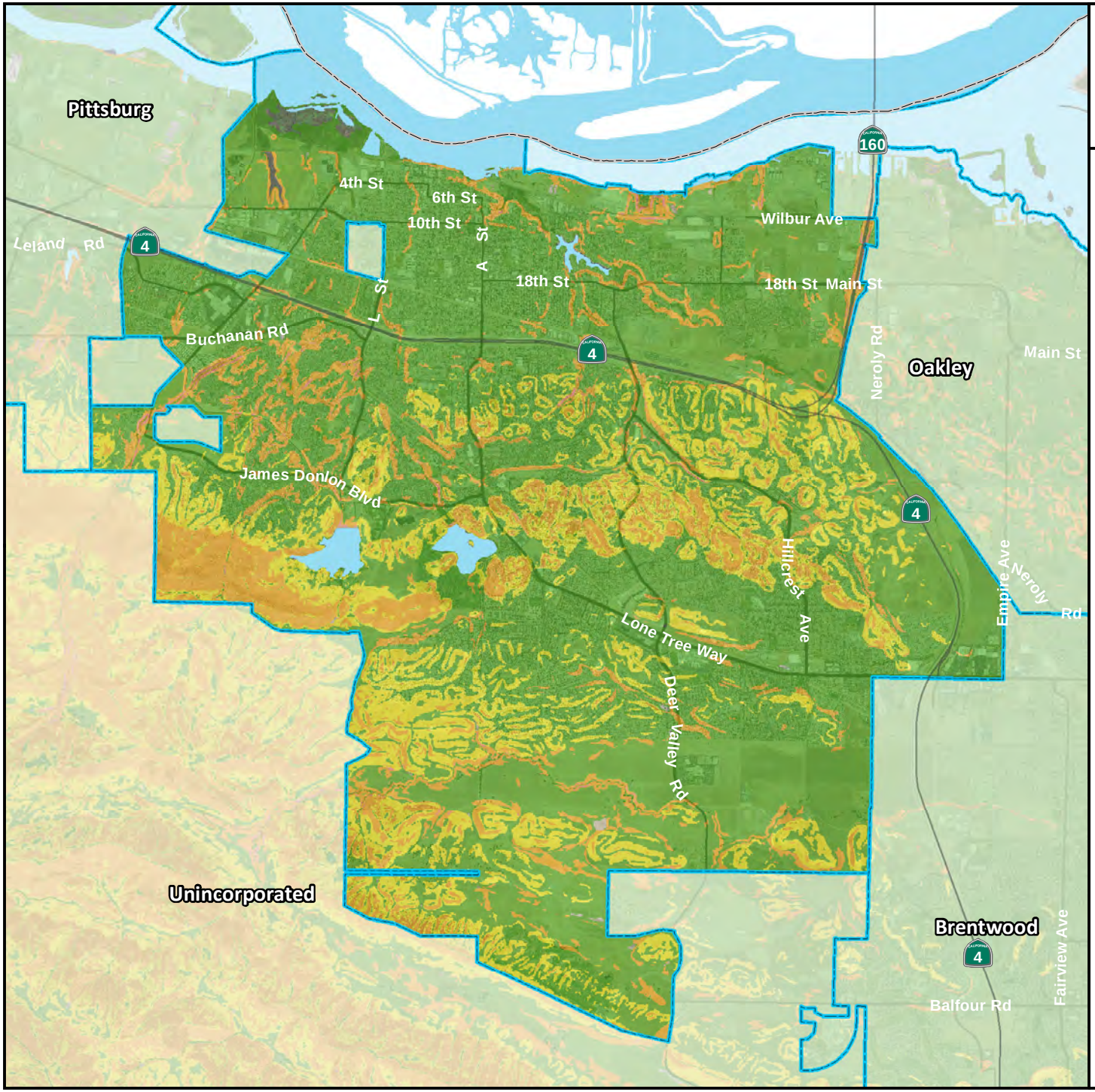
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, FEMA, USDA



The City of Antioch

Landslide Susceptibility Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Type

Low

Moderate

High

Very High / Existing

Data Not Available

Source dataset created by Wills C.J., Perez, F., Gutierrez, C., 2011, Susceptibility to deep-seated landslides in California: California Geological Survey Map Sheet 58

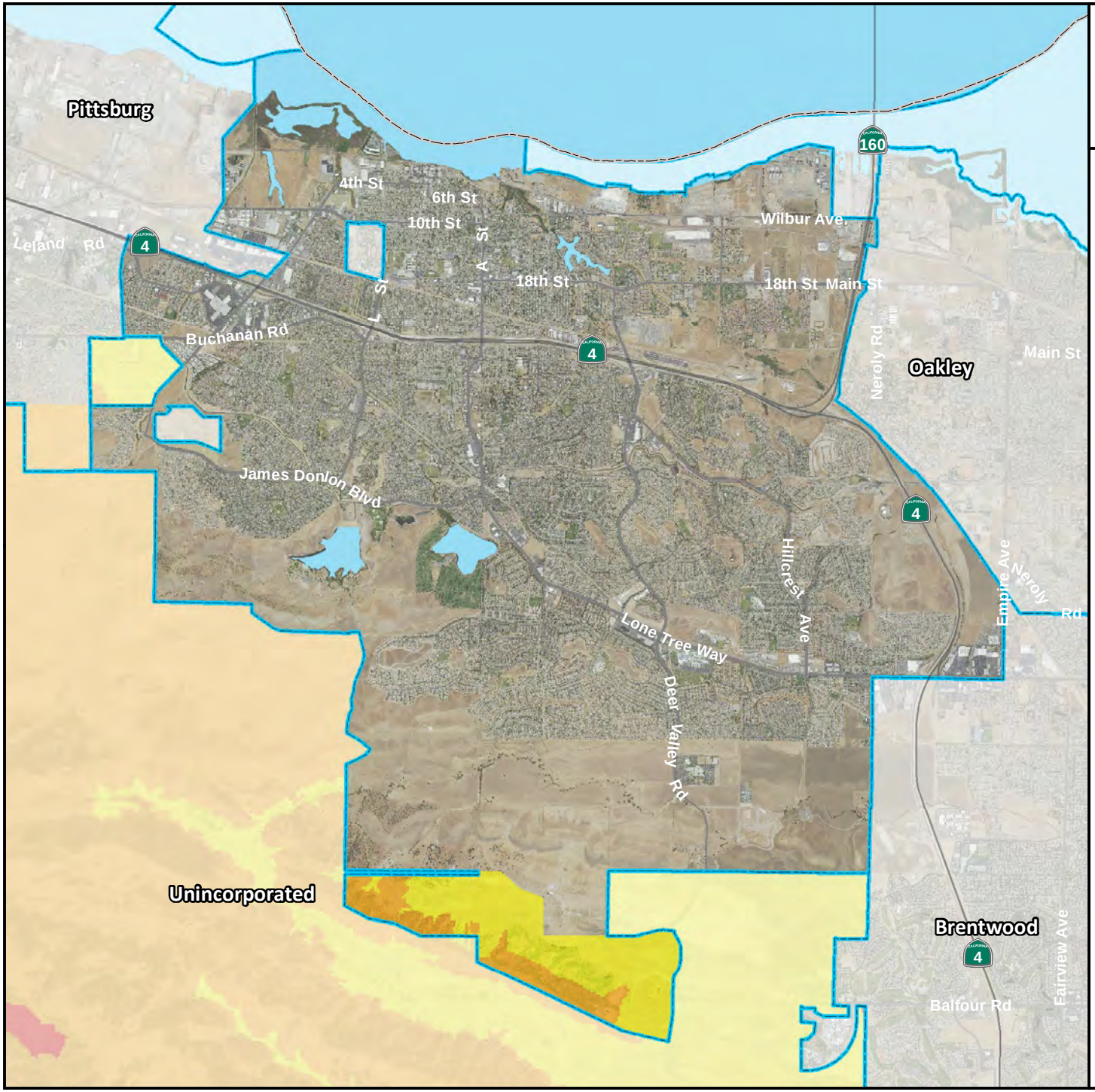
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The City of Antioch

Wildfire Severity Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Wildfire Severity Zone

Moderate

High

Very High

0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, CalFIRE, USDA

3. CITY OF BRENTWOOD

3.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Doug Silva, Police Captain
9100 Brentwood Boulevard
Brentwood, CA 94513
Telephone: : 925-634-6911
e-mail Address: dsilva@brentwoodca.gov

Alternate Point of Contact
Ben Tolero, Police Lieutenant
9100 Brentwood Boulevard
Brentwood, CA 94513
Telephone: 925-634-6911
e-mail Address: btolero@brentwoodca.gov

3.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation**—1948
- **Current Population**—61,055 as of January 2017 (California Department of Finance)
- **Population Growth**—The City of Brentwood experienced a period of tremendous growth from the mid-1990s to the mid-2000s. During this time, the population more than tripled. Since the end of that expansionary period, the City experienced a period of slow growth following the recession; however in the past three years there has been a period of increasing growth in population due to moderate development.
- **Location and Description**—The City of Brentwood is in the eastern portion of Contra Costa County, 7 miles southeast of the City of Antioch (center to center) and 32 miles east of the City of Oakland. It is situated along the San Joaquin Delta in the East Bay region of the San Francisco Bay Area. The major thoroughfare is State Route 4, which traverses Contra Costa County east/west and provides access to San Joaquin County. The City of Brentwood has a total area of 11.67 square miles, of which 0.01 square miles is water. The landscape is marked by rolling hills, native grasses, oak trees and fruit orchards, with three public golf courses.
- **Brief History**—Brentwood began as a farming community in the late 1800s, and is known throughout the Bay Area for its agricultural products, primarily its cherries, corn and peaches. Brentwood was originally laid out on land donated from property owned by John Marsh, an East Contra Costa County pioneer. The city is named after Marsh's ancestral home, the town of Brentwood in the County of Essex, England. Many of the old farms have been replaced by suburban developments since 1990. Despite the decrease in farmland, the City of Brentwood remains a popular location for Bay area residents to visit to pick their own fruits and berries.
- **Climate**—Brentwood's weather is typical of the San Joaquin Valley region, with very cool winters and very hot summers. It is not uncommon to have periods of freezing temperatures in the winter and temperatures exceeding 100 degrees in the summer. Winter rains fall from November to April, with an

annual average rainfall of 13 inches. Humidity averages between 50 and 60 percent. Prevailing winds are from the west and average 5-10 mph.

- **Governing Body Format**—The City of Brentwood has a Mayor-Council system of governance. Primary power lies with the five council members. The Mayor presides over Council meeting and has the power to appoint, as well as ceremonial duties. Official city business is administered by the Office of the City Manager. The City Council assumes responsibility for adoption of this plan, and the Police Department will oversee its implementation.

3.3 DEVELOPMENT TRENDS

Brentwood was a typical small, bedroom/farming community until the mid-1990s, when the city experienced tremendous growth through the mid-2000s. During this time, the population of the city more than tripled. For the first few years after that expansionary period, the city saw significantly reduced growth, including a decline in property valuations. Over the last several years, growth is back to a moderate level and property valuations have increased.

Although the City continues to emphasize growth in the commercial, industrial and retail sectors, office and industrial development also slowed as a result of the recession. While this has returned to a degree, it is expected that the pace of new permits for office, industrial and retail construction will continue to be fairly sluggish during the next several years as market absorption of existing and vacant space will need to take place before significant amounts of new construction is feasible.

California law requires counties and cities to prepare and adopt a comprehensive long-range plan to guide community development. The plan must consist of an integrated and internally consistent set of goals, policies, and implementation measures and must focus on issues of the greatest concern to the community. City actions, such as those relating to land use allocations, annexations, zoning, subdivision and design review, redevelopment, and capital improvements, must be consistent with the plan. The City of Brentwood adopted its general plan under this law and has updated it several times over the years, including most recently in July 2014.

Table 3-1 summarizes development trends in the performance period since development of the previous hazard mitigation plan and expected future development trends.

3.4 CAPABILITY ASSESSMENT

The City of Brentwood performed an inventory and analysis of existing capabilities, plans, programs and policies that enhance its ability to implement mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of legal and regulatory capabilities is presented in Table 3-2.
- Development and permitting capabilities are presented in Table 3-3.
- An assessment of fiscal capabilities is presented in Table 3-4.
- An assessment of administrative and technical capabilities is presented in Table 3-5.
- An assessment of education and outreach capabilities is presented in Table 3-6.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 3-7.
- Classifications under various community mitigation programs are presented in Table 3-8.
- The community's adaptive capacity for the impacts of climate change is presented in Table 3-9.

Table 3-1. Recent and Expected Future Development Trends

Criterion	Response
Has your jurisdiction annexed any land since the development of the previous hazard mitigation plan? • If yes, give the estimated area annexed and estimated number of parcels or structures.	No N/A
Is your jurisdiction expected to annex any areas during the performance period of this plan?	No
Are any areas targeted for development or major redevelopment in the next five years? • If yes, please briefly describe	Yes The PA-1 Specific Plan area, located in the northwest corner of the city, is targeted for significant jobs development in the next few years, including a possible transit village with the extension of BART.
How many building permits for new construction were issued in your jurisdiction since the development of the previous hazard mitigation plan?	

	2012	2013	2014	2015	2016
Single Family	249	476	421	488	560
Multi-Family	54	0	0	0	0
Other (commercial, mixed use, etc.)	4	5	1	7	4

Please provide the number of permits for each hazard area or provide a qualitative description of where development has occurred.	The City of Brentwood does not have a database tracking the number of development permits issued in specific hazard areas. At the time an applicant proposes development in a specific location, if applicable, staff assesses hazard risk specific to individual projects. For example, areas with steep slopes/ potential landslide hazards require a hillside development permit and soils/geotechnical report.

Table 3-2. Legal and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code *Comment: 2016 Building Code*	Yes	No	Yes	Yes
Zoning Code *Comment: 17.010.004 (Amended 2017)*	Yes	No	Yes	Yes
Subdivisions *Comment: 16.010.020 (Amended 2009)*	Yes	No	No	Yes
Stormwater Management *Comment: 14.20.010 (Adopted 2005)*	Yes	No	No	Yes
Post-Disaster Recovery *Comment: None Located*	No	No	No	No
Real Estate Disclosure *Comment: Ca. State Civil Code 1102 requires full disclosure on natural hazard exposure of the sale/re-sale of any and all real property*	No	Yes	Yes	Yes
Growth Management *Comment: General Plan Element (2014); Cal. Gov. Code §65300 et seq.*	Yes	No	Yes	Yes
Site Plan Review *Comment: 17.820.002 (Adopted 1987)*	Yes	No	No	Yes
Environmental Protection *Comment: 18.04.030 (Adopted 1987); California Environmental Quality Act*	Yes	Yes	Yes	Yes
Flood Damage Prevention *Comment: 15.07.010 (Adopted 2001)*	Yes	Yes	Yes	Yes

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Emergency Management *Comment: 2.16.060 (Adopted 1976)*	Yes	No	Yes	Yes
Climate Change *Comment: California SB-375: General Plan Conservation and Open Space Element*	Yes	No	Yes	Yes
Other: *Comment: N/A*	N/A	N/A	N/A	N/A
Planning Documents				
General Plan *Is the plan compliant with Assembly Bill 2140?* Yes *Comment: Adopted July 2014*	Yes	No	Yes	Yes
Capital Improvement Plan *How often is the plan updated?* Annually *Comment: Adopted May 2017*	Yes	No	No	Yes
Floodplain or Watershed Plan *Comment: Covered under Flood Damage Prevention*	Yes	No	No	No
Stormwater Plan *Comment: Covered under Flood Damage Prevention*	No	Yes	No	No
Urban Water Management Plan *Comment: Updated 2015*	Yes	No	Yes	Yes
Habitat Conservation Plan *Comment: ECCCHCP Adopted 2007*	Yes	Yes	No	Yes
Economic Development Plan *Comment: General Plan Element (2014)*	Yes	No	No	Yes
Shoreline Management Plan *Comment: N/A*	No	No	No	No
Community Wildfire Protection Plan *Comment: East Contra Costa Fire Protection District*	No	Yes	No	No
Forest Management Plan *Comment: N/A*	No	No	No	No
Climate Action Plan *Comment: N/A*	No	No	No	No
Comprehensive Emergency Management Plan *Comment: Emergency Operations Plan (Revised 2013) Currently under revision*	Yes	No	Yes	Yes
Threat & Hazard Identification & Risk Assessment (THIRA) *Comment: Contra Costa County Office of the Sherriff*	No	Yes	No	No
Post-Disaster Recovery Plan *Comment:*	No	No	No	No
Continuity of Operations Plan *Comment: N/A*	No	No	No	No
Public Health Plan *Comment: Contra Costa County Health and Human Services*	No	Yes	No	No
Other: *Comment: N/A*	N/A	N/A	N/A	N/A

Table 3-3. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? • If no, who does? If yes, which department?	Yes Community Development
Does your jurisdiction have the ability to track permits by hazard area?	No
Does your jurisdiction have a buildable lands inventory? • If yes, please briefly describe. • If no, please quantitatively describe the level of buildout in the jurisdiction.	Yes Approximately 2,000 acres as of 2014 General Plan Update, including 1,700 acres of single-family residential N/A

Table 3-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes (Water, Wastewater, Solid Waste)
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	No
Development Impact Fees for Homebuyers or Developers	Yes
Other	No

Table 3-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Engineering and Community Development Departments/Staff
Engineers or professionals trained in building or infrastructure construction practices	Yes	Engineering and Public Works Departments/Staff
Planners or engineers with an understanding of natural hazards	Yes	Engineering and Community Development Departments/Staff
Staff with training in benefit/cost analysis	Yes	City Administration and Finance Departments/Staff
Surveyors	Yes	Engineering and Public Works Departments/Staff
Personnel skilled or trained in GIS applications	Yes	Engineering Department/GIS Coordinator
Scientist familiar with natural hazards in local area	No	
Emergency Manager	Yes	City Manager and Police Captain
Grant writers	No	
Other	No	

Table 3-6. Education and Outreach Capability

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe.	No N/A
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe.	Yes Facebook and Nixle
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly describe.	Yes Planning Commission
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe.	Yes Press release
Do you have any established warning systems for hazard events? • If yes, please briefly describe.	Yes Community Warning System

Table 3-7. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Engineering and Community Development Departments/Staff
Who is your floodplain administrator? (department/position)	Chief Building Official
Are any certified floodplain managers on staff in your jurisdiction?	No
What is the date that your flood damage prevention ordinance was last amended?	January 2017
Does your floodplain management program meet or exceed minimum requirements? • If exceeds, in what ways?	Meets N/A
When was the most recent Community Assistance Visit or Community Assistance Contact?	2012
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? • If so, please state what they are.	No N/A
Do your flood hazard maps adequately address the flood risk within your jurisdiction? • If no, please state why.	Yes N/A
Does your floodplain management staff need any assistance or training to support its floodplain management program? • If so, what type of assistance/training is needed?	No N/A
Does your jurisdiction participate in the Community Rating System (CRS)? • If yes, is your jurisdiction interested in improving CRS Classification? • Is your jurisdiction interested in joining the CRS program?	No N/A No
How many Flood Insurance policies are in force in your jurisdiction?[a] • What is the insurance in force? • What is the premium in force?	80 $ 24,426,200 $ 58,993
How many total loss claims have been filed in your jurisdiction?[a] • How many claims were closed without payment/are still open? • What were the total payments for losses?	2 1/0 $ 782

a. According to FEMA statistics as of December 31, 2016

Table 3-8. Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	No	N/A	N/A
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A

Table 3-9. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: None provided*	Medium
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: None provided*	Low
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: None provided*	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: None provided*	Low
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: None provided*	Low
Participation in regional groups addressing climate risks *Comments/Additional Information: None provided*	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: None provided*	Low
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: None provided*	Low
Identified strategies for adaptation to impacts *Comments/Additional Information: None provided*	Low
Champions for climate action in local government departments *Comments/Additional Information: None provided*	Low
Political support for implementing climate change adaptation strategies *Comments/Additional Information: None provided*	Low
Financial resources devoted to climate change adaptation *Comments/Additional Information: None provided*	Low
Local authority over sectors likely to be negative impacted *Comments/Additional Information: None provided*	Low
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: None provided*	Medium
Local residents support of adaptation efforts *Comments/Additional Information: None provided*	Low
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low

Criterion	Jurisdiction Rating[a]
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

3.5 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

3.5.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the City of Brentwood made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **General Plan Safety Element**—Action SA 3b supports regional disaster planning and emergency response planning efforts, including the Multi-Jurisdictional Local Government Hazard Mitigation Plan for the San Francisco Bay Area

Resources listed in Section 3.11 were used to provide information for this annex on hazard events and local capabilities within the jurisdiction.

3.5.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the City of Brentwood will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan in actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **General Plan**—Opportunities to integrate additional hazard mitigation polices into the City of Brentwood General Plan overall.
- **General Plan Safety Element**—Opportunities to integrate additional hazard mitigation polices into the City of Brentwood General Plan Safety Element.
- **Brentwood Municipal Code**—Opportunity to integrate hazard mitigation practices as ordinances are updated for new ordinances are adopted.
- **City of Brentwood Design Guidelines**—Opportunity to integrate new hazard mitigation guidelines and standards when the Design Guidelines are updated at a future date.

- **Urban Water Management Plan—**Opportunity to integrate hazard mitigation strategies.
- **Brentwood Standard Plans and Specifications**—Opportunity to integrate hazard mitigation strategies and the results of the risk assessment, as appropriate.
- **Water and Sewer Master Plans**—Opportunity to integrate hazard mitigation strategies and the results of the risk assessment, as appropriate.
- **Emergency Operations Plan**—Opportunity to integrate the results of the risk assessment, as appropriate.

3.6 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 3-10 lists past occurrences of natural hazards for which specific damage was recorded in the City of Brentwood. Other hazard events that broadly affected the entire planning area, including the City of Brentwood, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 3-10. Past Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Drought	N/A	2012-2017	Mandatory water reduction of 36% achieved
Tornado	N/A	January 23, 2010	$0
Winter storm and flood	N/A	January 2006	$193,000
Tornado	N/A	February 19, 1998	$0

3.7 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for the jurisdiction.

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 0
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: 0

Other noted vulnerabilities include the following:

- Public Works Corporation Yard has no backup generator
- Three water booster pump stations have no backup generator
- The City is in need of a Mobile Command Vehicle

3.8 HAZARD RISK RANKING

Table 3-11 presents a local ranking for the City of Brentwood of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 3-11. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake[b]	48	High
2	Severe weather	30	Medium
3	Landslide[e]	18	Medium
4	Flood[c]	15	Medium
5	Dam and levee failure[a]	12	Low
6	Drought	9	Low
7	Wildfire[e, f]	6	Low
8	Sea level rise[d]	0	None
8	Tsunami	0	None

a. Based on the level of detail conducted in the risk assessment, the risk ranking for this hazard is focused solely on dam failure impacts. See Chapter 6.4 of Volume 1 for combined dam inundation list on which this assessment is based.
b. Haywired M7.05 event was used to assign probability and impacts
c. 1-percent annual chance event was used to assign probability and impacts
d. 2100 upper range estimates and extreme tide are used to assign probability and impacts
e. Very High and High severity zones were used to assign probability and impacts
f. There is no mapped risk within the jurisdiction; however, a score was given due to potential impacts to people and the economy from smoke

3.9 STATUS OF PREVIOUS PLAN ACTIONS

Table 3-12 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

3.10 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 3-13 lists the actions that make up the City of Brentwood hazard mitigation action plan. Table 3-14 identifies the priority for each action. Table 3-15 summarizes the mitigation actions by hazard of concern and mitigation type.

3.11 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **City of Brentwood Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Brentwood Flood Damage Prevention Ordinance**—The flood damage prevention ordinance was reviewed for compliance with the National Flood Insurance Program.
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.
- **City of Brentwood Website**—www.brentwoodca.gov – The City of Brentwood's website was reviewed for the full capability assessment and for identifying plans, ordinances, and resources for action plan integration.

Table 3-12. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
B-1—Repair and/or replacement of City responsible sound walls which are damaged from either the ground settling, vehicular damage or as a result of other problems to avoid public safety issues *Comment: Ongoing*			X	B-7
B-2—Replace power supplies at City wells 11, 12, 13 and 15 to ensure a safe, reliable disinfection system for the City's water supply *Comment: This was completed in 2011*	X			
B-3—Installation of new water and sewer facilities, rehabilitation/replacement of existing facilities in order to bring Downtown infrastructure up to current standards *Comment: Parkway Alley sewer and water lines has been replaced and others are scheduled in upcoming years.*			X	B-5
B-4—Construction to improve water flow throughout the City in order to stabilize volumes and pressure during peak demands *Comment: Per the updated Water Master Plan it is no longer needed.*		X		
B-5—Install fueling system at Public Works Corp yard and future system at Police Station to increase storage capacity to aid in event of emergency *Comment: This was completed in 2012*	X			
B-6—Install a trunk, reclaimed water system to irrigate golf courses and city owned vegetation *Comment: This is in the works.*			X	B-6
B-7—Support County-wide initiatives identified in Volume 1. *Comment:*	X		X	B-8
B-8—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Volume 1. *Comment:*	X		X	B-3
B-9—Continue to maintain compliance and good standing under the National Flood Insurance Program *Comment: Ongoing*	X		X	B-4
B-10—Consider participation in the Community Rating System *Comment:*			X	B-11
B-11—Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan *Comment:*	X		X	B-2
B-12—Where appropriate, support retrofitting, purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. *Comment: None identified as repetitive loss structures at this time.*	X		X	B-1

Table 3-13. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
B-1—Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	City of Brentwood	High	HMGP, PDM, FMA	Short-term
B-2— Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including General Plan						
New and Existing	All Hazards	1, 4, 5, 7, 11, 12, 14, 17	City of Brentwood	Low	Staff Time, General Funds	Ongoing
B-3— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 16	City of Brentwood	Low	Staff Time, General Funds	Short-term
B-4—Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: • Enforce the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts.						
New and Existing	Flood	3, 5, 6, 9, 10, 11, 15	City of Brentwood	Low	Staff Time, General Funds	Ongoing
B-5—Installation of new water and sewer facilities, rehabilitation/replacement of existing facilities in order to bring Downtown infrastructure up to current standards						
New and Existing	Earthquake, Flood, Severe Weather	1, 5, 10	Department of Public Works	Low $4,953,600	Water Enterprise/ Redevelopment Funds; HMGP	Short-term
B-6—Install a trunk, reclaimed water system to irrigate golf courses and city owned vegetation						
Existing	Drought	12, 18	Department of Public Works	Medium $14.3 M	Facility Fees, HMGP	Long-term
B-7—Repair and/or replacement of City responsible sound walls which are damaged from either the ground settling, vehicular damage or as a result of other problems to avoid public safety issues						
Existing	Earthquake, Severe Weather	1, 17	Department of Public Works	Low $125,000	Parks and LLD Replacement Fund	Long-term
B-8—Support County-wide initiatives identified in Volume 1.						
New and Existing	All Hazards	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18	Police Department*, All Departments	Low	Staff Time, General Funds	Short-term
B-9—Consider participation in the Community Rating System						
New and Existing	Flood, Dam and Levee Failure	3, 9	Department of Public Works	Low	Staff Time, General Fund	Short-term

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 3-14. Mitigation Action Priority

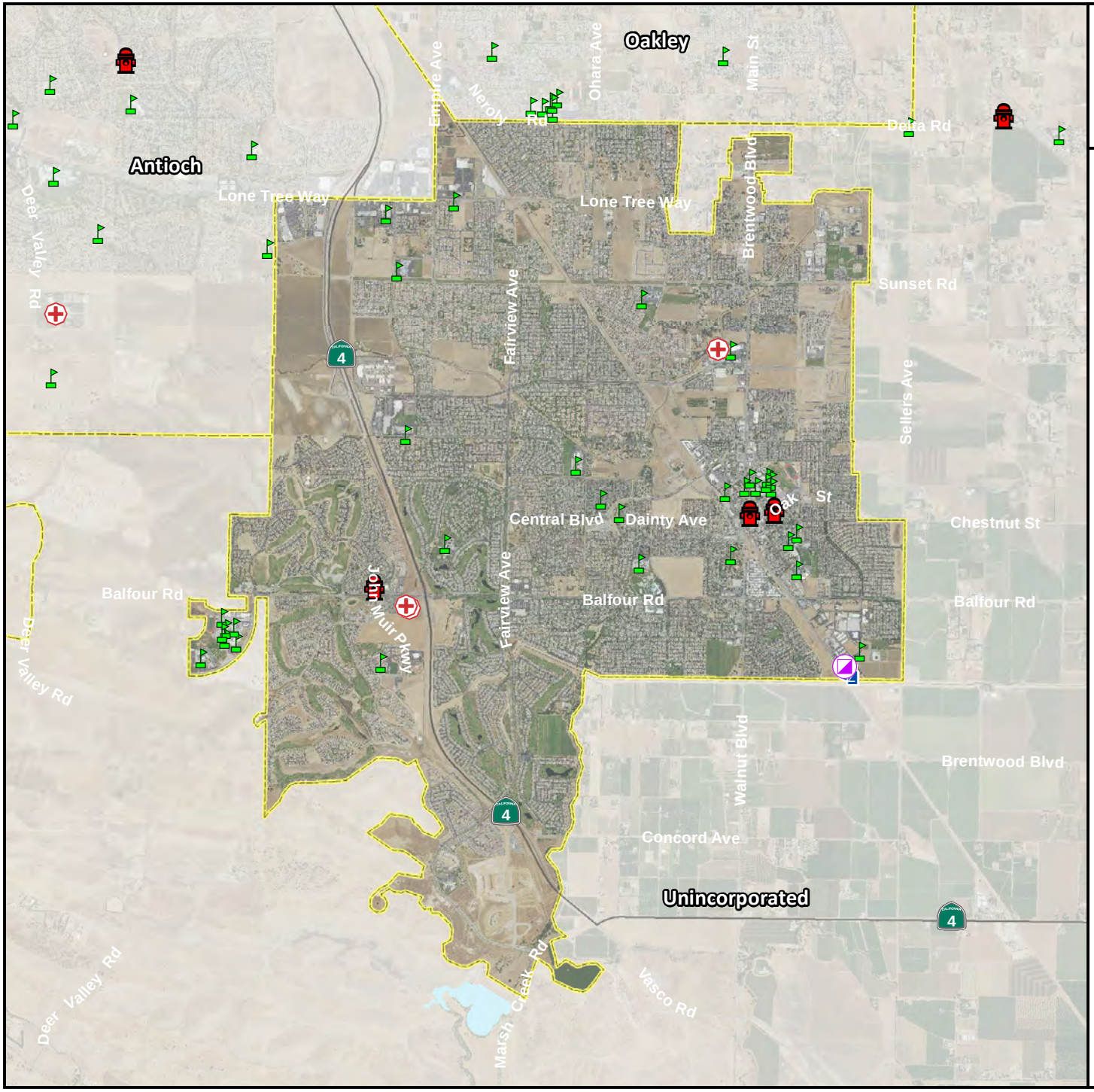
Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
B-1	8	High	High	Yes	Yes	No	Medium	High
B-2	8	Medium	Low	Yes	No	Yes	High	Low
B-3	3	Low	Low	Yes	No	Yes	High	Low
B-4	7	Medium	Low	Yes	No	Yes	High	Low
B-5	3	Medium	Low	Yes	Yes	Yes	High	High
B-6	2	Medium	Medium	Yes	Yes	Yes	Medium	High
B-7	2	Medium	Low	Yes	No	Yes	Medium	Low
B-8	18	Low	Low	Yes	No	Yes	High	Low
B-9	2	Medium	Low	Yes	No	Yes	High	Low

a. See the introduction to this volume for explanation of priorities.

Table 3-15. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	B-2, 8	B-1, 8	B-8	B-8	B-8	B-8	B-8	B-2, 3, 8
Dam and Levee failure	B-4, 9	B-4	B-4				B-9	B-9
Drought		B-6					B-6	
Earthquake		B-5, 7				B-5		
Flood	B-4, 9	B-4, 5	B-4			B-5	B-9	B-9
Landslide								
Severe weather		B-7				B-5		
Tsunami								
Wildfire								

a. See the introduction to this volume for explanation of mitigation types.



The City of Brentwood

Critical Facilities

- Emergency Operations Centers (Government)
- Fire Stations (Protective Functions)
- Hazardous Materials
- Medical Facilities
- Police Stations (Protective Functions)
- Schools & Educational Facilities
- Contra Costa County Boundary
- City Boundaries

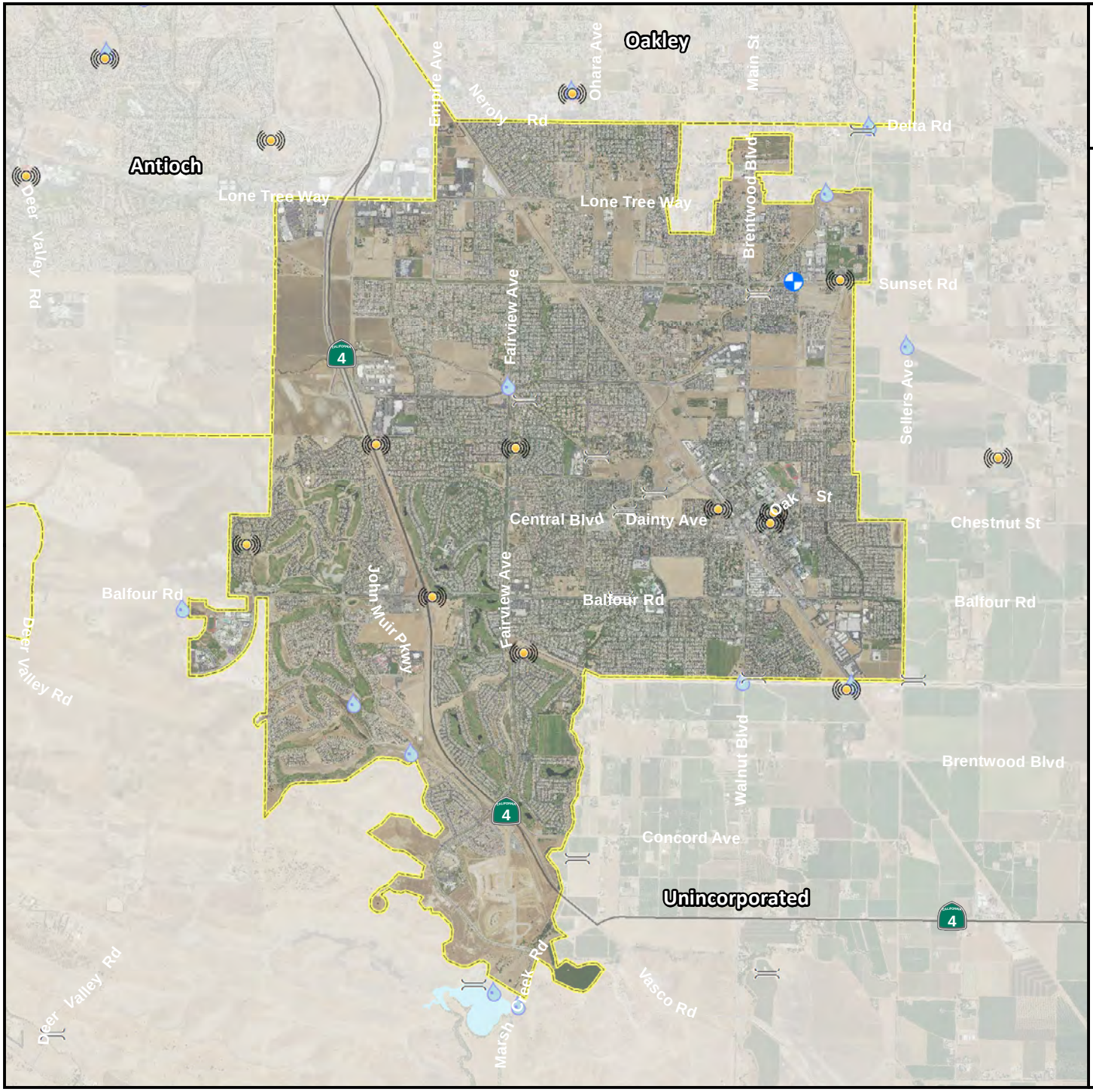
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of Brentwood

Critical Infrastructure

- Airports (Other Critical Functions)
- Bus Facilities (Other Infrastructure)
- Communication Facilities
- Electric Power Facilities
- Highway Bridges
- Highway Tunnels (Other Infrastructure)
- Light Rail (Other Infrastructure)
- Natural Gas (Other Infrastructure)
- Port Facilities (Other Critical Functions)
- Water Supply Facilities
- Rail Facilities (Other Infrastructure)
- Wastewater Facilities
- Contra Costa County Boundary
- City Boundaries

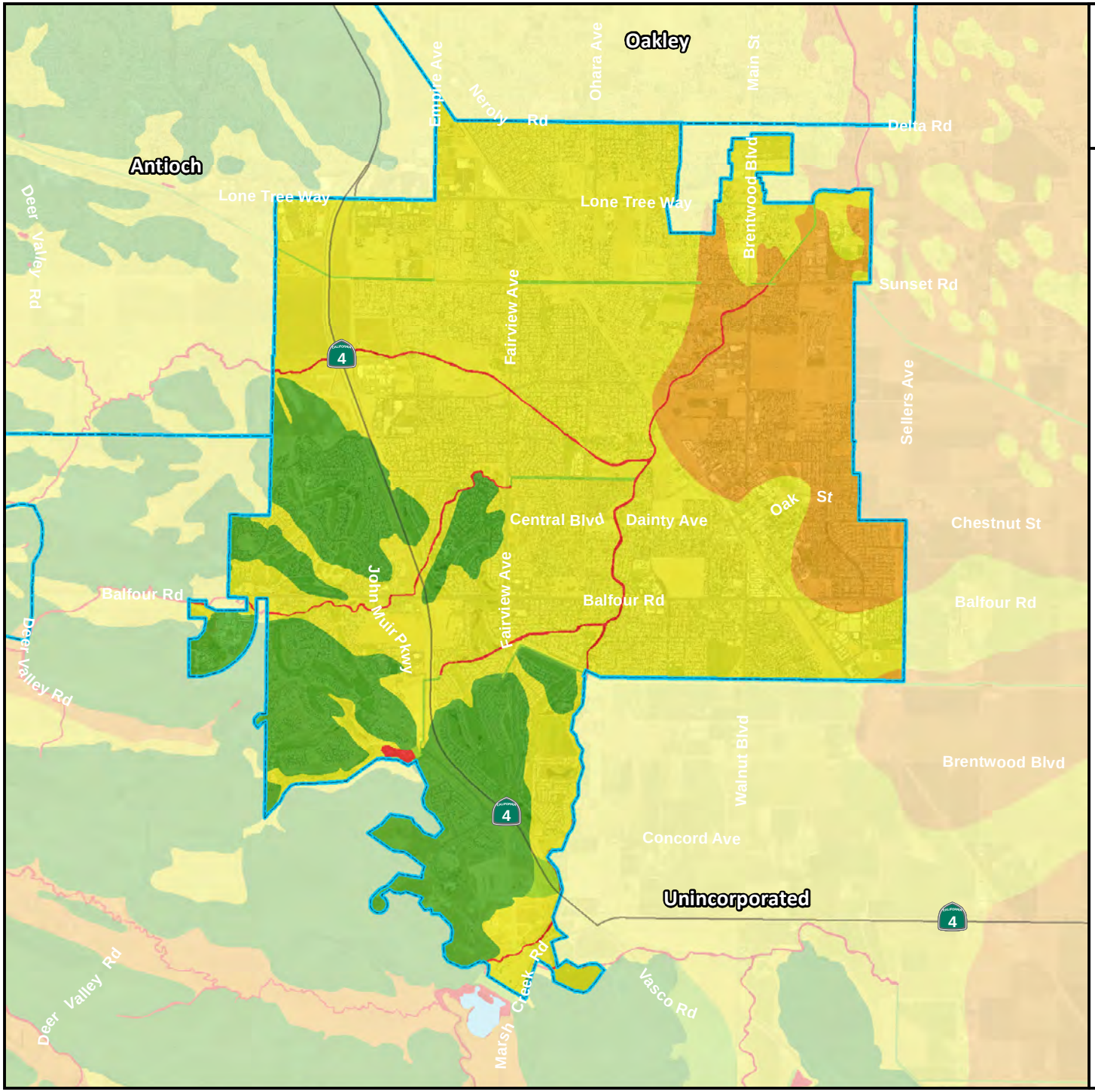
0 0.5 1 2

Miles

N
W E
S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of Brentwood

Liquefaction Susceptibility

Contra Costa County Boundary

City Boundaries

Water Bodies

Susceptibility to Liquefaction

- Very Low
- Low
- Medium
- High
- Very High
- No Liquefaction Data Available

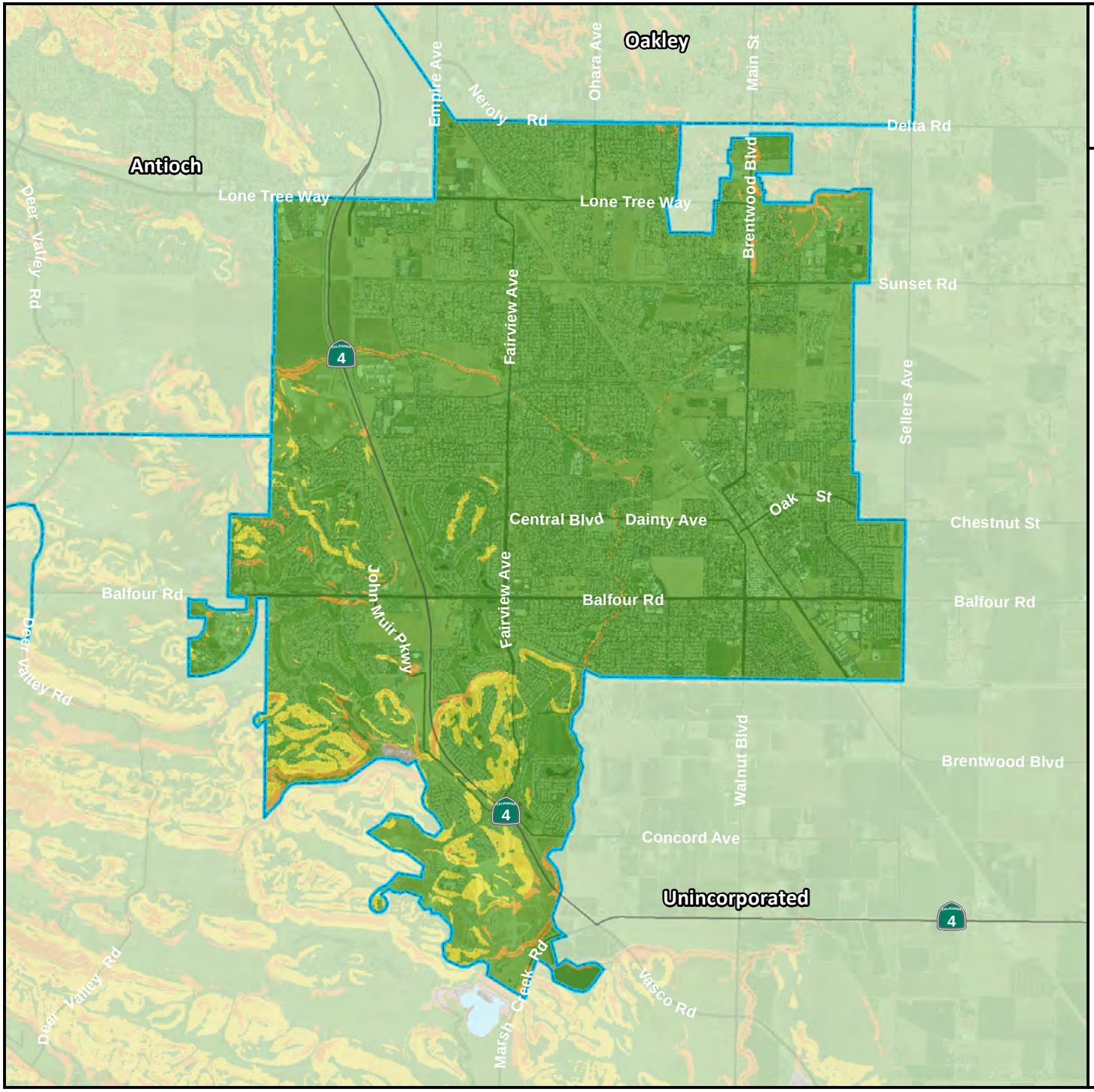
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The City of Brentwood

Landslide Susceptibility Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Type

Low

Moderate

High

Very High / Existing

Data Not Available

Source dataset created by Wills C.J., Perez, F., Gutierrez, C., 2011, Susceptibility to deep-seated landslides in California: California Geological Survey Map Sheet 58

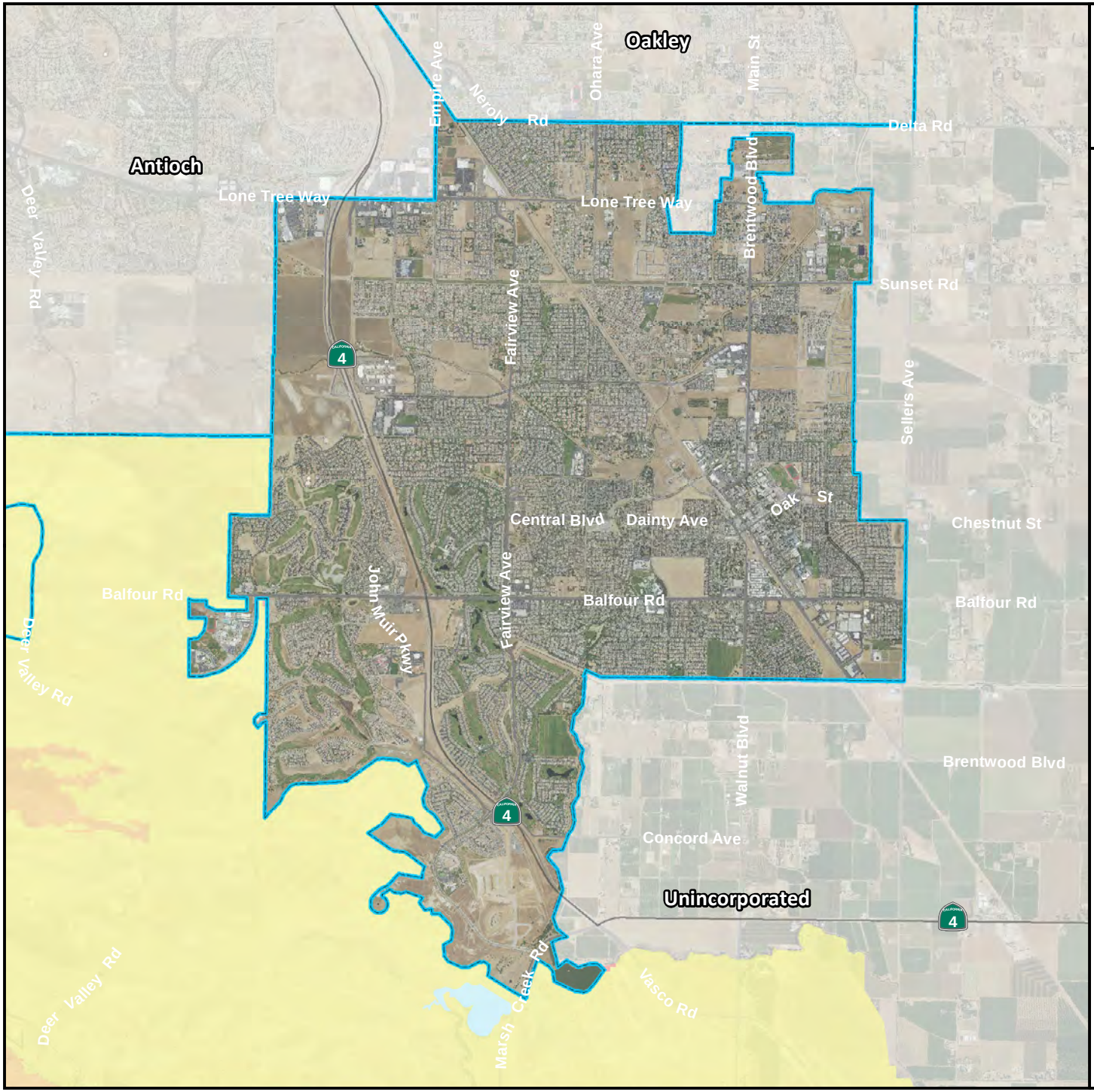
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The City of Brentwood

Wildfire Severity Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Wildfire Severity Zone

Moderate

High

Very High

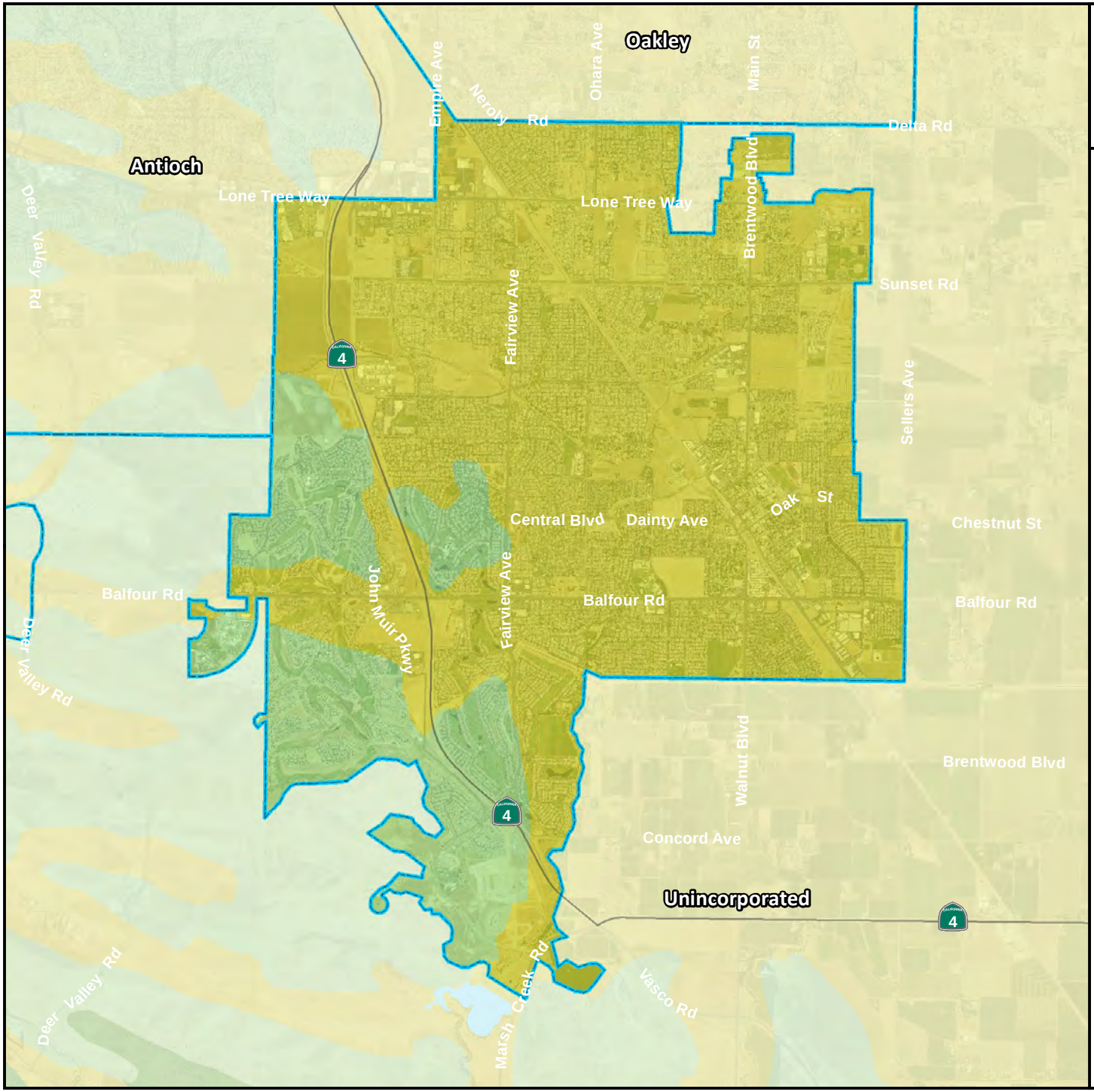
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, CalFIRE, USDA



The City of Brentwood

National Earthquake Hazard Reduction Program (NEHRP) Soil Class

Contra Costa County Boundary

City Boundaries

Water Bodies

NEHRP Site Class / Soil Profile

- B / Rock
- C / Very Dense Soil - Soft Rock
- D / Stiff Soil
- E / Soft Soil
- No Soil Data Available

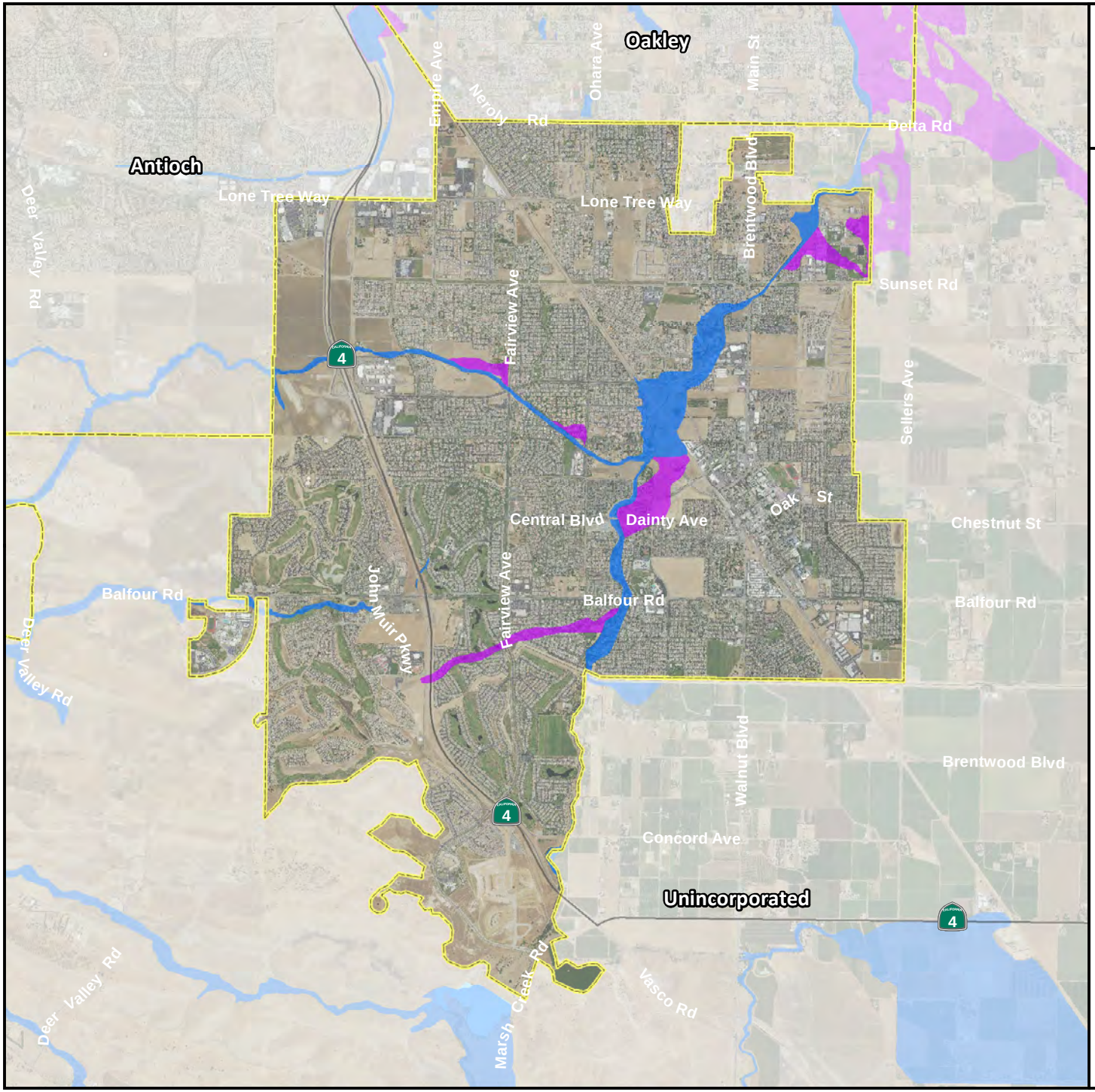
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Department of Conservation, USDA



The City of Brentwood

FEMA DFIRM Flood Hazard Areas

- 1% Annual Chance (100-Year) Flood Zone
- 0.2% Annual Chance (500-Year) Flood Zone
- Contra Costa County Boundary
- City Boundaries
- Water Bodies

Flood hazard areas as depicted on Effective FEMA Digital Flood Insurance Rate Maps (DFIRM)

0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, FEMA, USDA

4. CITY OF CONCORD

4.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Margaret Romiti
Emergency Manager
1350 Galindo Street
Concord, CA 94520
925-671-3184
Margaret.Romiti@cityofconcord.org

Alternate Point of Contact

Kevin Marstall
PE, Sr. Civil Engineer
1950 Parkside Drive
Concord, CA 94519
925-671-3257
Kevin.Marstall@cityofconcord.org

4.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

4.2.1 Overview

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation** February 8, 1905
- **Current Population** — 128,667 (U.S. Census Bureau)
- **Population Growth** — 5.2% increase since April 1, 2010.
- **Location and Description** — Concord has a total area of 30.5 square miles all of it land. Concord is bordered on the west by Pleasant Hill and the unincorporated community of Pacheco, on the south by Walnut Creek, on the southeast by Clayton, on the northeast by Pittsburg and the unincorporated community of Bay Point, and on the north by the unincorporated community of Clyde. Though it shares no border with Concord, Martinez (the county seat) is located almost immediately adjacent to Concord on the northwest. The North Concord BART station is also known as Martinez BART
- **Brief History** — Concord was founded under the name of Todos Santos on the initiative of Pacheco in 1869. It achieved prominence in the 19th century as a result of most residents of Pacheco relocating to Concord to avoid the devastation of fire and flood which crippled Pacheco's formerly booming economy. Concord was incorporated on February 5, 1905.
  The focal point of downtown Concord is Todos Santos Plaza, which encompasses an entire city block and is known for its farmers market, free summer concerts, and large number of surrounding restaurants. Much of the area immediately around downtown has recently been redeveloped, with new high-density apartment and condominium projects to take advantage of the proximity to public transportation and to the area surrounding the park. Despite this, some crime and homelessness remain issues in the downtown area.

To the north and east of downtown is the older residential area of Concord, with many homes dating back to before World War II. In the far northern edge of town is a primarily industrial area, dominated by the Tesoro Golden Eagle Refinery (which is actually not located within city limits). The southeastern area of the city, centered along Clayton Road, is primarily residential and was mostly developed in the 1960s and 1970s. In the southwest area of the city is the primarily Latino neighborhood known as Four Corners, centered around the intersection of Monument Boulevard and Oak Grove Road.

- **Climate** —Concord has a hot summer Mediterranean climate. Official data from the National Weather Service cooperative station in Concord shows average January temperatures are a maximum of 57.2 °F and a minimum of 41.6 °F. Average July temperatures are a maximum of 87.8 °F and a minimum of 58.2 °F. There are an average of 45 days with highs of 90 °F or higher and 3.8 days with lows of 32 °F or lower. The highest recorded temperature was 110 °F on July 23, 2006. The lowest record temperature was 24 °F on December 23, 1998. Average annual precipitation is 18.31 inches, falling on an average of 57 days annually. The wettest year was 1995 with 26.62 inches and the driest year was 2007 with 10.57 inches. The most rainfall in one month was 11.79 inches in December 2005, which included the 24-hour maximum rainfall of 3.95 inches on December 31.
- **Governing Body Format** — Concord is a General Law city with a City Council/City Manager form of government, and a community-oriented, performance-based management system at the core of decision-making. As its governing body, Concord's City Council is comprised of five elected members, who serve at large, rather than by district, each for four-year terms. City voters also elect a City Treasurer who serves for a four-year term. The City Council also serves as the Board of Directors of the Concord/Pleasant Hill Health Care District, the Board of the Local Reuse Authority, and as the Successor Agency to the Redevelopment Agency. Items considered by these bodies are done so on regular City Council Agendas The Council hires the City Manager, who is then responsible for all management functions of the City, including preparation of the budget, delivery of services, hiring of personnel, and implementation of capital projects. The City Council also directly hires the City Attorney who serves as the City's primary legal advisor. Municipal elections are consolidated with the general election held every two years in November of the even-numbered years. Council terms overlap, with three Councilmembers elected one year and the other two elected two years later. The Council annually selects one of its members to serve as Mayor and another as Vice Mayor. The City Council assumes responsibility for the adoption of this plan: the City Manager will oversee its implementation.

4.3 DEVELOPMENT TRENDS

Concord is seeing a number of large multifamily residential developments being entitled within the Downtown Specific Plan area, and within the Transit-Oriented Development zone near the Concord BART Station. Over 180 residential units are now under construction and over 600 multifamily units are in the pipeline. In addition, several new commercial/industrial spaces have been entitled and are under construction in the western and northern business park areas of the city. The City's industrial space vacancy is very low. There has been a consolidation of Wells Fargo offices into One Concord office space downtown. A 300,000 square foot high end theater and retail center was approved in 2016 and is now under construction, to open in October 2017. Development is guided by the General Plan.

Table 4-1 summarizes development trends in the performance period since development of the previous hazard mitigation plan and expected future development trends.

Table 4-1. Recent and Expected Future Development Trends

Criterion	Response					
Has your jurisdiction annexed any land since the development of the previous hazard mitigation plan? • If yes, give the estimated area annexed and estimated number of parcels or structures.	No N/A					
Is your jurisdiction expected to annex any areas during the performance period of this plan?	No					
Are any areas targeted for development or major redevelopment in the next five years? • If yes, please briefly describe	Yes Downtown Base Reuse Area					
How many building permits were issued in your jurisdiction since the development of the previous hazard mitigation plan? [a]		2012[b]	2013[b]	2014	2015	2016
	Single Family	n/a	n/a	2785	3283	3289
	Multi-Family	n/a	n/a	253	298	299
	Other (commercial, mixed use, etc.)	n/a	n/a	579	682	684
Please provide the number of permits for each hazard area or provide a qualitative description of where development has occurred.	• Special Flood Hazard Areas: 2 • Landslide: 0 • High Liquefaction Areas: Not available, see hazard map • Dam Failure Inundation Area: 0 • Wildfire Risk Areas: 0					
Please describe the level of buildout in the jurisdiction, based on your jurisdiction's buildable lands inventory. If no such inventory exists, provide a qualitative description.	A total of 4,523 residential units can be built on the identified sites within the Housing Element planning period as stated in General Plan.					

a. Numbers listed in this table are for total permits including alterations, additions, and new constructions.
b. The current permit tracking software was not in place prior to 2014.

4.4 CAPABILITY ASSESSMENT

The City of Concord performed an inventory and analysis of existing capabilities, plans, programs and policies that enhance its ability to implement mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of legal and regulatory capabilities is presented in Table 4-2.
- Development and permitting capabilities are presented in Table 4-3.
- An assessment of fiscal capabilities is presented in Table 4-4.
- An assessment of administrative and technical capabilities is presented in Table 4-5.
- An assessment of education and outreach capabilities is presented in Table 4-6.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 4-7.
- Classifications under various community mitigation programs are presented in Table 4-8.
- The community's adaptive capacity for the impacts of climate change is presented in Table 4-9.

Table 4-2. Legal and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code	Yes	Yes	Yes	Yes
Comment: California Code of Regulations Title 24, and Municipal Code Chapter 15. Last amended November 1, 2016, effective January 1, 2017.				
Zoning Code	Yes	Yes	No	Yes
Comment: 2030 General Plan, Zoning Plan Chapter 3 Land Use. Adopted October 2, 2007, Amended January 6, 2015				
Subdivisions	Yes	Yes	Yes	Yes
Comment: Municipal Code, Title 17 Subdivisions. Amended September 5, 2017.				
Stormwater Management	Yes	Yes	Yes	Yes
Comment: Municipal Code Chapter 16.05 Date of last update 2004.				
Post-Disaster Recovery	No	No	No	No
Comment:				
Real Estate Disclosure	Yes	Yes	Yes	No
Comment: Cal.Civ. Code §1102 et seq. Amended in 1999, effective January 1, 2000.				
Growth Management	Yes	No	Yes	No
Comment: Cal.Gov. Code §65300 et seq. Amended in 1984.				
Site Plan Review	Yes	Yes	No	Yes
Comment: Municipal Code, Chapter 18.10 Title, Purpose, Applicability and Interpretation. Amended August 23, 2012.				
Environmental Protection	Yes	Yes	Yes	Yes
Comment: California Environmental Quality Act (Guideline: California Code of Regulations, Title 14, Division 6, Chapter3. Sections 15000-15387) Amended January 1, 2016.				
Flood Damage Prevention	Yes	Yes	Yes	Yes
Comment: Municipal Code Chapter 15.75 Date of last update 2010.				
Emergency Management	Yes	Yes	Yes	Yes
Comment: Code 1965, § 3600; Code 2002, § 22-1. Ord. No. 858. Date of last amendment 2016				
Climate Change	Yes	Yes	Yes	Yes
Comment: California SB-379: Land Use: General Plan: Safety Element, Amended October 8, 2015.				
Other:	N/A	N/A	N/A	N/A
Comment:				
Planning Documents				
General Plan	Yes	Yes	Yes	Yes
Is the plan compliant with Assembly Bill 2140? Yes				
Comment: City of Concord 2030 General Plan, Chapter 7: Safety and Noise. Elements include: Fault Rapture Hazards, Ground Shaking Susceptibility, Liquefaction Potential, Wildfire Hazards, Hazardous Materials and Health and Safety Services.				
Capital Improvement Plan	Yes	No	No	Yes
How often is the plan updated? 2 years				
Comment: Last updated 2016				
Floodplain or Watershed Plan	Yes	Yes	Yes	Yes
Comment: Last updated 2010				
Stormwater Plan	Yes	Yes	Yes	Yes
Comment: Last updated 2004				
Urban Water Management Plan	No	Yes	Yes	No
Comment: Contra Costa Water District				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Habitat Conservation Plan	Yes	Yes	Yes	Yes
Comment: Municipal Code Chapter 18.305, Creek and Riparian Habitat Protection-last updated 2012				
Economic Development Plan	Yes	No	No	No
Comment: On April 11, 2017 an Economic Vitality Strategy Initiative was presented to council.				
Shoreline Management Plan	No	N/A	N/A	N/A
Comment:				
Community Wildfire Protection Plan	No	N/A	N/A	N/A
Comment:				
Forest Management Plan	No	N/A	N/A	N/A
Comment:				
Climate Action Plan	Yes	Yes	Yes	Yes
Comment: Last updated July 23, 2013.				
Comprehensive Emergency Management Plan	Yes	Yes	Yes	Yes
Comment: A Resolution to Adopt the City of Concord's Emergency Operations Plan Dated March 22, 2016				
Threat & Hazard Identification & Risk Assessment (THIRA)	No	Yes	Yes	No
Comment: County Office of Emergency Services				
Post-Disaster Recovery Plan	No	Yes	Yes	Yes
Comment: Office of Emergency Services				
Continuity of Operations Plan	No	Yes	No	Yes
Comment: Office of Emergency Services				
Public Health Plan	No	Yes	Yes	Yes
Comment: Contra Costa County Health Services				
Other:	N/A	N/A	N/A	N/A
Comment:				

Table 4-3. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? • If no, who does? If yes, which department?	Yes Community Economic Development
Does your jurisdiction have the ability to track permits by hazard area?	Yes For flood map only
Does your jurisdiction have a buildable lands inventory? • If yes, please briefly describe. • If no, please quantitatively describe the level of buildout in the jurisdiction.	Yes Inventory of the housing potential on vacant sites is within the Concord 2014-2022 Housing Element, Category 2-8. ----------N/A

Table 4-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes, sewer fees
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	Yes
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	N/A

Table 4-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Planning, Community Economic Development
Engineers or professionals trained in building or infrastructure construction practices	Yes	Community Economic Development
Planners or engineers with an understanding of natural hazards	Yes	Community Economic Development
Staff with training in benefit/cost analysis	Yes	Finance
Surveyors	No	
Personnel skilled or trained in GIS applications	Yes	Information Technology
Scientist familiar with natural hazards in local area	No	
Emergency Manager	Yes	Police Department
Grant writers	Yes	Various
Other	N/A	

Table 4-6. Education and Outreach Capability

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes, Information Technology
Do you have hazard mitigation information available on your website? • If yes, please briefly describe.	Yes Emergency Preparedness, LHMP
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe.	Yes Police Department
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly describe.	Yes Planning Commission
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe.	Yes Nextdoor.com, PD
Do you have any established warning systems for hazard events? • If yes, please briefly describe.	Yes Contra Costa County Community Warning System

Table 4-7. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Community Economic Development
Who is your floodplain administrator? (department/position)	Community Development/Current Development Manager
Are any certified floodplain managers on staff in your jurisdiction?	Yes, 3
What is the date that your flood damage prevention ordinance was last amended?	4/13/2010
Does your floodplain management program meet or exceed minimum requirements? • If exceeds, in what ways?	Exceeds CRS Class 7 City of Concord has one foot of freeboard requirement.
When was the most recent Community Assistance Visit or Community Assistance Contact?	3/1/2007
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? • If so, please state what they are.	No N/A
Do your flood hazard maps adequately address the flood risk within your jurisdiction? • If no, please state why.	Yes N/A
Does your floodplain management staff need any assistance or training to support its floodplain management program? • If so, what type of assistance/training is needed?	No N/A
Does your jurisdiction participate in the Community Rating System (CRS)? • If yes, is your jurisdiction interested in improving CRS Classification? • Is your jurisdiction interested in joining the CRS program?	Yes No N/A
How many Flood Insurance policies are in force in your jurisdiction?[a] • What is the insurance in force? • What is the premium in force?	483 $133,975,300 $516,834
How many total loss claims have been filed in your jurisdiction?[a] • How many claims were closed without payment/are still open? • What were the total payments for losses?	67 37/0 $117,324

a. According to FEMA statistics as of December 31, 2016

Table 4-8. Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	Yes	7	10/01/12
Building Code Effectiveness Grading Schedule	Yes	2	4/11/12
Public Protection	No	N/A	N/A
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A

Table 4-9. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: None provided*	Medium
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: None provided*	Medium
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: None provided*	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: None provided*	Medium
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: None provided*	Low
Participation in regional groups addressing climate risks *Comments/Additional Information: None provided*	High
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: None provided*	Medium
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: None provided*	Medium
Identified strategies for adaptation to impacts *Comments/Additional Information: None provided*	Low
Champions for climate action in local government departments *Comments/Additional Information: None provided*	Medium
Political support for implementing climate change adaptation strategies *Comments/Additional Information: None provided*	Low
Financial resources devoted to climate change adaptation *Comments/Additional Information: None provided*	Low
Local authority over sectors likely to be negative impacted *Comments/Additional Information: None provided*	Low
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: None provided*	Low
Local residents support of adaptation efforts *Comments/Additional Information: None provided*	Low
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Medium
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Medium

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

4.5 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

4.5.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the City of Concord made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **City of Concord Emergency Operations Plan**—The Emergency Operations Plan addresses the City's responsibilities in emergencies associated with natural disaster, human-caused emergencies and technological incidents. It provides a framework for coordination of response and recovery efforts within the City in coordination and with local, State, and federal agencies. The Plan establishes an emergency organization to direct and control operations during a period of emergency by assigning responsibilities to specific personnel.
  Information from the hazard mitigation plan is incorporated as appropriate.
- **General Plan Safety Element**—The City of Concord has a Safety Element in its General Plan that includes a discussion of fire, earthquake, flooding, and landslide hazards. The hazard mitigation plan was adopted as an implementation appendix to the Safety Element.
- **Capital Improvements Plan**—The capital improvement plan includes projects can help mitigate potential hazards. The city will act to ensure consistency between the hazard mitigation plan and the current and future capital improvement plans. The hazard mitigation plan may identify new possible funding sources for capital improvement projects and may result in modifications to proposed projects based on results of the risk assessment.
- **Local Emergency Volunteer Management Plan**— This plan establishes a framework by which the City of Concord can coordinate unaffiliated spontaneous and affiliated volunteer resources for community-wide response, relief, and recovery following a disaster.
- **Citywide Climate Action Plan**—The City's Climate Action Plan includes projects for reducing greenhouse gas emissions and adapting to likely impacts of climate change. These projects were reviewed to identify cross-planning initiates that serve both adaptation and mitigation objectives.
- **Care and Shelter for People with Disabilities and Functional Needs**— The city addresses the needs of individuals with disabilities and the elderly during an emergency or disaster situation, and provides safe, sanitary, secure shelter and care for all residents including those residents with functional needs.
- **CEQA**—The City enforces the requirements of CEQA, which, since 1988, requires mitigation for identified natural hazards.
- **2010 Association of Bay Area Governments' Local Hazard Mitigation Plan**—The City of Concord and Contra Costa County Operational Area used the following planning mechanisms of the 2010 Local Hazard Mitigation plan that were incorporated into the 2017 plan.

  - General Plan
  - Capital Improvement Plan
  - All Hazard Emergency Operation Plan
  - Citywide Climate Action Plan
  - Concord Reuse Area Climate Action Plan

Resources listed in Section 4.12 were used to provide information for this annex on hazard events and local capabilities within the jurisdiction.

4.5.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the City of Concord will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan in actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future.

- **Post-Disaster Recovery Plan**—The departments of the City of Concord provide vital services to its residents. As a result, reliability is the fundamental mission of every department in the city. For years, such planning had been an individual department's responsibility. The content and structure of Continuity of Operations Plans (COOP), operational standards, and coordination with other departments, if any, were left to the discretion of individual departments. This COOP will serve as a supplemental tool designed to help the City's departments effectively resume day-to-day core services and functions following a disaster.
- **Green Infrastructure Plan**—As a compliance measure included under the Municipal Regional Permit (MRP 2.0), the City of Concord is required to develop a Plan for Green Infrastructure to be approved by City Council, prior to June 30, 2019. **Pertinent Issues:** MRP 2.0 includes a requirement to develop a Green Infrastructure Plan for disconnecting runoff from existing City infrastructure from direct discharge into the municipal storm drain system and downstream receiving waters.

4.6 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 4-10 lists past occurrences of natural hazards for which specific damage was recorded in the City of Concord. Other hazard events that broadly affected the entire planning area, including the City of Concord, are listed in the risk assessments in Volume 1 of this hazard mitigation plan. In addition to these natural hazard events, a few human-caused events have caused damage with the City:

- **Concord Water Park tragedy**—On June 2, 1997, The Banzai Pipeline slide at Waterworld USA broke under the weight of reveling students, killed one and dropped dozens of others through the air to the ground. Thirty-two students from a Napa High School were taken to 10 Bay Area hospitals; five of them by helicopter.
- **Concord Sunvalley Mall Plane Crash**—On December 23, 1987, A twin-engine Beechcraft plane on its second inbound approach to the Buchannan Airport plowed into the roof of the Macy's Department Store at the Sunvalley Mall, bursting into a ball of fire rising 40 feet into the air, and tearing a 50 foot long hole in the roof. The mall was packed with thousands of last minute holiday shoppers. Broken glass, flaming droplets of aviation fuel, and burning hot metal debris rained upon parents and children waiting to see Santa Claus, scorching many. All four passengers in the plane lost their lives. Of the 83 people taken to hospitals, 4 succumbed to their injuries.

Table 4-10. Past Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Pandemic (H1N1)	N/A	4/2009	Contra Costa County Health Services initiated four mass inoculation clinics. The cities of Concord, Richmond, San Ramon and Pittsburg held separate drive-thru clinics vaccinating over 6000 citizens in the perspective priority groups.
Landslide	DR-1628	3/2006	1,000-foot segment of one eastbound lane was closed at Ygnacio Valley Road and Cowell Road due to landslide.
Winter Storms	DR-1628	12/2005	Area flooding, uprooted trees and damaged property.
Earthquake (Loma Prieta)	DR-845	1989	63 persons killed, injured 3,757, and displaced over 12,000 persons. Over 20,000 homes and businesses damaged and over 1,100 destroyed, approximately $6 billion of damage.

4.7 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for the jurisdiction.

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 3
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: Unknown

Other noted vulnerabilities include the following:

- **Hazardous Material Release**—Hazardous materials come in the form of explosives, flammable and combustible substances, poisons, and radioactive materials. These substances are most often released as a result of transportation and radioactive materials. These substances are most often released as a result of transportation accidents or business of chemical accidents in plants. Although the City of Concord has had limited exposure to a chemical release, the risk of a release impact to the community is significant. Releases have occurred on highways that travel through Concord. Incidents have occurred on rail which connects to the City and the remaining have been in the air and water.
- **Refineries**—There are six refineries that can pose hazard risks in Contra Costa County. Hazards can occur during production, storage, transportation, use, or disposal. The six facilities currently subject to the County's Industrial Safety Ordinance (ISO) include: Air Products (within the Shell Refinery), Air Products (within the Tesoro Refinery), Phillips 66 Rodeo Refinery, Air Liquide-Rodeo Hydrogen Plant, Shell Oil Martinez Refinery, the DOW Chemical Refinery and Tesoro Golden Eagle Refinery. Hazardous materials in various forms can cause death, serious injury, long-lasting health effects, and damage to buildings, homes, and other property.

4.8 HAZARD RISK RANKING

Table 4-11 presents a local ranking for the City of Concord of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 4-11. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake[b]	48	High
2	Severe weather	30	Medium
3	Flood[c]	18	Medium
3	Landslide[e]	18	Medium
4	Dam and levee failure[a]	11	Low
5	Drought	9	Low
6	Wildfire[f]	6	Low
7	Sea level rise[d]	0	None
7	Tsunami	0	None

a. Based on the level of detail conducted in the risk assessment, the risk ranking for this hazard is focused solely on dam failure impacts. See Chapter 6.4 of Volume 1 for combined dam inundation list on which this assessment is based.
b. Haywired M7.05 event was used to assign probability and impacts
c. 1-percent annual chance event was used to assign probability and impacts
d. 2100 upper range estimates and extreme tide are used to assign probability and impacts
e. Very High and High severity zones were used to assign probability and impacts
f. There is no mapped risk within the jurisdiction; however, a score was given due to potential impacts to people and the economy from smoke

4.9 STATUS OF PREVIOUS PLAN ACTIONS

Table 4-12 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

4.10 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 4-13 lists the actions that make up the City of Concord hazard mitigation action plan. Table 4-14 identifies the priority for each action. Table 4-15 summarizes the mitigation actions by hazard of concern and mitigation type.

4.11 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

As additional information and resources become available, the City of Concord will continue to assess the level of risk/vulnerability for the critical infrastructure, as well as for the residents and businesses, located within the City. The process of identifying risk/vulnerability is dynamic and it is anticipated that there will be future needs to better understand those risks/vulnerabilities to facilitate more resilient and sustainable measures for inclusion in updates to the Local Hazard Mitigation Plan

Table 4-12. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update: Check if Yes	Carried Over to Plan Update: Enter Action #
INFR a-21-As an infrastructure operator, designate a back-up Emergency Operations Center with redundant communications systems	X			
Comment: In 2016 the Cal State East Bay campus in Concord, CA signed a Memorandum of Understanding with the Concord Police Department as its alternate EOC. Next steps are to develop staging areas and plans to accommodate designated areas for emergency services. In 2012 the telecommunications vehicle was retrofitted and utilized in training and deployments for SWAT.				
INFR b-1 – Expedite the funding and retrofit and seismically-deficient city and county owned bridges and road structures by working with Caltrans and other appropriate governmental agencies.			X	C-9
Comment: The existing Marsh Drive Bridge project continues to move forward though the Planning stages, however Contra Costa County has taken over as lead agency. Additional projects to be developed on an ongoing basis, in cooperation with other agencies, and will be reflected in the Capital Improvement Plan, as appropriate.				
EDUC b-1-Work cooperatively with the American Red Cross, cities, counties and non-profits to set up Statement of Understanding for use of education facilities as emergency shelters following disasters.	X			
Comment: Due to reconstruction of the ARC program, no further sheltering vetting has been done. However, ARC now has a Shelter site locator on the internet. Concord also partners with Northern California VOAD, which used to be the IDACC group.				
EDOC b-2-Work cooperatively to ensure that school district personnel and relevant staff understand and are trained to understand that being designated by the American Red Cross or other 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 shelter following any specific disaster.	X			
Comment: While the City of Concord, in partnership with the American Red Cross did hold another shelter exercise in 2014, no further action has been taken on this Strategy.				
EDUC b-3- Work cooperatively to ensure that school district personnel and relevant staff understand and are trained that designated as disaster service workers and must remain at the school until released.	X			
Comment: Campus' throughout Mt. Diablo Unified School District continue to train teachers and staff as to their role as DSW's.				
EDUC d-2- Develop and distribute culturally appropriate materials related to disaster mitigation and preparedness, such as those on the http://www.preparenow.org website	X			
Comment: In 2012, the Concord Community Emergency Response Team (CERT) held an exercise with mono-lingual victims. The After Action Report from that exercise showed a gap in services to the Spanish speaking community. In 2013, Concord received grant funding to support Spanish speaking emergency preparedness. The LISTOS program held a train-the-trainer program in Concord and began teaching Spanish emergency preparedness. Concurrently, the Get Ready Bay Area 5th Graders program was launched in Concord and trained over 700 youth. In 2017, Concord has implemented the Pillowcase Project in English and Spanish and will hold its first Spanish CERT class in June.				
ECON b-2- Adopt the 2009 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.			X	C-17
Comment:				

Table 4-13. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
C-1— Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	OES, Planning and Housing Division, Public Works	High	HMGP, PDM, FMA	Short-term
C-2— Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including the Development Code, the General Plan, and other programs.						
New and Existing	All Hazards	5, 6, 11, 12	Planning and Housing Division	Low	Staff Time, General Funds	Ongoing
C-3— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 16	OES	Low	Staff Time, General Funds	Short-term
C-4—Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: • Enforce the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts.						
New and Existing	Flood	3, 5, 6, 9, 10, 11, 15	Community Economic Development	Low	Staff Time, General Funds	Ongoing
C-5—Seismic review of critical buildings: Review of construction plans for Police Department Headquarters and Civic Center Finance/Information Technology building to assess their ability to withstand an earthquake. These are critical buildings for city operations						
New and Existing	Earthquake	1, 2, 13	Public Works	Low; 20K	Public Works, Staff Time	Ongoing
C-6—Implement disaster recovery plan equipment for information technology for core application: This project will allow the City to place the necessary equipment at the Rocklin co-location facility to run the City's critical application in a disaster						
New	All Hazards	1, 2, 13	Information Technology	Low	Staff Time, General Funds	Short-term
C-7—Restoration of Holbrook Channel Slope Failure at 2260 Holbrook Drive						
Existing	Flood	9, 10, 17	Public Works	Low	Staff Time, General Funds, Grants	Ongoing
C-8— Galindo and Mt. Diablo Creek Drainage Improvements – Detention Basin at Ygnacio Valley Rd & Pine Hollow Rd.						
New and Existing	Flood	4, 6, 9, 10, 16, 17	Engineering	Medium	Stormwater Funds, Storm Drain Fees, Staff Time, General Funds, Grants	Long-term
C-9—Marsh Drive Bridge Seismic Retrofit						
Existing	Earthquake, Flood	1, 2, 9, 13, 15, 16	Contra Costa County	Medium	Gas Tax, Grants, State & Local Funds	Ongoing
C-10— Civic Center Generator Replacement to maintain critical functions of Finance and Information Technology departments during power outage of any sort.						
New and Existing	All Hazards	1, 2, 3	Public Works	Low;85K	General Fund	Ongoing
C-11— Uninterruptible power service supply replacement at the PD: replaces end of life Uninterruptible Power Supply (UPS) for the Police Department's Dispatch and Emergency Operations Center (EOC) activities.						
New and Existing	All Hazards	1, 2, 3	Public Works	Low;100K	General Fund	Ongoing
C-12—Updated and Maintain the Flood Plain Management Plan						
New and Existing	Flood	2, 3, 6, 9, 10, 13, 14, 16, 17, 18	Engineering	Medium	Staff Time, General Funds, Grants	Ongoing
C-13— Develop a continuity of operations plan						
New	All Hazards	1, 2, 13	Concord OES	Low; 50K	General Fund	Short-term (2 years)

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
C-14— Work with the Water District to develop inundation mapping for District owned Water Storage Units and integrate this mapping into locally relevant planning mechanisms, such as the hazard mitigation plan, emergency response plan, and/or general plan, as appropriate.						
New	Flood	1, 2, 3, 4, 5	OES	Low; 25K	General Fund	Short-term (2 years)
C-15— Develop a City Critical Infrastructure Map						
Existing asset	All Hazards	1, 3	OES	Low;10K	General Fund	Short-term (1 year)
C-16—Identify an alternate EOC in Concord						
Existing asset	All Hazards	1, 5	OES	Low; 50K	General Fund	Short-term (2 years)
C-17— Adopt the 2009 International Existing Building Code for the design of voluntary or mandatory soft-story building retrofits						
Existing asset	Earthquake	3, 4, 6, 7, 11, 12, 15, 16	Building	Medium	Staff Time, General Fund, Grants	Ongoing
C-18— Climate Action Plan, City Forrest Plan TL-9. Develop a City Forrest Plan for Downtown and Key Street Corridors. Also include in Street Tree Master Plan, which requires 10% of non-residential parking lots to be landscaped.						
New and Existing	Flood	1, 10, 11, 17	Planning, Public Works, Parks Division	Low	Grants	Ongoing

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 4-14. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
C-1	8	High	High	Yes	Yes	No	Medium	High
C-2	4	Medium	Low	Yes	No	Yes	High	Low
C-3	3	Low	Low	Yes	No	Yes	High	Low
C-4	7	Medium	Low	Yes	No	Yes	High	Low
C-5	3	Medium	Low	Yes	No	Yes	Medium	Low
C-6	3	Medium	Low	Yes	No	Yes	High	Low
C-7	3	Low	Low	Yes	Yes	No	Low	Low
C-8	6	Medium	Medium	Yes	Yes	No	Medium	Medium
C-9	6	Medium	Medium	Yes	Yes	Yes	High	Medium
C-10	3	High	Medium	Yes	No	Yes	High	Low
C-11	3	High	Medium	Yes	No	Yes	High	Low
C-12	10	High	Medium	Yes	Yes	Yes	High	Medium
C-13	3	Medium	Low	Yes	Yes	Yes	High	Low
C-14	5	Medium	Low	Yes	No	Yes	Medium	Low
C-15	2	Low	Low	Yes	No	Yes	Medium	N/A
C-16	2	High	Medium	Yes	Yes	Yes	High	Medium
C-17	8	Medium	Medium	Yes	Yes	No	Medium	Low
C-18	4	Low	Low	Yes	Yes	Yes	Medium	Medium

a. See the introduction to this volume for explanation of priorities.

Table 4-15. Analysis of Mitigation Actions

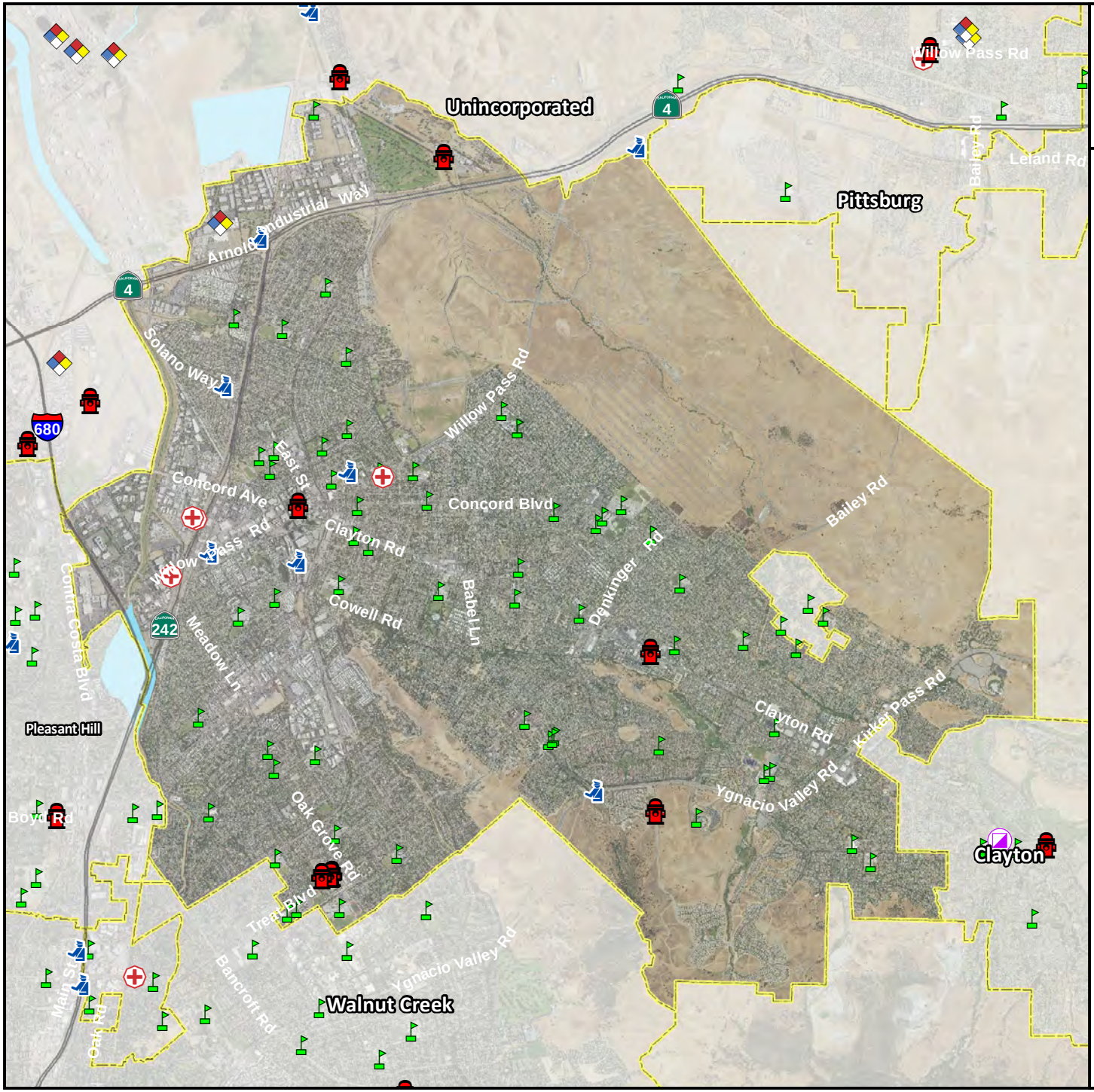
Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	C-1, C-2, C-3, C-6	C-1, C-2	C-2		C-6, C-10, C-11, C-13, C-15, C-16	C-1		
Dam and Levee failure		C-14				C-14		C-14
Drought								
Earthquake	C-5, C-9, C-17	C-5, C-9			C-5	C-5, C-9		
Flood	C-1, C-4, C-12, C-18	C-1, C-4, C-12, C-18	C-4, C-12	C-12	C-2, C-4	C-1	C-12, C-18	
Landslide		C-7				C-7	C-7	
Severe weather	C-2, C-18	C-2					C-18	
Tsunami								
Wildfire	C-2							

a. See the introduction to this volume for explanation of mitigation types.

4.12 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **City of Concord Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Concord Flood Damage Prevention Ordinance**—The flood damage prevention ordinance was reviewed for compliance with the National Flood Insurance Program
- **Sewer System Management Plan**—A document that describes the activities the City of Concord uses to manage its wastewater collection system. The plan includes a complete inventory of the City's wastewater collection system, Operation & Maintenance information, Design and Construction Standards, and an Overflow Emergency Response Plan. The Sewer System Management Plan is used as a reference document by Public Works that describes the activities the City uses to manage its wastewater collection system effectively. The document discusses collection system maintenance, minimizing infiltration/inflow and minimizing the number and impact of sanitary sewer overflows (SSOs) that occur.
- **City of Concord FY 2016-17 and 2017-18 Capital Budget**—Reviewed for possible inclusion of identified projects.
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.



The City of Concord

Critical Facilities

- Emergency Operations Centers (Government)
- Fire Stations (Protective Functions)
- Hazardous Materials
- Medical Facilities
- Police Stations (Protective Functions)
- Schools & Educational Facilities
- Contra Costa County Boundary
- City Boundaries

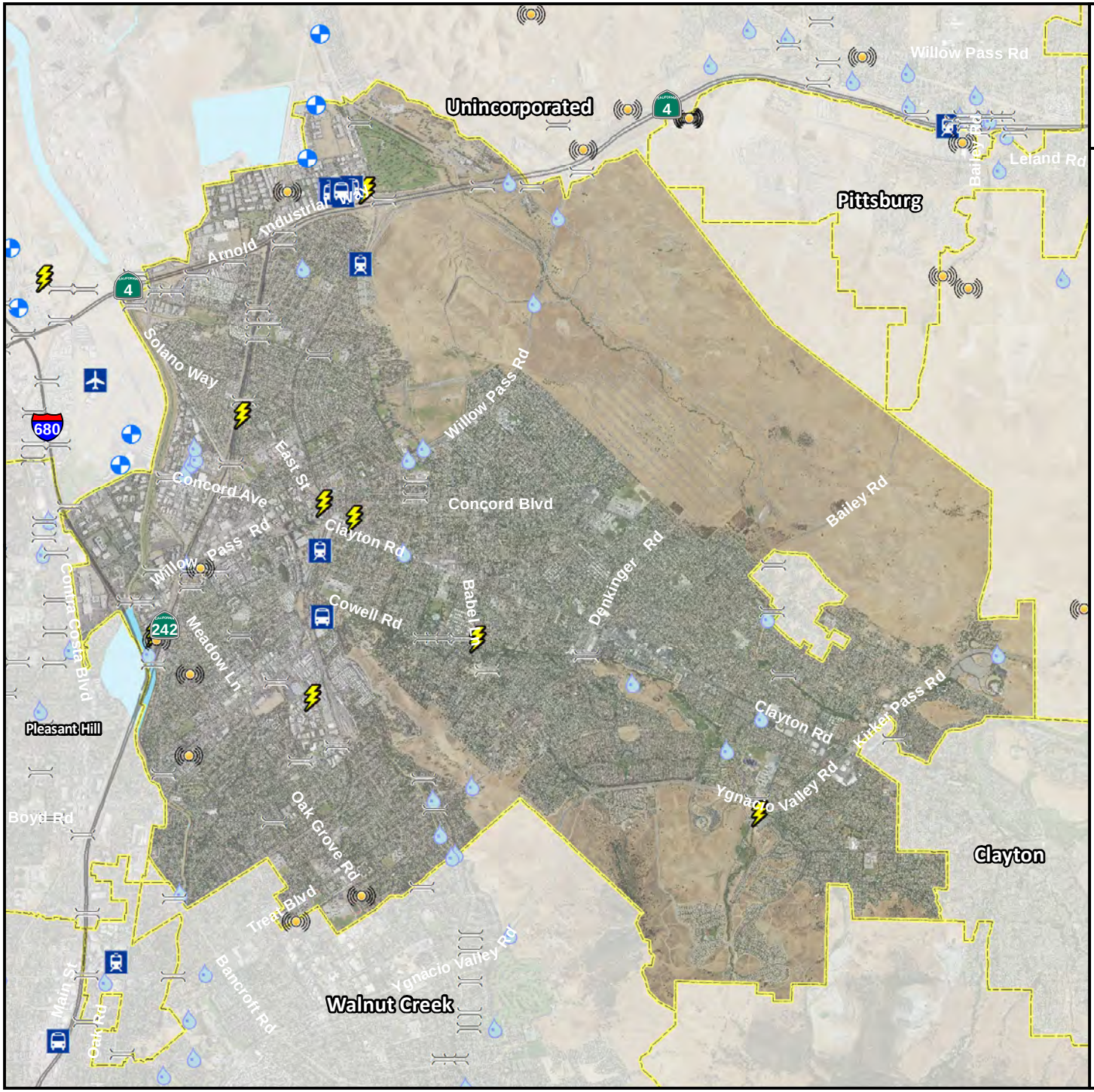
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of Concord

Critical Infrastructure

- Airports (Other Critical Functions)
- Bus Facilities (Other Infrastructure)
- Communication Facilities
- Electric Power Facilities
- Highway Bridges
- Highway Tunnels (Other Infrastructure)
- Light Rail (Other Infrastructure)
- Natural Gas (Other Infrastructure)
- Port Facilities (Other Critical Functions)
- Water Supply Facilities
- Rail Facilities (Other Infrastructure)
- Wastewater Facilities
- Contra Costa County Boundary
- City Boundaries

0 0.5 1 2

Miles

N
W E
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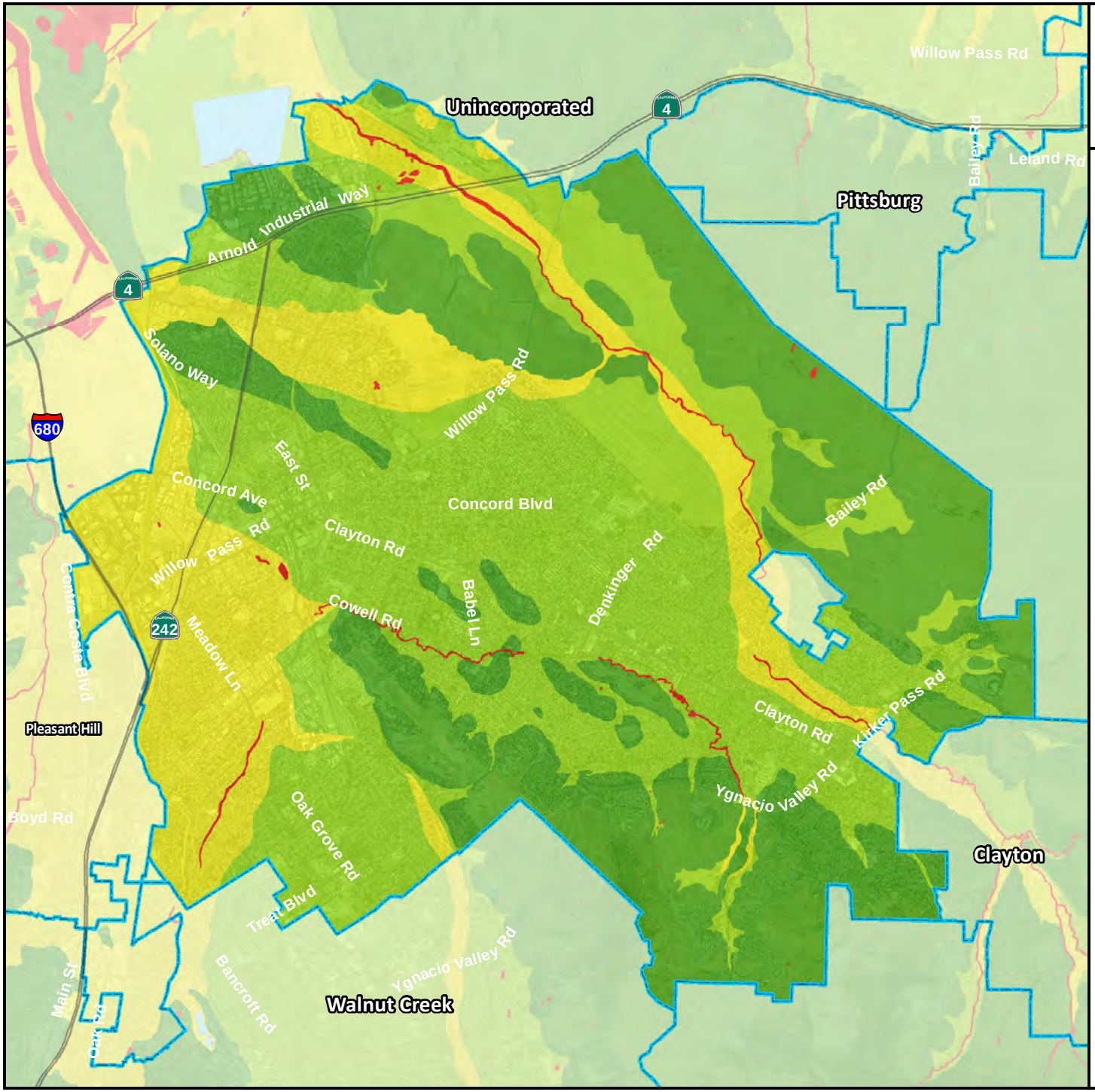
TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of Concord

Liquefaction Susceptibility

- Contra Costa County Boundary
- City Boundaries
- Water Bodies

Susceptibility to Liquefaction

- Very Low
- Low
- Medium
- High
- Very High
- No Liquefaction Data Available

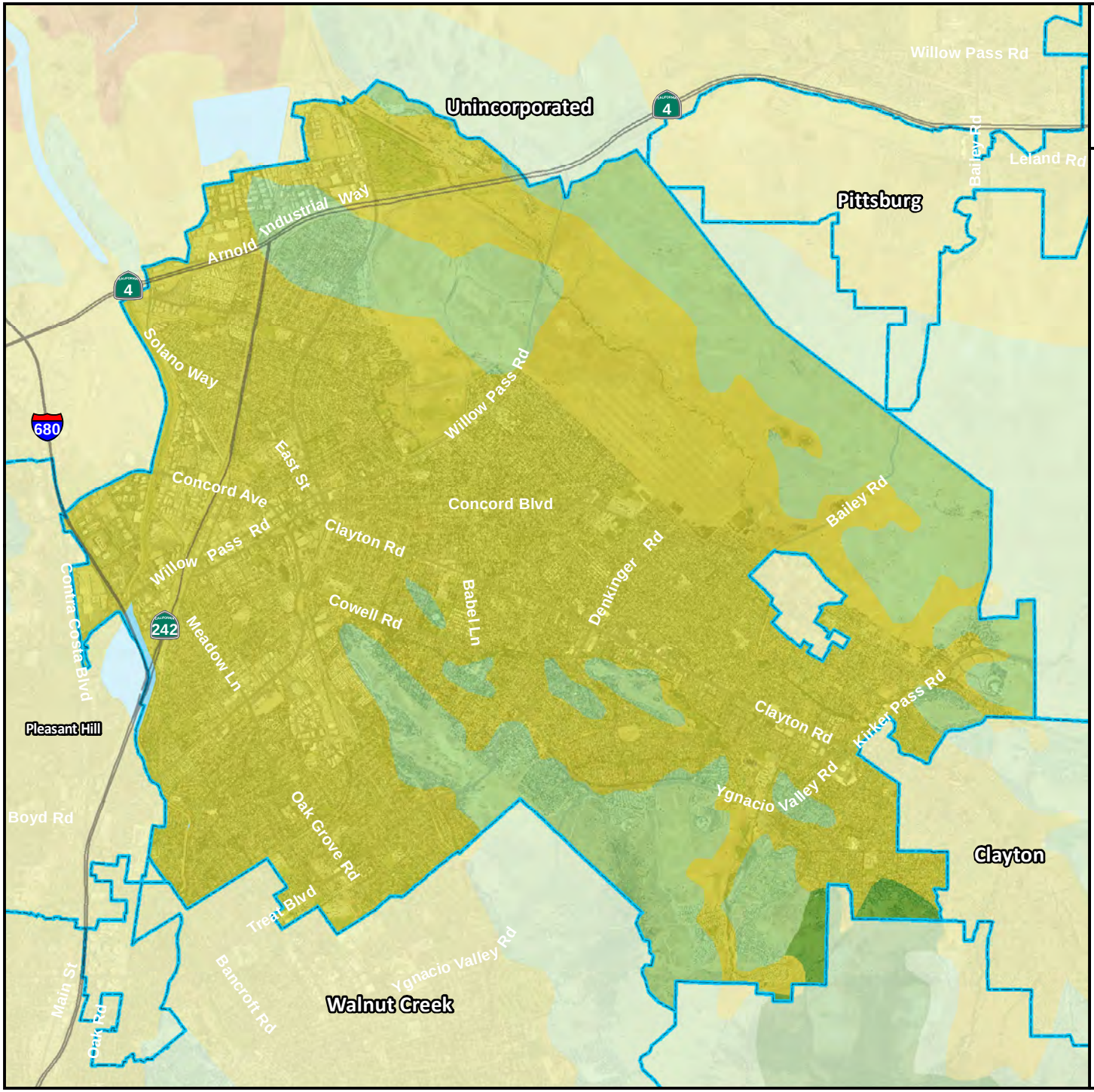
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The City of Concord

National Earthquake Hazard Reduction Program (NEHRP) Soil Class

Contra Costa County Boundary

City Boundaries

Water Bodies

NEHRP Site Class / Soil Profile

- B / Rock
- C / Very Dense Soil - Soft Rock
- D / Stiff Soil
- E / Soft Soil
- No Soil Data Available

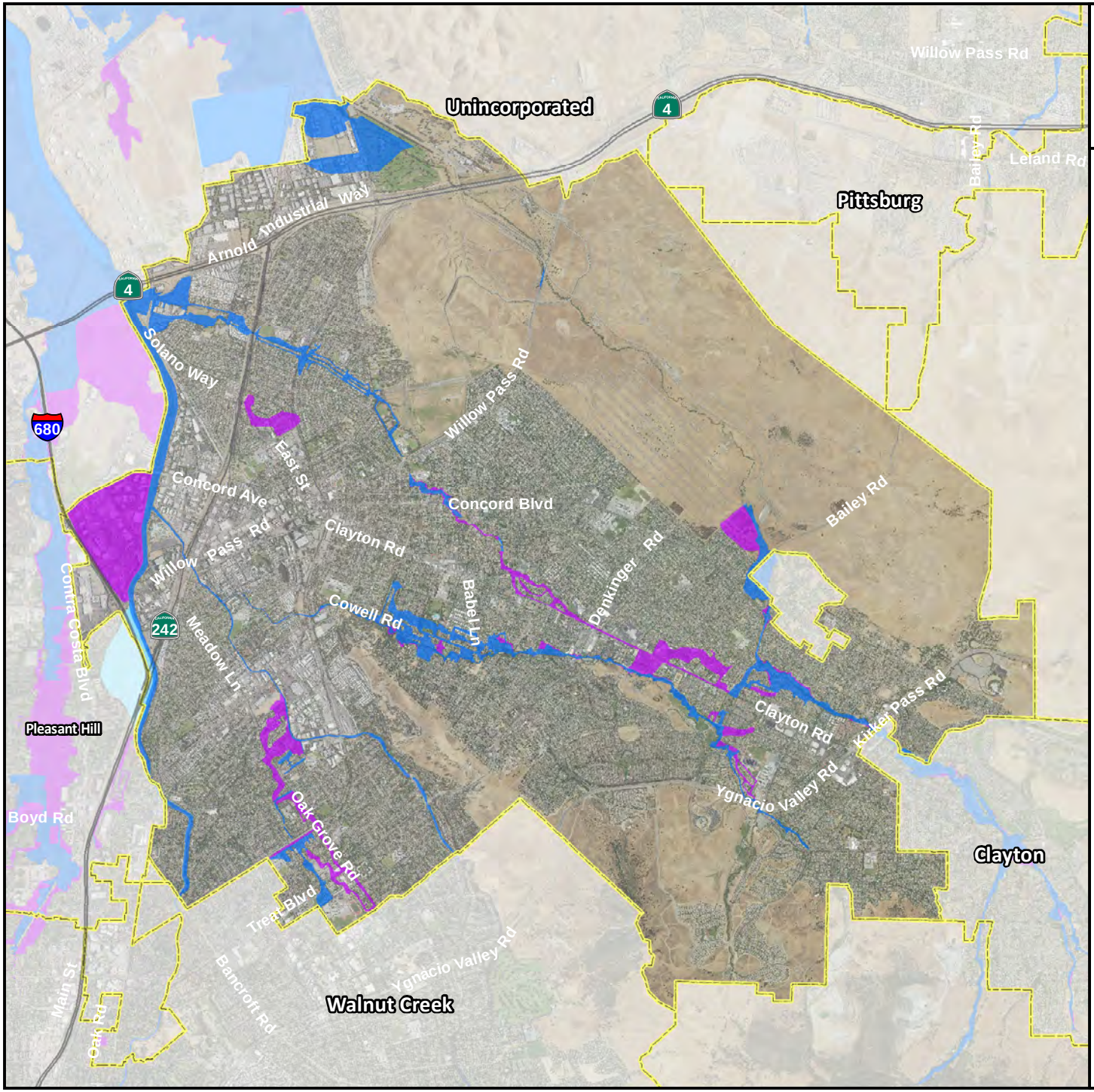
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Department of Conservation, USDA



The City of Concord

FEMA DFIRM Flood Hazard Areas

- 1% Annual Chance (100-Year) Flood Zone
- 0.2% Annual Chance (500-Year) Flood Zone
- Contra Costa County Boundary
- City Boundaries
- Water Bodies

Flood hazard areas as depicted on Effective FEMA Digital Flood Insurance Rate Maps (DFIRM)

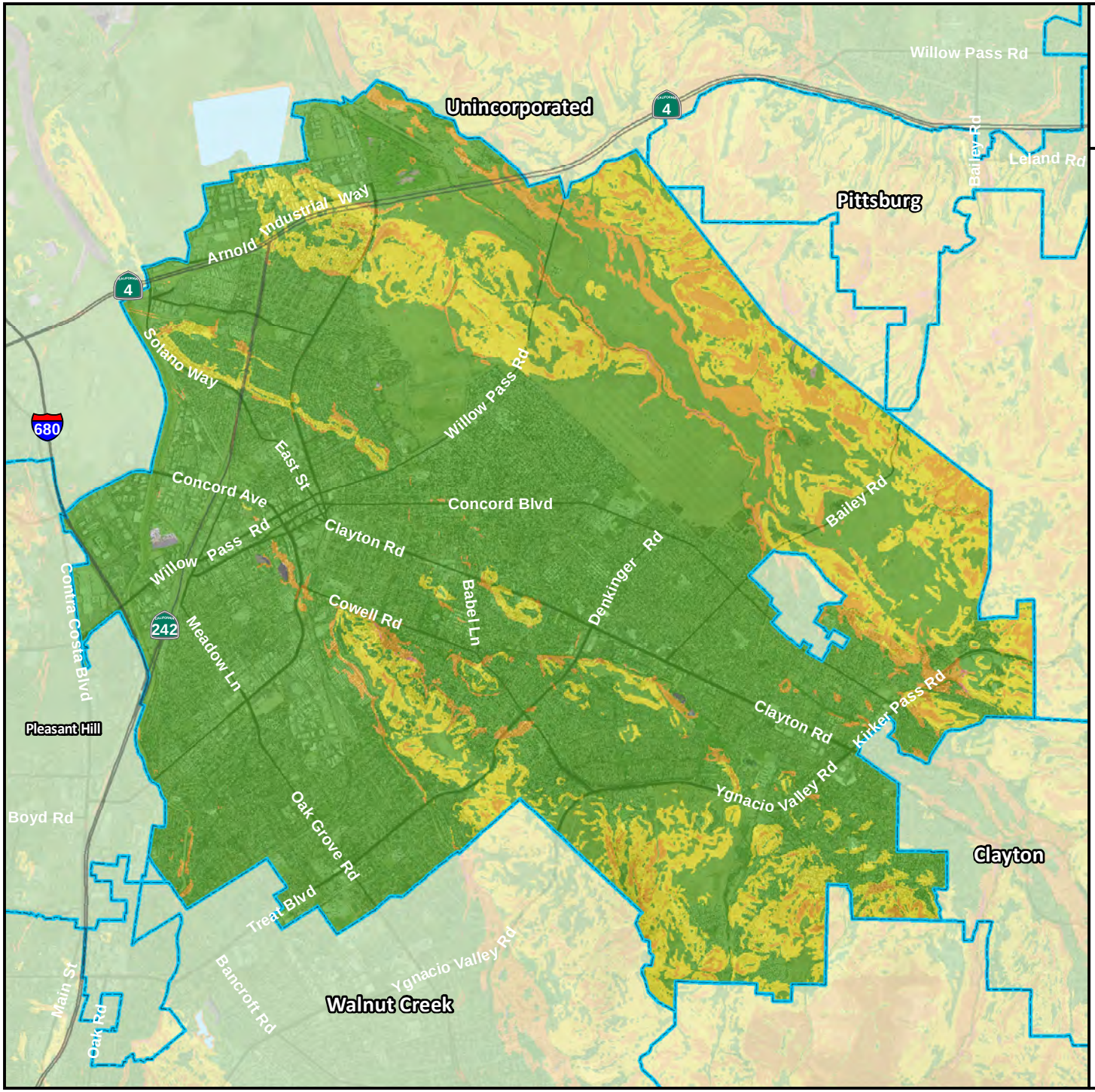
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, FEMA, USDA



The City of Concord

Landslide Susceptibility Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Type

- Low
- Moderate
- High
- Very High / Existing
- Data Not Available

Source dataset created by Wills C.J., Perez, F., Gutierrez, C., 2011, Susceptibility to deep-seated landslides in California: California Geological Survey Map Sheet 58

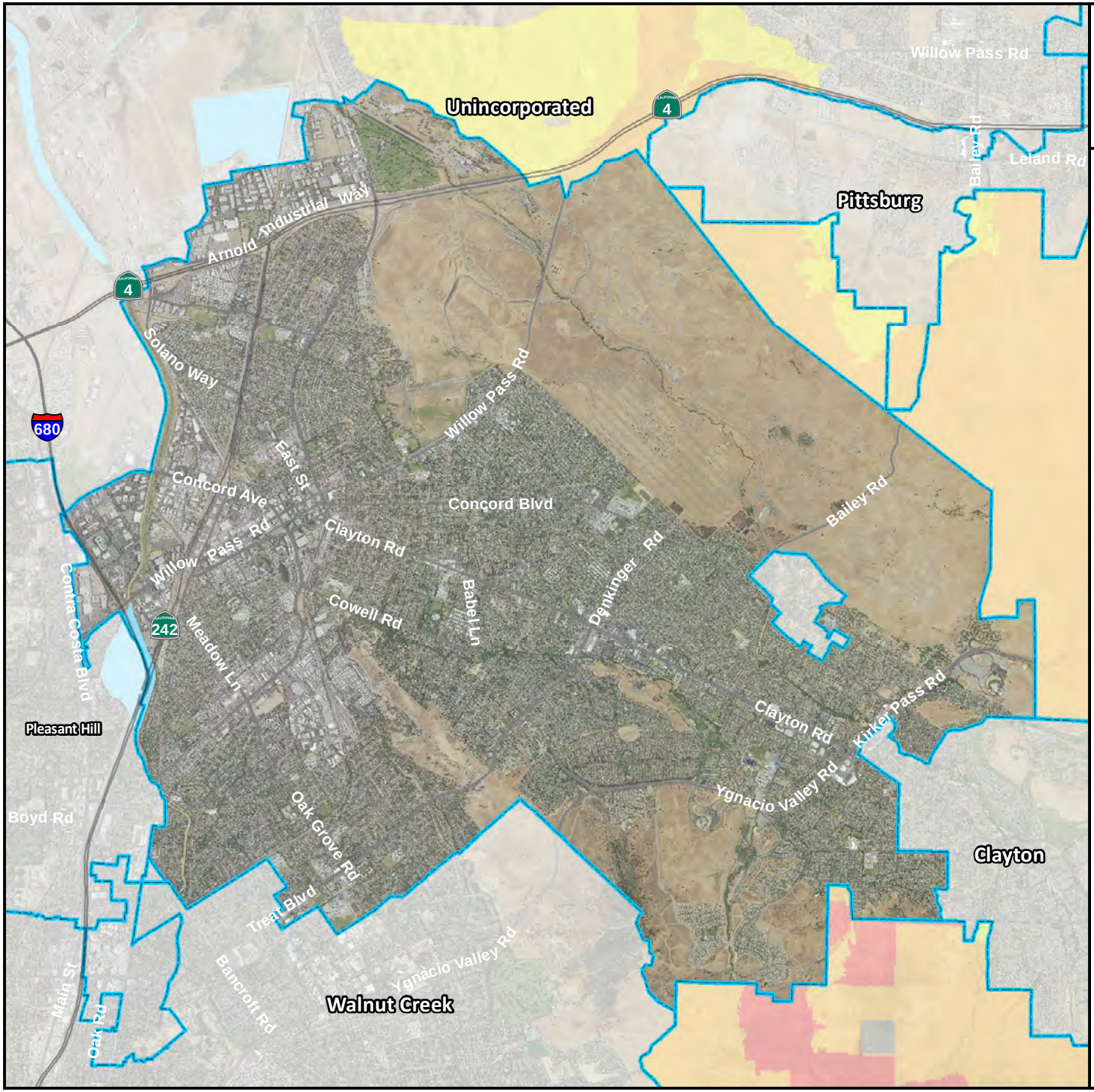
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The City of Concord

Wildfire Severity Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Wildfire Severity Zone

Moderate

High

Very High

0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, CalFIRE, USDA

5. TOWN OF DANVILLE

5.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Mr. Jeffrey Hebel, Emergency Manager
510 LaGonda Way
Danville, CA 94526
Telephone: 925-314-3368
e-mail Address: jhebel@danville.ca.gov

Alternate Point of Contact

Steven Jones, Senior Civil Engineer
510 LaGonda Way
Danville, CA 94526
Telephone Number: 925-314-3339
E-mail Address: sjones@danville.ca.gov

5.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation**—1982
- **Current Population**—43,691 as of 2015 (California Department of Finance)
- **Population Growth**—Danville has had an average annual growth rate of 1.60 percent per year since 1990.
- **Location and Description**—The Town of Danville is a moderately sized community about 18 square miles in size, resting in the shadow of Mount Diablo. The Town is in the south-central portion of Contra Costa County on the SR 680 corridor, about 35 miles from San Francisco.
- **Brief History**—Often referred to as the "Heart of the San Ramon Valley," Danville was first populated by Native Americans who lived next to the creeks and camped on Mount Diablo in the summer. Later it was part of Mission San Jose's grazing land and a Mexican land grant called Rancho San Ramon. Settlers raised cattle and sheep and grew wheat, barley and onions. Later the farms produced hay, a wide variety of fruit crops (apples, plums, pears), walnuts and almonds. In the 1800s, horses and wagons hauled these products north to the docks at Pacheco and Martinez, following Road No. 2, which wound by San Ramon Creek and was almost impassable in the rainy season. When the Southern Pacific Railroad came to the Valley in 1891, Danville changed dramatically. The farmers built warehouses and shipped crops by rail in any kind of weather, and residents traveled to and from Danville with an ease they had not experienced before.

  Danville continued to be farm country well into the 1940s. The entire valley had 2,120 people in 1940, growing to 4,630 by 1950. Developments such as Montair and Cameo Acres were built and the water and sewer districts extended their boundaries. The I-680 freeway, which sliced through Danville in the mid-1960s, altered the Town permanently. The Valley population rose from 12,700 in 1960 to 15,900 in 1970, 21,100 in 1975, and 26,500 in 1980. The 1980 census showed that 82 percent of Danville's 26,500 had arrived after 1970.

  A remarkable number of early Danville buildings remain today, such as the houses belonging to the Boone, Osborn, Young, Spilker, Podva, Vecki, Root, Elliott and Hartz families. The Danville Hotel and original 1874 Grange Hall exist as well. Many of the early pioneer names appear on the streets and schools, including Baldwin, Harlan, Wood, Love, Hemme, Boone, Bettencourt and Meese.

In 1982, Danville citizens showed their strong sense of identity by voting to incorporate their community, allowing themselves to shape future changes more directly. There are 155 miles of center line streets maintained by the Town. Open space is greatly valued in Danville, contributing to the overall quality of life for its citizens.

The Town contracts with the Contra Costa County Office of the Sheriff for police services; fire services are supplied by the San Ramon Valley Fire Protection District (SRVFPD). The San Ramon Valley Unified School District serves the Town of Danville, the City of San Ramon and the unincorporated areas of Alamo, Blackhawk and Tassajara, providing service to over 27,000 K-12 grade students. Danville formed a joint-powers agreement/partnership with the City of San Ramon, the SRVFPD, Contra Costa County and the San Ramon Valley Unified School District, designed to regionally manage disaster preparedness and emergency response. This partnership, called the San Ramon Valley Emergency Preparedness Citizen Corps Council (SRVEPCCC), shares resources, information, ideas and staff to make the region more prepared and disaster-resistant.

- **Climate—**The climate of Danville is generally moderate, with a marine influence coming from the San Francisco Bay. The rainy season lasts from November through April, accounting for about 90 percent of the annual precipitation (23 inches average/annually). The dry season, lasting from May through October, is typically marked by periods of hot dry weather, with shorter periods of low clouds and fog.
- **Governing Body Format—**The Town of Danville incorporated in 1982 as a General Law City, with a Mayor-Council system of governance. Primary power lies with the five council members. The Mayor has the power to appoint, as well as ceremonial duties, presiding over council meetings, and meeting visiting dignitaries. Official Town business is administered by the Office of the Town Manager. The Town employs a full time staff of 94 people and has an operating budget of $31.4 million for FY 2016-17. The Town Council assumes responsibility for the adoption of this plan; the Office of the Town Manager will oversee its implementation.

5.3 DEVELOPMENT TRENDS

Based on data from the California Department of Finance, Danville has experienced a relatively flat rate of growth, with a 1 percent population increase since 2000. There are currently 16,075 housing units within the Town, averaging 2.77 persons per household. As of 2015, the Town is generally built out, with housing growth consisting mostly of infill projects and remodels.

California law requires counties and cities to prepare and adopt a comprehensive long-range plan to guide community development. The plan must consist of an integrated and internally consistent set of goals, policies, and implementation measures and must focus on issues of the greatest concern to the community. City actions, such as those relating to land use allocations, annexations, zoning, subdivision and design review, redevelopment, and capital improvements, must be consistent with the plan The Town of Danville adopted its general plan under this mandate in 2014 and is currently updating the document. Future growth and development will be managed as identified in the general plan.

Table 5-1 summarizes development trends in the performance period since development of the previous hazard mitigation plan and expected future development trends.

Table 5-1. Recent and Expected Future Development Trends

Criterion	Response					
Has your jurisdiction annexed any land since the development of the previous hazard mitigation plan? • If yes, give the estimated area annexed and estimated number of parcels or structures.	No N/A					
Is your jurisdiction expected to annex any areas during the performance period of this plan?	No					
Are any areas targeted for development or major redevelopment in the next five years? • If yes, please briefly describe	Yes Major subdivision of 69 residential units. Not located in a hazard area.					
How many building permits were issued in your jurisdiction since the development of the previous hazard mitigation plan?		2012	2013	2014	2015	2016
	Single Family	52	32	25	24	27
	Multi-Family	0	13	16	12	0
	Other (commercial, mixed use, etc.)	2,204	2,906	3,157	3,299	2,092
Please provide the number of permits for each hazard area or provide a qualitative description of where development has occurred.	• Special Flood Hazard Areas: Not available • Landslide: Not available • High Liquefaction Areas: 7 • Dam Failure Inundation Area: Not available • Wildfire Risk Areas: Not available Development has occurred throughout the city during the performance period for this plan. For those hazards with a clearly defined extent and location, the City cannot estimate specific development impacts. For those hazards with impacts city-wide, it is safe to assume that this new development could be subject to impacts from those hazards. However, it is important to note that all new development was consistent with General Plan policies and municipal code standards and as a result most development has occurred outside of identified hazard zones.					

5.4 CAPABILITY ASSESSMENT

The Town of Danville performed an inventory and analysis of existing capabilities, plans, programs and policies that enhance its ability to implement mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of legal and regulatory capabilities is presented in Table 5-2.
- Development and permitting capabilities are presented in Table 5-3.
- An assessment of fiscal capabilities is presented in Table 5-4.
- An assessment of administrative and technical capabilities is presented in Table 5-5.
- An assessment of education and outreach capabilities is presented in Table 5-6.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 5-7.
- Classifications under various community mitigation programs are presented in Table 5-8.
- The community's adaptive capacity for the impacts of climate change is presented in Table 5-9.

Table 5-2. Legal and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code	Yes	No	Yes	Yes
Comment: IBC, CBC, Danville Municipal Code (DMC - Updated: Jan 2016)				
Zoning Code	Yes	No	Yes	Yes
Comment: DMC – Chapter 32 (updated annually)				
Subdivisions	Yes	No	Yes	Yes
Comment: DMC – Chapter 31, last updated 2014				
Stormwater Management	Yes	Yes	No	Yes
Comment: DMC - Chapter 20, last updated 2013				
Post-Disaster Recovery	No	No	No	Yes
Comment: N/A				
Real Estate Disclosure	Yes	Yes	Yes	Yes
Comment: Ca. Civil Code 1102.6c requires full disclosure of natural hazard exposure for sale/re-ale of all real property				
Growth Management	Yes	No	Yes	Yes
Comment: Contra Costa County Measure C – 1988; Cal. Gov. Code §65300 et seq.				
Site Plan Review	Yes	No	No	Yes
Comment: Design Review Board, Planning Commission, Scenic Hillside & Ridgeline Ord. DMC- Chapter 19 (last updated 1989) & 32 (updated annually)				
Environmental Protection	Yes	Yes	Yes	Yes
Comment: Environmental Protection California Environmental Quality Act (Guideline: California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000–15387). Developmental Services is responsible.				
Flood Damage Prevention	Yes	No	No	Yes
Comment: Flood damage prevention ordinance DMC- Chapter 32-117 (2002)				
Emergency Management	Yes	No	Yes	Yes
Comment: Established by Town Resolution November 5, 1987, updated next March 16,1999 resolution #26-99. SEMS adopted July 16,1996 with resolution 96-96				
Climate Change	Yes	No	Yes	Yes
Comment: Climate Change California SB-379: Land Use: General Plan: Safety Element				
Other: None Identified	No	No	No	Yes
Comment: N/A				
Planning Documents				
General Plan	Yes	No	Yes	Yes
Is the plan compliant with Assembly Bill 2140? Yes				
Comment: Last updated 1999; Currently being reviewed & updated				
Capital Improvement Plan	Yes	No	No	Yes
How often is the plan updated? Annually				
Comment: The CIP document is divided into the three project categories or sections: Capital Recovery/-Other, Quality of Life, and Transportation. An index to all projects, both alphabetical and by number is located at the back of the CIP. This five-year CIP includes information on every project that will be under construction from 2016/17 through 2020/21.				
Floodplain or Watershed Plan	No	No	No	No
Comment: N/A				
Stormwater Plan	Yes	No	Yes	No
Comment: December 2009				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Urban Water Management Plan *Comment: N/A*	No	No	No	No
Habitat Conservation Plan *Comment: N/A*	No	No	No	Yes
Economic Development Plan *Comment: Council Resolution 2016*	Yes	No	No	Yes
Shoreline Management Plan *Comment: N/A*	No	No	No	Yes
Community Wildfire Protection Plan *Comment: San Ramon Valley Fire Prevention District Wildfire Protection Plan*	Yes	Yes	Yes	Yes
Forest Management Plan *Comment: N/A*	No	No	No	Yes
Climate Action Plan *Comment: N/A*	No	No	No	Yes
Comprehensive Emergency Management Plan *Comment: Updated 2017*	Yes	No	Yes	Yes
Threat & Hazard Identification & Risk Assessment (THIRA) *Comment: N/A*	No	No	No	Yes
Post-Disaster Recovery Plan *Comment: Town of Danville Emergency Operations Plan - 2017*	Yes	No	Yes	Yes
Continuity of Operations Plan *Comment: Included in the EOP updated 2017*	Yes	No	No	Yes
Public Health Plan *Comment: Contra Costa County Health Department has a comprehensive plan and overall responsibility for Public Health.*	No	Yes	Yes	Yes
Other: None Identified *Comment: N/A*	No	No	No	No

Table 5-3. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? • If no, who does? If yes, which department?	Yes Development Service Department
Does your jurisdiction have the ability to track permits by hazard area?	Yes, Although the City has the ability to track permits by hazard area, this capability is not currently being utilized.
Does your jurisdiction have a buildable lands inventory? • If yes, please briefly describe. • If no, please quantitatively describe the level of buildout in the jurisdiction.	Yes Yes, per the General Plan. The Town is nearly built out. N/A

Table 5-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes, for all three
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	No

Table 5-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Planning Department, Engineering Department
Engineers or professionals trained in building or infrastructure construction practices	Yes	Planning Department, Engineering Department, Building Department
Planners or engineers with an understanding of natural hazards	Yes	Planning Department, Engineering Department
Staff with training in benefit/cost analysis	Yes	Development Services
Surveyors	Yes	Informational Technology Department, Development Services
Personnel skilled or trained in GIS applications	Yes	IT and Development Services
Scientist familiar with natural hazards in local area	No	
Emergency Manager	Yes	Town Manager - Emergency Services Manager
Grant writers	No	
Other	No	

Table 5-6. Education and Outreach Capability

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Information Technology Manager
Do you have hazard mitigation information available on your website? • If yes, please briefly describe.	Yes Link to Contra Costa County website
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe.	Yes All social Media utilized for Emergency Management
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly describe.	No N/A
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe.	Yes Highway Advisory Radio System, Social Media, Interoperable Comm
Do you have any established warning systems for hazard events? • If yes, please briefly describe.	Yes CWS/ Nixle

Table 5-7. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Development Services Department
Who is your floodplain administrator? (department/position)	Development Services Director
Are any certified floodplain managers on staff in your jurisdiction?	No
What is the date that your flood damage prevention ordinance was last amended?	March 19, 2002
Does your floodplain management program meet or exceed minimum requirements? • If exceeds, in what ways?	Exceeds Lowest floor 1" above base flood elevation
When was the most recent Community Assistance Visit or Community Assistance Contact?	2002
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? • If so, please state what they are.	No N/A
Do your flood hazard maps adequately address the flood risk within your jurisdiction? • If no, please state why.	Yes N/A
Does your floodplain management staff need any assistance or training to support its floodplain management program? • If so, what type of assistance/training is needed?	No N/A
Does your jurisdiction participate in the Community Rating System (CRS)? • If yes, is your jurisdiction interested in improving CRS Classification? • Is your jurisdiction interested in joining the CRS program?	No N/A No
How many Flood Insurance policies are in force in your jurisdiction?[a] • What is the insurance in force? • What is the premium in force?	150 $ 45,453,600 $132,033
How many total loss claims have been filed in your jurisdiction?[a] • How many claims were closed without payment/are still open? • What were the total payments for losses?	13 0/11 $36,118.85

a. According to FEMA statistics as of December 31, 2016

Table 5-8. Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	No	N/A	N/A
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A

Table 5-9. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: None provided*	Low
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: None provided*	Low
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: None provided*	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: None provided*	Low
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: None provided*	Low
Participation in regional groups addressing climate risks *Comments/Additional Information: None provided*	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: None provided*	Low
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: None provided*	Low
Identified strategies for adaptation to impacts *Comments/Additional Information: None provided*	Low
Champions for climate action in local government departments *Comments/Additional Information: None provided*	Low
Political support for implementing climate change adaptation strategies *Comments/Additional Information: None provided*	Low
Financial resources devoted to climate change adaptation *Comments/Additional Information: None provided*	Low
Local authority over sectors likely to be negative impacted *Comments/Additional Information: None provided*	Low
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: None provided*	Low
Local residents support of adaptation efforts *Comments/Additional Information: None provided*	Low
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

5.5 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

5.5.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the Town of Danville made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **Emergency Operations Plan—**State mandated EOP provides a concept of operations in a declared emergency. It includes the hazards of concern included in the hazard mitigation plan and incorporates the plan by reference.
- **Disaster Debris Management Plan—**A FEMA/ Cal OES approved plan that provides guidance on how to properly remove and dispose of waste after a disaster.
- **Regulatory Codes—**A number of the Town's existing codes and ordinances include provisions to reduce hazard risk including the building code, zoning code, storm water management code and flood damage prevention ordinance.
- **San Ramon Valley Emergency Preparedness Citizens Corps Council (SRVEPCCC)—**The Town is part of a Joint Powers Authority (JPA) that includes Contra Costa County, The San Ramon Valley Unified School District, The City of San Ramon and the San Ramon Valley Fire Prevention District. The SRVEPCCC works collaboratively to ensure the San Ramon Valley is prepared to respond to, recover from and mitigate a natural or manmade disaster.

Resources listed in Section 5.6 were used to provide information for this annex on hazard events and local capabilities within the jurisdiction.

5.5.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the Town of Danville will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan in actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Emergency Operations Plan to include the DDMP—**The Town will ensure that the EOP is integrated with the LHMP by linking the annual review and revision of these documents.
- **Danville Municipal Code—**The Town will ensure that the Municipal Code is integrated with the LHMP by looking for ways to enhance codes and ordinances to include hazard mitigation, as appropriate.
- **CEQA—**A CEQA review or consideration is a regular part of the Town's process for any project. With several potential mitigation projects coming this year, the Town will ensure that the projects are CEQA compliant.

- **SB 379-Climate Change—**With several potential mitigation projects coming this year, the Town will ensure that the projects are SB 379 compliant.

5.1 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 5-10 lists past occurrences of natural hazards for which specific damage was recorded in the Town of Danville. Other hazard events that broadly affected the entire planning area, including the Town of Danville, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 5-10. Past Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Severe Weather	DR-4308	February 1, 2017	$300,000
Severe Weather	DR-4305	January 18, 2017	$42,000
Severe Weather	DR-4301	January 3, 2017	$75,000
Severe Weather - High winds	NA	10/2009	$5,000 - Town facilities/infrastructure related
Winter Weather-Flooding	NA	1/6/2007	$243,000 FEMA claim/El Pinto Street failure
Winter Weather-Flooding	NA	1/6/2007	$877,000 FEMA claim/Front Street failure
Flooding - Storm related	NA	1/1/2006	$25,000 - Town facilities/infrastructure related
Landslide - Storm related	NA	11-12/2005	$7,500 - Town facilities/infrastructure related
Flooding - Storm related	NA	12/31/2002	$5 Million - San Ramon Valley Unified School District
Flooding - Storm related	NA	1/17/1995	$10,000-Town facilities/infrastructure related
Landslide - Town Service Ctr.	NA	1990	$1,000,000 - Town facilities/infrastructure related
Earthquake - Landslide	FEMA-845	10/17/1989	Unknown FEMA claim/landslide on El Pintado

5.2 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for the jurisdiction.

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 0
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: 0

Other noted vulnerabilities include the following:

- Hazardous Materials event—The Town is bisected by a jet fuel pipeline that runs through residential and light commercial (restaurants) area. The pipeline is vulnerable to natural and man-made events.

- Earthquake—The Town is vulnerable to earthquake from several local faults. The extent of the potential damage varies widely depending on magnitude and epicenter. A significant quake on one of the local faults would generate estimates of between $15-$20 million dollars in debris removal costs alone.
- Urban interface wildfire—The Town is vulnerable to wildfire in several areas. While the local fire protection district has done much proactive work in this area, the western hillside (in particular) has a high concentration of homes and natural fuel for a fire.
- Flooding, storm related—As noted above, the Town is vulnerable to severe weather. Recent storms have caused almost $500,000 in damage.

5.3 HAZARD RISK RANKING

Table 5-11 presents a local ranking for the Town of Danville of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 5-11. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake[b]	54	High
2	Landslide[e]	48	High
3	Severe weather	30	Medium
4	Flood[c]	18	Medium
4	Wildfire[e]	18	Medium
5	Dam and levee failure[a]	12	Medium
6	Drought	9	Low
7	Sea level rise[d]	0	None
7	Tsunami	0	None

a. Based on the level of detail conducted in the risk assessment, the risk ranking for this hazard is focused solely on dam failure impacts. See Chapter 6.4 of Volume 1 for combined dam inundation list on which this assessment is based.
b. Haywired M7.05 event was used to assign probability and impacts
c. 1-percent annual chance event was used to assign probability and impacts
d. 2100 upper range estimates and extreme tide are used to assign probability and impacts
e. Very High and High severity zones were used to assign probability and impacts

5.4 STATUS OF PREVIOUS PLAN ACTIONS

Table 5-12 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 5-12. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter New Action#
D-1—Incorporate Danville's Local Hazard Mitigation Plan into the Town's General Plan Safety Element	X		X	D-2
Comment: This update will be incorporated into the Town's General Plan Safety Element.				
D-2—Continue EBRCSA partnership in building a P25 compliant Interoperability Communications System for public agencies in Alameda & Contra Costa counties	X			
Comment: System operational in 2014				
D-3—Continue to partner with SRVEPCCC to develop disaster resilient EOC and equipment			X	D-5
Comment:				
D-4—Have back-up power available for critical intersection traffic signals	X		X	D-6
Comment: Completed in 2006. Ongoing maintenance plan now in place for all traffic lights in Town.				
D-5—Expand existing Emergency Highway AM Radio frequency capability to transmit to all of Danville's area and SR Valley	X			
Comment: Completed 2012				
D-6—Offer the 20-hour basic CERT training to citizens in San Ramon Valley			X	D-7
Comment: Ongoing				
D-7—Building permit application seismic review for any residential soft-structure major modifications	X			
Comment: During Plan Review a thorough review of documents for compliance with seismic building standards is conducted.				
D-8—Structural seismic retrofit of Danville's Veterans Memorial Building	X			
Comment: Completed April of 2012				
D-9—Train staff in critical facilities and emergency personnel, as well as 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		X	D-8
Comment: Ongoing				
D-10—Jointly, with SRVFPD, develop a MANDATORY defensible space vegetation program that includes the clearing or thinning of non-fire resistive vegetation within 30 feet of access and evacuation roads and routes to critical facilities, within 30 feet of access and evacuation roads and routes to critical facilities.	X		X	D-9
Comment: Ongoing				
D-11—Ensure all dead-end segments of public roads, in high hazard areas, have at least a "T" intersection turn-around sufficient for typical wild land fire equipment.	X		X	D-10
Comment: Ongoing				
D-12—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 high wildfire hazard areas.	X		X	D-11
Comment: Ongoing				
D-13—Establish landslide requirements in zoning ordinances to address hillside development constraints in areas of steep slopes during winter storms	X			
Comment: Ordinance 29-84 Municipal Code 19-6.1 through 19-6.3. Adopted 1984				

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update: Check if Yes	Carried Over to Plan Update: Enter New Action#
D-14—Repair and make structural improvements to storm drains, pipelines, and/or channels throughout the Town to enable them to perform to their design capacity in handling water flows *Comment:*			X	D-12
D-15—Partner with CCC Flood Control District to improve creek capacity along Green Valley Creek and Hwy 680 *Comment:*			X	D-13
D-16—Enforce provisions under creek protection, storm water management, and discharge control ordinances designed to keep watercourses free of obstructions. *Comment: Ongoing*			X	D-14
D-17—Provide information to residents on the availability of interactive hazard maps showing your community *Comment: On the Town website*	X			
D-18—Provide public information on locations for obtaining sandbags and/or deliver those sandbags to those various locations throughout town prior to and/or during the rainy season. *Comment: Ongoing*	X		X	D-15
D-19—Ensure EBMUD repairs dam & infrastructure of Prospect Reservoir *Comment: Completed in 2010*	X			
D-20—Incorporate a dam failure component into the city's emergency operations plan that include warning and evacuation procedures for dam failure scenarios as well as protocol for periodic communication checks with dam owners/operators *Comment:*			X	D-16
D-21—Support County-wide initiatives identified in Volume 1. *Comment: County-wide initiatives were supported through the performance period of the 2011 plan and will continue to be supported over the performance period of this update.*	X			
D-22—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Volume 1. *Comment: The Town will continue to actively participate in the plan maintenance protocol.*	X		X	D-3
D-23—Continue to maintain compliance and good standing under the National Flood Insurance Program *Comment:*			X	D-4
D-24—Consider participation in the Community Rating System *Comment:*			X	D-17
D-25—Where appropriate, support retrofitting, purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. *Comment:*			X	D-1

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter New Action#
D-26—Better inform residents of comprehensive mitigation activities, for all hazards of concern 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.	X		X	D-18
Comment: An ongoing effort.				
D-27— Sponsor the formation and training of Community Emergency Response Teams (CERT) training through partnerships with local businesses.	X		X	D-19
Comment: An ongoing effort.				
D-28—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).			X	D-20
Comment:				

5.5 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 5-13 lists the actions that make up the Town of Danville hazard mitigation action plan. Table 5-14 identifies the priority for each action. Table 5-15 summarizes the mitigation actions by hazard of concern and mitigation type.

5.6 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Town of Danville Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **Town of Danville Flood Damage Prevention Ordinance**—The flood damage prevention ordinance was reviewed for compliance with the National Flood Insurance Program.
- **The Town of Danville's Emergency Operations Plan (EOP) including a FEMA / Cal OES approved Disaster Debris Management Plan**—The EOP was reviewed for identifying opportunities for integration with other plans.
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.

Table 5-13. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
D-1— Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	Town of Danville Developmental Services	High	HMGP, PDM, FMA	Short-term
D-2— Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including The Town General Plan. Specifically ensure that the Town's General Plan, Emergency Operations Plan, The Local Hazard Mitigation Plan align with the towns Sustainability Action Plan.						
New and Existing	All Hazards	1, 4, 5, 7, 11, 12, 14, 17	Town of Danville Emergency Services	Low	Staff Time, General Funds	Ongoing
D-3— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 16	Town of Danville Emergency Services	Low	Staff Time, General Funds	Short-term
D-4—Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: • Update and enforce the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts.						
New and Existing	Flood, Dam and Levee Failure	3, 5, 6, 9, 10, 11, 15	Town of Danville Development Services	Low	Staff Time, General Funds	Ongoing
D-5—Continue to Partner with SRVEPCCC to develop disaster resilient EOC and Equipment.						
Existing	All Hazards	1, 2, 4, 16	Town of Danville Emergency Services	Low	General Fund	Ongoing
D-6—Have backup power available for critical intersection traffic signals.						
Existing	All Hazards	1, 2, 13	Town of Danville Traffic Department	Low	General Fund	Ongoing
D-7—Offer the 20 hour basic CERT training courses to citizens of San Ramon Valley.						
Existing	All Hazards	2, 16	SRVFPD, Marshalls Division	Low	SRVEPCCC resources	Ongoing
D-8—Train staff in critical facilities and emergency personnel, as well as 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						
Existing	All Hazards	1, 2, 11, 12	Town of Danville Emergency Services	Low	General Fund	Ongoing
D-9—Jointly, with SRVFPD, develop a MANDATORY defensible space vegetation program that includes the clearing or thinning of non-fire resistive vegetation within 30 feet of access and evacuation roads and routes to critical facilities, within 30 feet of access and evacuation roads and routes to critical facilities.						
Existing	Wildfire	1, 3, 6, 11, 13, 16	SRVFPD Fire Marshall, Town of Danville	Medium	SRVFPD	Ongoing
D-10—Ensure all dead-end segments of public roads, in high hazard areas, have at least a "T" intersection turn-around sufficient for typical wild land fire equipment.						
Existing	Wildfire	1, 2, 11, 16	SRVFPD Fire Marshall*, Town of Danville	Medium	SRVFPD, Developer funds	Ongoing

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
D-11—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 high wildfire hazard areas.						
Existing	Wildfire	1, 3, 6, 11, 13, 16	SRVFPD Fire Marshall*, Town of Danville	Medium	SRVFPD, Developer Funds	Ongoing
D-12—Repair and make structural improvements to storm drains, pipelines, and/or channels throughout the Town to enable them to perform to their design capacity in handling water flows. The Town currently has submitted five Notices Of Intent for projects related to the 2017 severe weather incidents. They are: • The Loch Lomond storm racks-Adding a new overland ditch to prevent recurring flooding. • Westridge Drive overflow inlets-Add new overflow inlets to prevent recurring flooding. • Starview Drive trash racks-Expand existing trash rack infrastructure to prevent future flooding. • Camino Encanto storm drain –Repair existing pipe damaged from excessive storm water flow. • Old Camino Tassajara landslide repair-Stabilize landslide below existing homes to prevent future slippage.						
Existing	Flood	1, 2, 9, 10, 13, 15	Town of Danville Development Services	High	General Fund, HMA Grants, PA Grants, LHMP	Ongoing
D-13—Partner with CCC Flood Control District to improve creek capacity along Green Valley Creek and Hwy 680						
Existing	Flood	17, 1, 4, 13	Town of Danville Development Services, CCC Flood Control*	High	General Fund	Ongoing
D-14—Enforce provisions under creek protection, storm water management, and discharge control ordinances designed to keep watercourses free of obstructions.						
Existing	Flood	1, 4, 13, 17	Town of Danville Development Services	Low	General Fund, EPA Grants	Ongoing
D-15—Provide public information on locations for obtaining sandbags and/or deliver those sandbags to those various locations throughout town prior to and/or during the rainy season.						
Existing	Flood	13, 16	Town of Danville Maintenance Department	Low	General fund, PA Grants	Ongoing
D-16—Incorporate a dam failure component into the city's emergency operations plan that include warning and evacuation procedures for dam failure scenarios as well as protocol for periodic communication checks with dam owners/operators						
Existing	Dam and Levee Failure	1, 2, 3, 4, 6, 13	Town of Danville Emergency Services	Low	Staff Time, General Fund	Ongoing
D-17—Consider participation in the Community Rating System						
Existing	Flood	9, 10, 13	Town of Danville Development Services	Low	Staff Time	Ongoing
D-18—Better inform residents of comprehensive mitigation activities, for all hazards of concern 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.						
Existing	All Hazards	1, 2, 3, 4, 16	Town of Danville and SRVFPD Marshall*	High	General Fund	Ongoing
D-19—Sponsor the formation and training of Community Emergency Response Teams (CERT) training through partnerships with local businesses.						
Existing	All Hazards	2, 3, 6, 13, 16	Town of Danville, SRVEPCCC*	Low	General Fund, SRVEPCCC	Ongoing

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
D-20—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).						
Existing	All Hazards	1, 3, 4, 5, 6, 7, 12	Town of Danville Development Services	Low	Town of Danville General Fund	Ongoing

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 5-14. Mitigation Action Priority

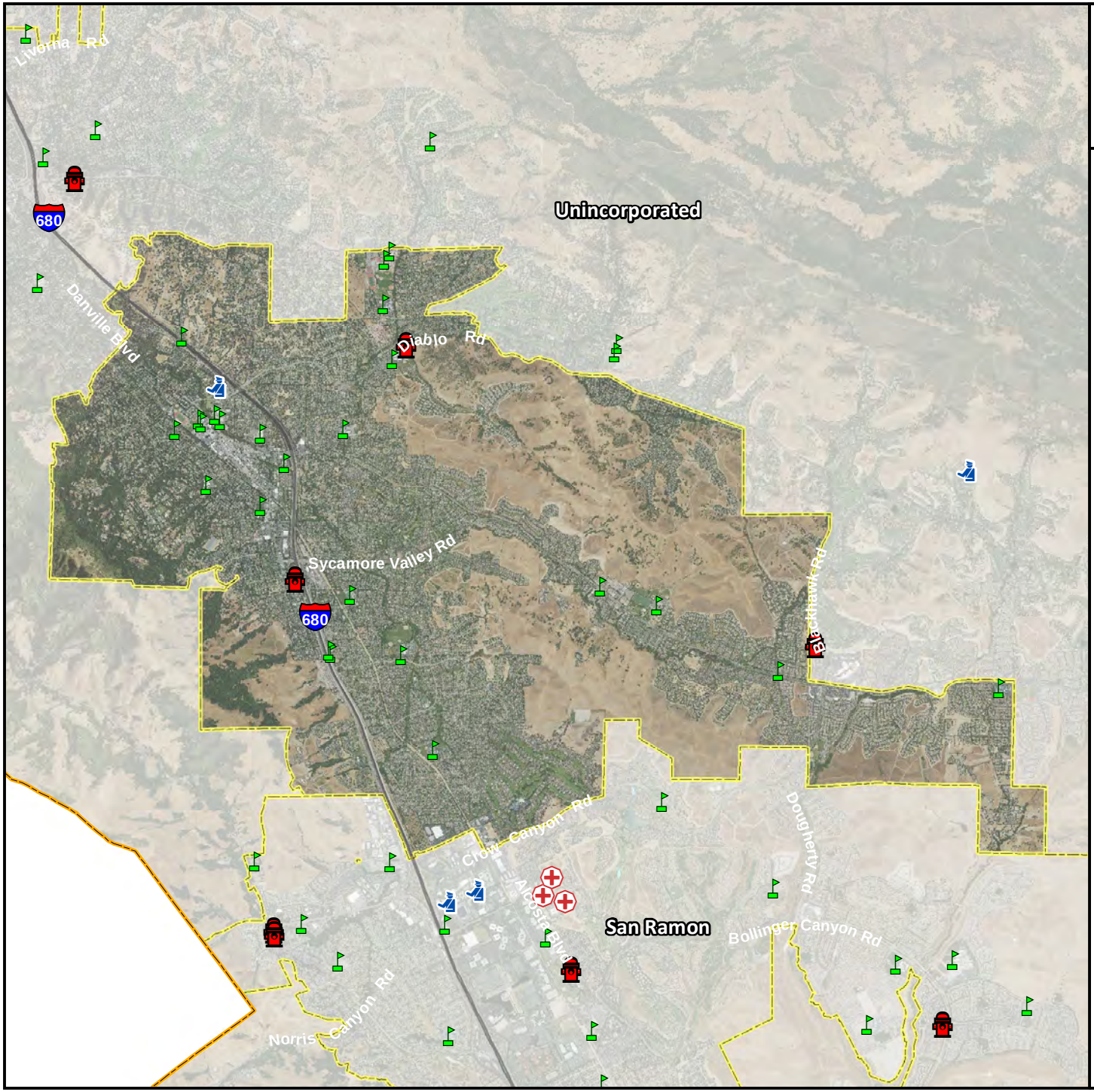
Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
D-1	8	High	Low	Yes	No	Yes	High	Low
D-2	8	High	Low	Yes	No	Yes	High	Low
D-3	3	Low	Low	Yes	No	Yes	High	Low
D-4	7	High	Low	Yes	No	Yes	High	Medium
D-5	4	High	High	Yes	No	Yes	High	Low
D-6	3	Medium	Medium	Yes	No	Yes	Medium	Low
D-7	2	High	Low	Yes	No	Yes	High	Low
D-8	4	High	Low	Yes	No	Yes	Medium	Low
D-9	6	High	High	Yes	No	Yes	High	Low
D-10	4	Medium	High	No	No	Yes	Medium	Low
D-11	6	Medium	High	No	No	Yes	Medium	Low
D-12	6	High	High	Yes	Yes	Yes	High	High
D-13	4	Medium	High	No	Yes	No	Medium	Low
D-14	4	High	Medium	Yes	No	Yes	High	Low
D-15	2	High	Low	Yes	Yes	Yes	High	Low
D-16	6	Low	Low	Yes	No	Yes	Low	Low
D-17	3	Medium	Low	Yes	No	No	Low	Low
D-18	5	Medium	Low	Yes	Yes	No	Medium	Low
D-19	5	Medium	Medium	Yes	Yes	Yes	Medium	Low
D-20	7	Medium	Low	Yes	No	No	Low	Low

a. See the introduction to this volume for explanation of priorities.

Table 5-15. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	D1, D2, D3, D5, D7, D19	D1, D2, D6	D3, D5, D7, D8, 18, D19		D2, D3, D5, D7, D8, D19	D1, D2	D-2	D1, D2, D3, D5, D7, D8, D19
Dam and Levee failure	D1, D12, D15, D16	D2, D3, D12, D15, D16			D2, D3, D12, D15, D16	D1, D12, D15		D12, D15, D16
Drought		D2			D2			D2, D5
Earthquake	D1, D3, D5, D8, D19, D20	D1, D2, D3, D5, D6, D20	D2, D3, D5, D7, D8, D19		D2, D3, D5, D6, D7, D8, D19	D1, D2		D1, D2, D3, D7, D8, D19, D20
Flood	D1, D2, D3, D4, D12, D13, D14, D15, D16	D1, D2, D4, D1, D14, D2, D16, D15, D13	D16, D2, D15	D-14	D2, D3, D12, D16, D13, D14, D15	D16, D1, D2 D12, D13		D1, D12, D13, D15, D16
Landslide	D1, D2, D10	D1, D2, D10	D2		D2, D3	D1, D2		D1, D2, D3, D10
Severe weather	D4, D12, D13, D14, D17	D2, D4, D12, D13, D17	D5		D2, D3, D5, D12, D13, D14	D2, D12, D13		D2, D5, D12, D13, D14
Tsunami								
Wildfire	D1, D2, D3, D5, D7, D8, D9, D20, D11, D19	D3, D9, D11	D1, D2, D3, D7, D5, D8, D9, D19, D20		D1, D2, D3, D5, D7, D8, D9, D19			D1, D2, D3, D5, D7, D8, D9, D20

a. See the introduction to this volume for explanation of mitigation types.



The Town of Danville

Critical Facilities

- Emergency Operations Centers (Government)
- Fire Stations (Protective Functions)
- Hazardous Materials
- Medical Facilities
- Police Stations (Protective Functions)
- Schools & Educational Facilities
- Contra Costa County Boundary
- City Boundaries

0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA

The Town of Danville

Critical Infrastructure

- Airports (Other Critical Functions)
- Bus Facilities (Other Infrastructure)
- Communication Facilities
- Electric Power Facilities
- Highway Bridges
- Highway Tunnels (Other Infrastructure)
- Light Rail (Other Infrastructure)
- Natural Gas (Other Infrastructure)
- Port Facilities (Other Critical Functions)
- Water Supply Facilities
- Rail Facilities (Other Infrastructure)
- Wastewater Facilities
- Contra Costa County Boundary
- City Boundaries

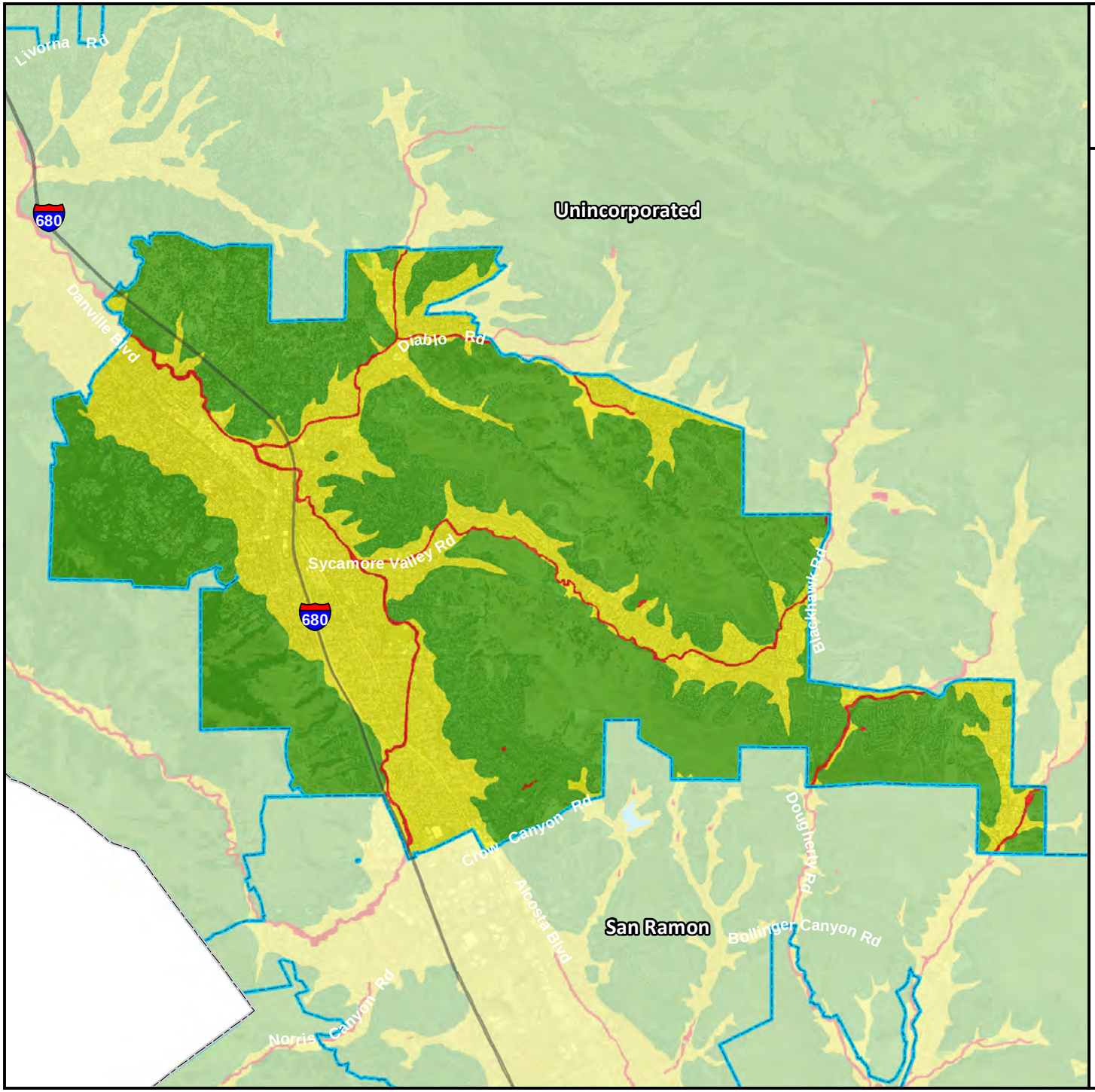
0 0.5 1 2

Miles

N
W E
S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The Town of Danville

Liquefaction Susceptibility

- Contra Costa County Boundary
- City Boundaries
- Water Bodies

Susceptibility to Liquefaction

- Very Low
- Low
- Medium
- High
- Very High
- No Liquefaction Data Available

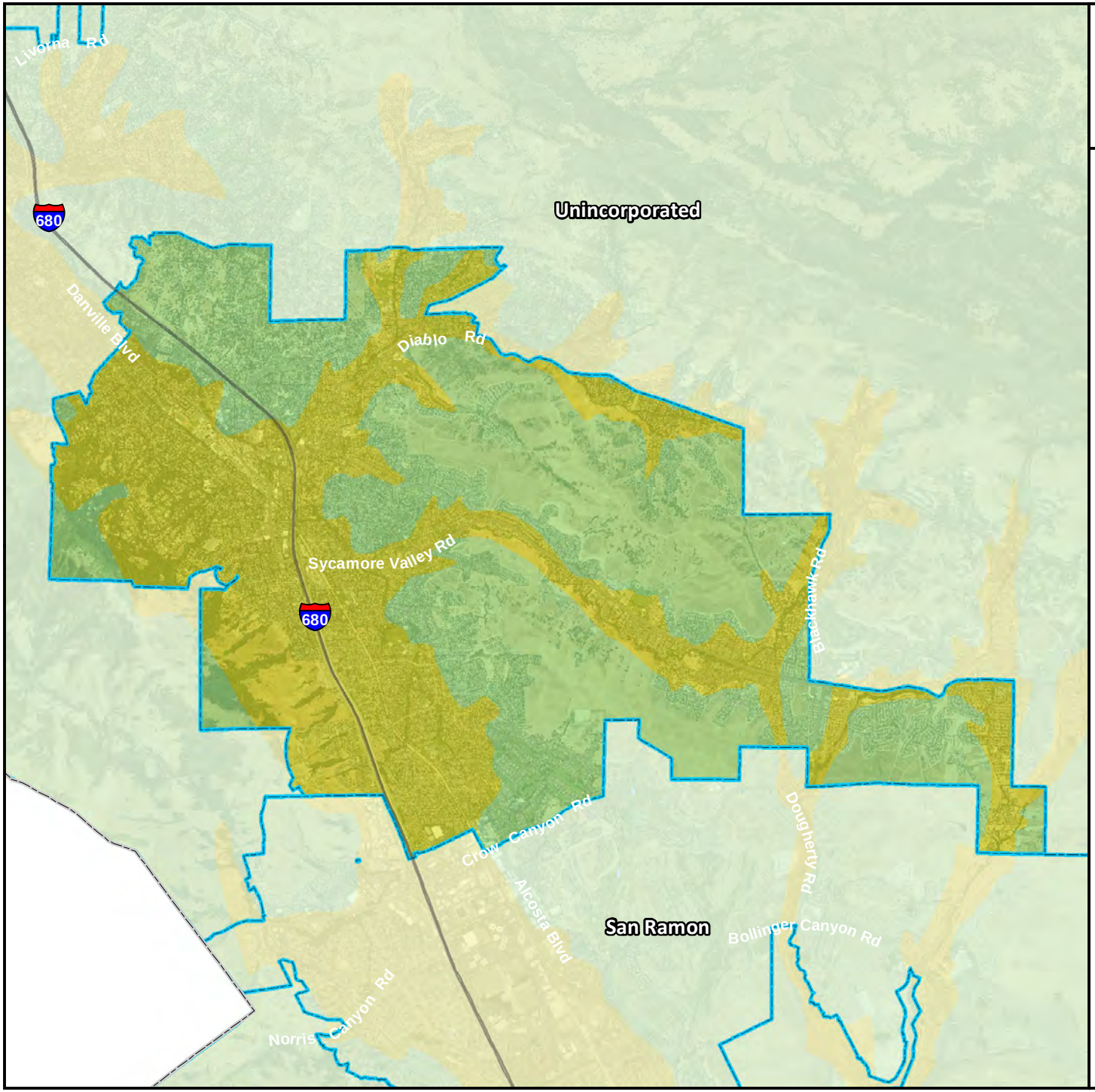
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The Town of Danville

National Earthquake Hazard Reduction Program (NEHRP) Soil Class

Contra Costa County Boundary

City Boundaries

Water Bodies

NEHRP Site Class / Soil Profile

B / Rock

C / Very Dense Soil - Soft Rock

D / Stiff Soil

E / Soft Soil

No Soil Data Available

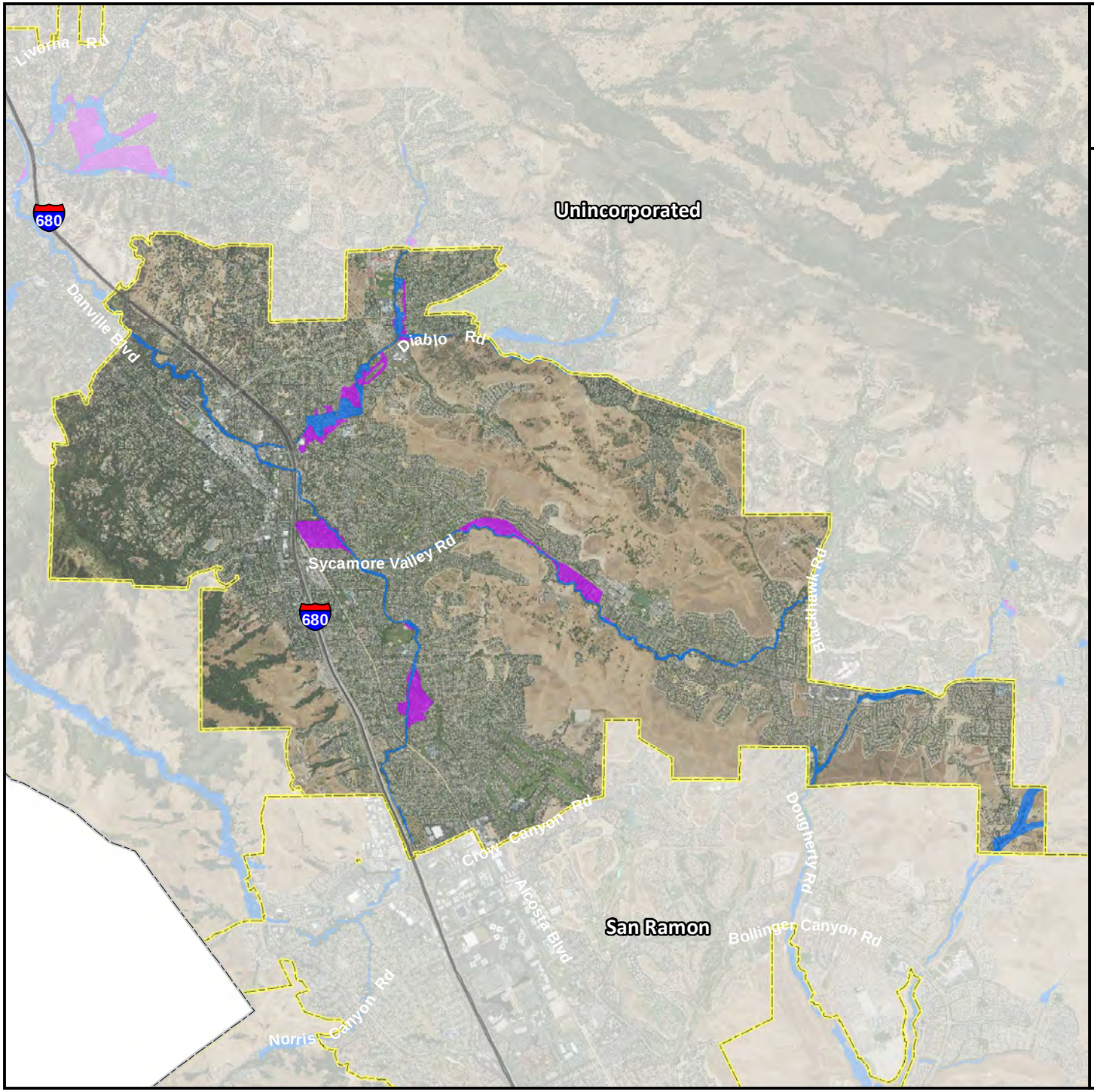
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Department of Conservation, USDA



The Town of Danville

FEMA DFIRM Flood Hazard Areas

- 1% Annual Chance (100-Year) Flood Zone
- 0.2% Annual Chance (500-Year) Flood Zone
- Contra Costa County Boundary
- City Boundaries
- Water Bodies

Flood hazard areas as depicted on Effective FEMA Digital Flood Insurance Rate Maps (DFIRM)

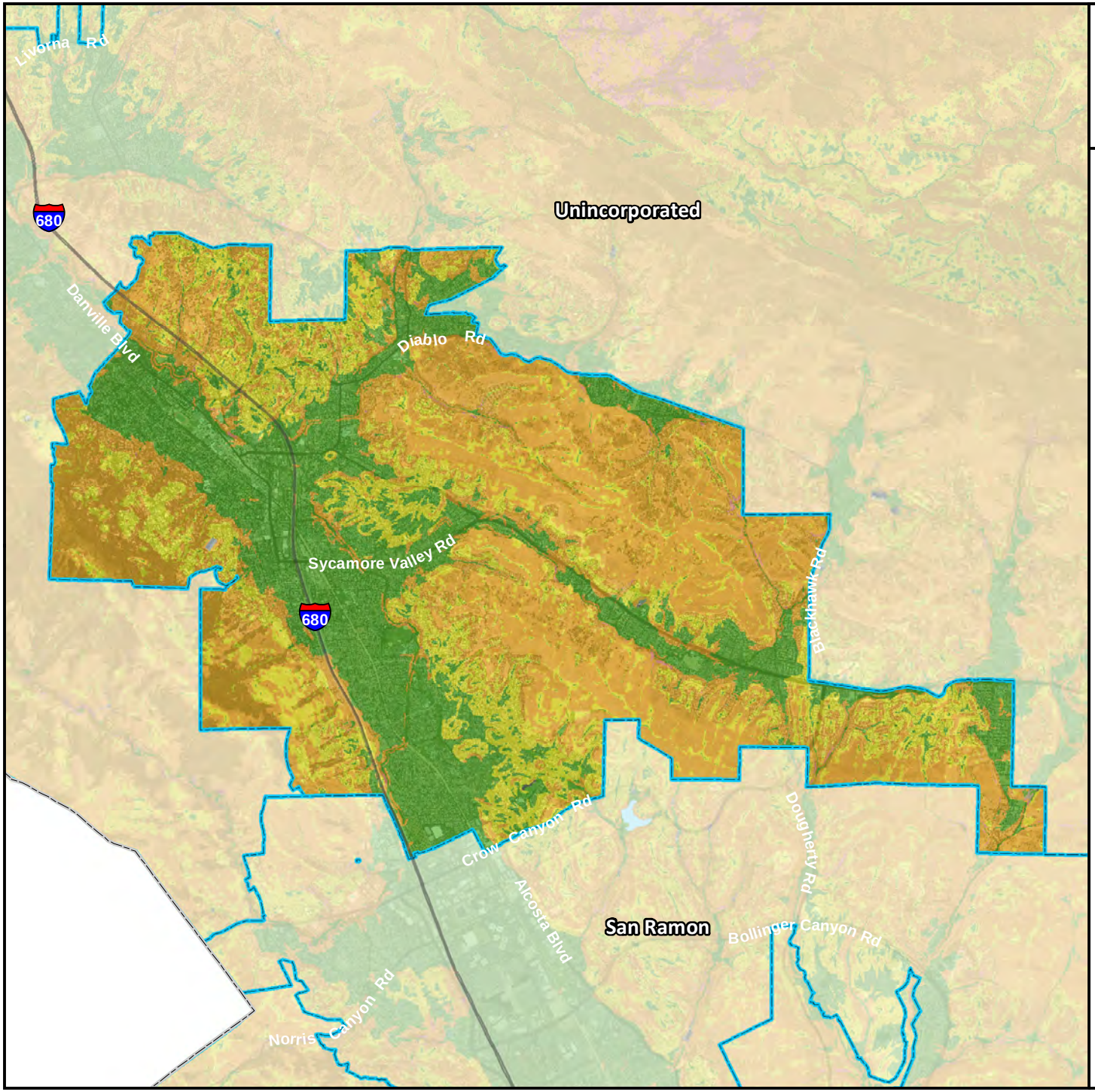
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, FEMA, USDA



The Town of Danville

Landslide Susceptibility Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Type

Low

Moderate

High

Very High / Existing

Data Not Available

Source dataset created by Wills C.J., Perez, F., Gutierrez, C., 2011, Susceptibility to deep-seated landslides in California: California Geological Survey Map Sheet 58

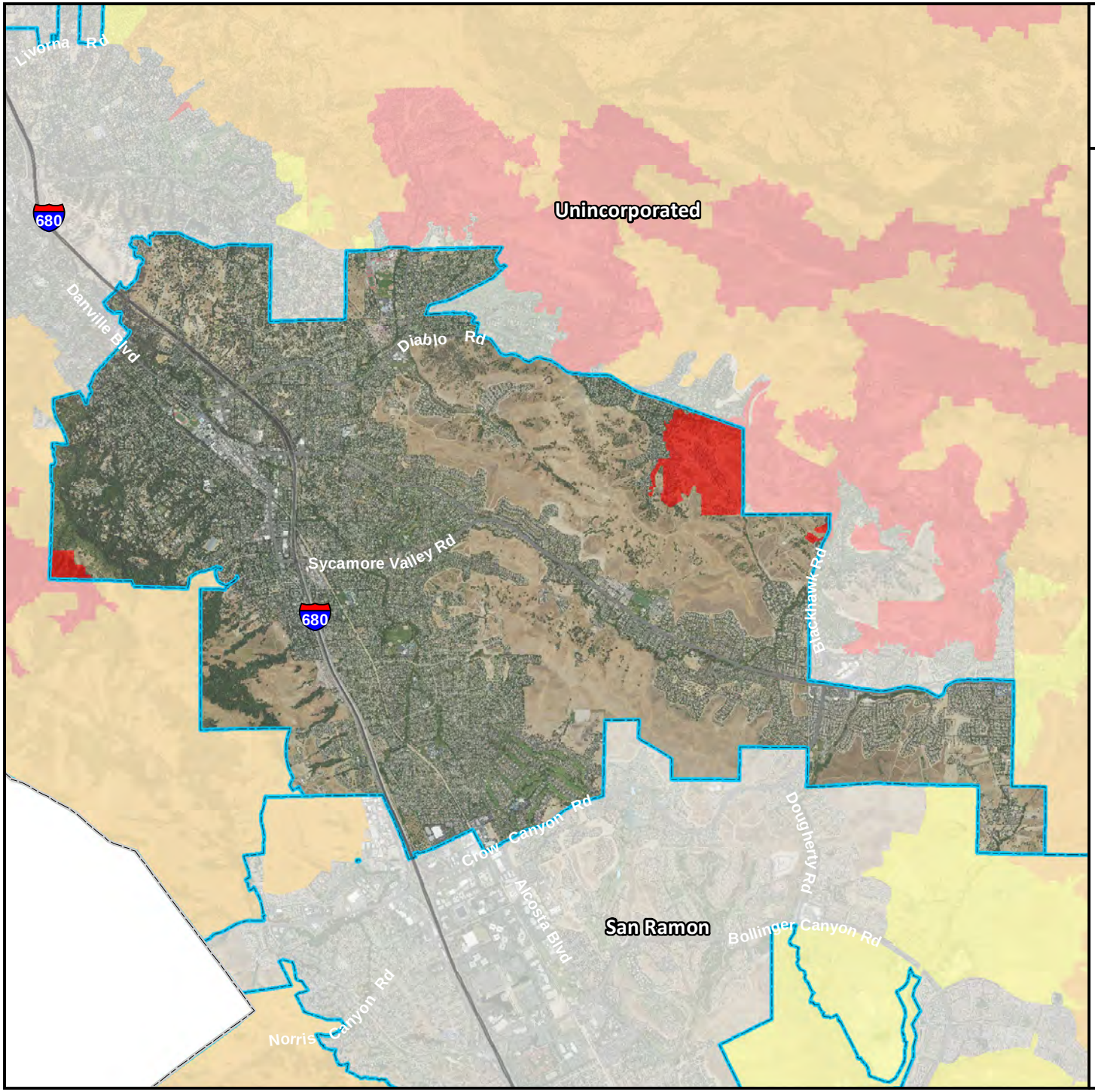
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The Town of Danville

Wildfire Severity Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Wildfire Severity Zone

Moderate

High

Very High

0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, CalFIRE, USDA

6. CITY OF EL CERRITO

6.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Michael J. Bond, Battalion Chief/Fire Marshal
10900 San Pablo Avenue
El Cerrito, CA 94530
Telephone: 510-215-4450
e-mail Address: mbond@ci.el-cerrito.ca.us

Alternate Point of Contact
Lance Maples, Fire Chief
10900 San Pablo Avenue
El Cerrito, CA 94530
Telephone: 510-215-4450
e-mail Address: lmaples@ci.el-cerrito.ca.us

6.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation**—1917
- **Current Population—**24,600, based on data from the California Department of Finance
- **Population Growth—**Based on data from the California Department of Finance, El Cerrito has experienced a modest rate of growth. The overall population has increased 5.61 percent since 2000. With this rate of growth, anticipated development is considered low to moderate. The growth rate has been virtually flat due to the built-out nature of existing city lots.
- **Location and Description—**El Cerrito is a moderately sized city of 3.9 square miles, located in western Contra Costa County on the south and west facing slopes of the Berkeley Hills, which rise from the Bay Plain to the top of the ridgeline (approximate elevation of 900 feet). The city is approximately 17 miles northeast of San Francisco and 12 miles north of Oakland. It forms part of the highly urbanized area along the eastern shore of San Francisco Bay together with the cities of Albany, Berkeley, and Richmond.

  El Cerrito is ideally situated within the San Francisco Bay Area due to its proximity to exceptional mass public transportation systems, small city hospitality within a major urban area, diverse culture, parks and spectacular vistas of the San Francisco Bay.

  The City is traversed by Interstate 80 (Eastshore Freeway), and the Bay Area Rapid Transit (BART) District's rail system bisects the City with an elevated track and two stations. The two BART stations are near the north (El Cerrito/Del Norte) and south (El Cerrito/Plaza) boundaries of the city. The El Cerrito/Del Norte Station is also a major public mass transit transfer station that provides extensive bus service throughout the San Francisco Bay Area. Both El Cerrito BART Stations are served by multiple mass public transportation services which include; AC Transit, WestCAT Transit, Vallejo Transit and Golden Gate Transit services, which are all bus systems.

- **Climate—**The climate of El Cerrito is greatly influenced throughout the year by its proximity to the San Francisco Bay. The rainy season lasts from January through March, accounting for about 90 percent of the annual precipitation. The dry season, lasting from June through October, is typically marked by

regular intrusions of low clouds and fog and long spells of high temperatures and low humidity. Temperatures are generally moderate.

In 2017, the high temperature for El Cerrito was 74ºF and the low was 42ºF. During a typical year, the colder lows are in the low to mid-40s and the warmer highs reach the mid-80s. The prevailing southwest wind blows across the cold upwelling water that is almost always present along the San Francisco Bay and Pacific Ocean coast. The immediate coast is largely affected by the cold California current.

- **Governing Body Format—**The City of El Cerrito is a general law City organized as a council-manager form of local municipal government. The City Council consists of five members elected at large for four-year, overlapping terms. The Council selects the Mayor from among its members for a one-year term. The Mayor and City Council provide community leadership, develop policies to guide the City in delivering services and achieving community goals, and encourage citizen understanding and involvement. The Council Members also serve as the governing body of the El Cerrito Redevelopment Agency.

  The City Manager is appointed by the City Council and is responsible for administration of municipal affairs. All City departments operate under the supervision of the City Manager. Through the City Manager, City staff, using the resources appropriated by the Council in the budget to achieve desired service results in the community, carries out the policies of the Council. The City employs approximately 170 people in five departments: Police Services, Fire Services, Administration, Community Development and Community Services. The City Council also appoints a city attorney to advise them and City staff on legal affairs, to see that laws are effectively enforced and, when necessary, to defend the City in litigation. The City Council assumes responsibility for the adoption of this plan, the Fire Department will oversee its implementation.

6.3 DEVELOPMENT TRENDS

El Cerrito is largely a bedroom community for San Francisco and other Bay Area cities. Most employment in the city comes from retail or service industries. As of Census 2010, the median income for a household in the city was $89,934.00, and the median income for a family was $88,380.00.

California law requires counties and cities to prepare and adopt a comprehensive plan to guide development. The plan must consist of an integrated, internally consistent set of goals, policies, and implementation measures and must focus on issues of the greatest concern to the community. City actions, such as those relating to land use, annexations, zoning, subdivision, design review, redevelopment, and capital improvements, must be consistent with the plan The City of El Cerrito adopted its general plan under this state mandate in July 2000. Future growth and development within the City will be managed as identified in the General Plan.

The City is faced with a host of potential health and safety hazards due to earthquakes, landslides and mudslides, fires, extreme weather/storms, flooding, dam failure, hazardous materials/transportation accidents and terrorist attack. The city is located in the heart of earthquake country, with the Hayward Fault Line running inside the city limits and parallel to its eastern boundary. Several other faults run roughly parallel to the ridgeline, with an extensive portion of the Alquist-Priolo fault zone mostly located within the City of El Cerrito.

The City is largely an urban housing area with commercial areas intermixed with wildland-urban interface areas. The wildland-urban interface areas are in portions of the city that have steep hillside grades and narrow winding roadways. This makes them extremely vulnerable to wildfire and landslides as portions of both the east and west facing slopes of the El Cerrito hillside are known to be active landslide areas. These areas can be adversely affected by earthquake, fire or excessively heavy rainfall.

Table 6-1 summarizes development trends in the performance period since development of the previous hazard mitigation plan and expected future development trends.

Table 6-1. Recent and Expected Future Development Trends

Criterion	Response
Has your jurisdiction annexed any land since the development of the previous hazard mitigation plan? • If yes, give the estimated area annexed and estimated number of parcels or structures.	No N/A
Is your jurisdiction expected to annex any areas during the performance period of this plan?	No
Are any areas targeted for development or major redevelopment in the next five years? • If yes, please briefly describe	Yes The City is mostly developed and has small infill projects that would not be considered major projects by larger jurisdictions. El Cerrito is a small City, because of our size these projects are considered major for El Cerrito.
How many building permits for new construction were issued in your jurisdiction since the development of the previous hazard mitigation plan?	

	2012	2013	2014	2015	2016
Single Family	2	1	5	4	3
Multi-Family	0	0	1	3	0
Other (commercial, mixed use, etc.)	0	0	0	0	0

Please provide the number of permits for each hazard area or provide a qualitative description of where development has occurred.	Development has occurred throughout the city during the performance period for this plan. For those hazards with a clearly defined extent and location, the City cannot estimate specific development impacts. For those hazards with impacts city-wide, it is safe to assume that this new development could be subject to impacts from those hazards. However, it is important to note that all new development was consistent with General Plan policies and municipal code standards and as a result most development has occurred outside of identified hazard zones. The total number of building permits per year from 2012 – 2016 are provided below. The numbers per risk zone are not available at this time: • 2012: 1520 • 2013: 1680 • 2014: 1596 • 2015: 1634 • 2016: 1680.

6.4 CAPABILITY ASSESSMENT

The City of El Cerrito performed an inventory and analysis of existing capabilities, plans, programs and policies that enhance its ability to implement mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of legal and regulatory capabilities is presented in Table 6-2.
- Development and permitting capabilities are presented in Table 6-3.
- An assessment of fiscal capabilities is presented in Table 6-4.
- An assessment of administrative and technical capabilities is presented in Table 6-5.
- An assessment of education and outreach capabilities is presented in Table 6-6.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 6-7.
- Classifications under various community mitigation programs are presented in Table 6-8.
- The community's adaptive capacity for the impacts of climate change is presented in Table 6-9.

Table 6-2. Legal and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code	Yes	No	Yes	Yes
Comment: 2016 CA Building Code with El Cerrito local amendments adopted 2016				
Zoning Code	Yes	No	Yes	Yes
Comment: El Cerrito Municipal Code, Title 19 adopted June 2016				
Subdivisions	Yes	No	No	No
Comment: El Cerrito Municipal Code, Title 18 adopted 1943				
Stormwater Management	Yes	No	No	Yes
Comment: El Cerrito Municipal Code, Title13 adopted in 1996				
Post-Disaster Recovery	No	No	No	No
Comment: None located				
Real Estate Disclosure	Yes	No	Yes	Yes
Comment: CA. Civil Code 1102 requires full disclosure on Natural hazard Exposure of the sale/re-sale of any and all real property.				
Growth Management	Yes	No	Yes	Yes
Comment: Cal. Gov. Code §65300 et seq.				
Site Plan Review	Yes	No	No	Yes
Comment: El Cerrito Municipal Code, Title 19 adopted June 2016				
Environmental Protection	Yes	Yes	Yes	Yes
Comment: CEQA; El Cerrito Municipal Code, Title 19 adopted June 2016				
Flood Damage Prevention	Yes	No	No	Yes
Comment: El Cerrito Municipal Code, 16.02.080 & 8.35 adopted 2015				
Emergency Management	Yes	Yes	Yes	Yes
Comment: El Cerrito Municipal Code, Title 2 adopted 1992				
Climate Change	Yes	Yes	Yes	Yes
Comment: El Cerrito Municipal Code, Title 19 adopted June 2016El				
Other:	N/A	N/A	N/A	N/A
Comment: None Identified				
Planning Documents				
General Plan	Yes	No	No	Yes
Is the plan compliant with Assembly Bill 2140? Yes				
Comment: General Plan adopted 1999, updated 2015 Housing element, 2014 specific Plan				
Capital Improvement Plan	Yes	No	No	Yes
How often is the plan updated? Every 2 years, last updated 6-2016				
Comment: 10 year plan updated every 2 years				
Floodplain or Watershed Plan	Yes	No	No	Yes
Comment: General Plan, 2014				
Stormwater Plan	Yes	Yes	Yes	Yes
Comment: Storm Drain Master Plan, adopted 1999				
Urban Water Management Plan	Yes	Yes	Yes	Yes
Comment: Urban Greening Plan, adopted 2015				
Habitat Conservation Plan	Yes	No	No	Yes
Comment: 2012				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Economic Development Plan	Yes	No	No	Yes
Comment: Economic Development Action Plan, adopted 2016				
Shoreline Management Plan	No	No	No	No
Comment: No shoreline				
Community Wildfire Protection Plan	Yes	Yes	No	Yes
Comment: Completed and adopted 2017, CFC 2016, State of California Fire Code				
Forest Management Plan	No	No	No	No
Comment:				
Climate Action Plan	Yes	No	Yes	Yes
Comment: Updated 2013				
Comprehensive Emergency Management Plan	Yes	No	Yes	Yes
Comment: Emergency Operations Plan Adopted 2007, Will be updated				
Threat & Hazard Identification & Risk Assessment (THIRA)	Yes	No	No	Yes
Comment: Contra Costa County Threat Assessment September 2010				
Post-Disaster Recovery Plan	No	No	No	Yes
Comment: Will be developed				
Continuity of Operations Plan	Yes	No	Yes	Yes
Comment: Contained in Emergency Operations Plans, Adopted 2007				
Public Health Plan	No	No	No	No
Comment:				
Other:	No	No	No	No
Comment: None Identified				

Table 6-3. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? • If no, who does? If yes, which department?	Yes Community Development Department
Does your jurisdiction have the ability to track permits by hazard area?	No
Does your jurisdiction have a buildable lands inventory? • If yes, please briefly describe. • If no, please quantitatively describe the level of buildout in the jurisdiction.	No 90%

Table 6-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes, through Contra Costa County
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No, El Cerrito can place tax increases or new taxes on the election ballot.
User Fees for Water, Sewer, Gas or Electric Service	Yes, the voters have approved a utility lighting and landscape assessment tax.
Incur Debt through General Obligation Bonds	Yes, El Cerrito can place tax increases or new taxes on the election ballot.
Incur Debt through Special Tax Bonds	Yes, El Cerrito can place tax increases or new taxes on the election ballot.
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	Yes
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No
Other	No

Table 6-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Community Development, City Engineer, Planning Director
Engineers or professionals trained in building or infrastructure construction practices	Yes	Community Development, City Engineer
Planners or engineers with an understanding of natural hazards	Yes	Community Development, City Engineer, Planning Director
Staff with training in benefit/cost analysis	No	
Surveyors	Yes	Company on contract
Personnel skilled or trained in GIS applications	Yes	Company on contract
Scientist familiar with natural hazards in local area	No	
Emergency Manager	Yes	Fire Chief / Police Chief
Grant writers	No	
Other	No	

Table 6-6. Education and Outreach Capability

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe.	Yes The HMP is available on the El Cerrito and Contra Costa County Web sites
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe.	Yes We use NEXEL, Next Door and Twitter
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly describe.	No N/A
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe.	Yes CERT, KARO/ECHO Amateur Radio Group and City website
Do you have any established warning systems for hazard events? • If yes, please briefly describe.	Yes CWS, TENS, NEXEL & Email

Table 6-7. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Public works
Who is your floodplain administrator? (department/position)	Community Development, Building Official
Are any certified floodplain managers on staff in your jurisdiction?	No
What is the date that your flood damage prevention ordinance was last amended?	2008
Does your floodplain management program meet or exceed minimum requirements? • If exceeds, in what ways?	Meets N/A
When was the most recent Community Assistance Visit or Community Assistance Contact?	Unknown
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? • If so, please state what they are.	No N/A
Do your flood hazard maps adequately address the flood risk within your jurisdiction? • If no, please state why.	Yes N/A
Does your floodplain management staff need any assistance or training to support its floodplain management program? • If so, what type of assistance/training is needed?	Yes Training in current standards and HAZUS use
Does your jurisdiction participate in the Community Rating System (CRS)? • If yes, is your jurisdiction interested in improving CRS Classification? • Is your jurisdiction interested in joining the CRS program?	No N/A No
How many Flood Insurance policies are in force in your jurisdiction?[a] • What is the insurance in force? • What is the premium in force?	97 $ 23,776,800 $129,122
How many total loss claims have been filed in your jurisdiction?[a] • How many claims were closed without payment/are still open? • What were the total payments for losses?	20 9/0 $ 81,179

a. According to FEMA statistics as of December 31, 2016

Table 6-8. Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	Yes	Not available	2015
Public Protection	Yes	N/A	N/A
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A

Table 6-9. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts	Medium
Comments/Additional Information: City staff are very concerned and work to fully understand the impacts of Climate change both locally, regionally and globally	
Jurisdiction-level monitoring of climate change impacts	Medium
Comments/Additional Information: Constant monitoring of stream flows, vegetation growth and atmospheric Changes	
Technical resources to assess proposed strategies for feasibility and externalities	Low
Comments/Additional Information: Small city with limited staff and resources	
Jurisdiction-level capacity for development of greenhouse gas emissions inventory	Low
Comments/Additional Information: Small City with few greenhouse gas emitters	
Capital planning and land use decisions informed by potential climate impacts	Medium
Comments/Additional Information: All new construction is done in compliance with the Cal Green Codes	
Participation in regional groups addressing climate risks	Medium
Comments/Additional Information: Attends and participates in the C4 climate change group	
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes	High
Comments/Additional Information: Through local, state and federal regulations	
Identified strategies for greenhouse gas mitigation efforts	Medium
Comments/Additional Information: Local, state and federal codes and regulations	
Identified strategies for adaptation to impacts	Medium
Comments/Additional Information: Cal green codes, local/regional traffic plans and multi modal transportation Strategies	
Champions for climate action in local government departments	High
Comments/Additional Information: All City staff is extremely proactive in climate change prevention	
Political support for implementing climate change adaptation strategies	High
Comments/Additional Information: City Council and city residents are proactive in climate change awareness Prevention and reversal of climate change effects	
Financial resources devoted to climate change adaptation	Medium
Comments/Additional Information: Small City with limited capital funds available, however staff is dedicated To proving all that is available	
Local authority over sectors likely to be negative impacted	Low
Comments/Additional Information: Not aware of any	

Criterion	Jurisdiction Rating[a]
Public Capacity	
Local residents knowledge of and understanding of climate risk	High
Comments/Additional Information: The citizens of El Cerrito are very aware and conscious of climate change and want to be proactive.	
Local residents support of adaptation efforts	High
Comments/Additional Information: City residents are very supportive of climate change adaptation efforts	
Local residents' capacity to adapt to climate impacts	Medium
Comments/Additional Information: El Cerrito has an elderly population with fixed income. Those with the Financial ability are very willing to adapt	
Local economy current capacity to adapt to climate impacts	Medium
Comments/Additional Information: El Cerrito has an elderly population with fixed income. Those with the Financial ability are very willing to adapt	
Local ecosystems capacity to adapt to climate impacts	Medium
Comments/Additional Information: Local ecosystems are diverse and mostly able to adapt to short term effects	

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

6.5 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

6.5.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the City of El Cerrito made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **Capital Improvement Plan**—The capital improvement plan includes projects can help mitigate potential hazards. The City will act to ensure consistency between the hazard mitigation plan and the current and future capital improvement plans. The hazard mitigation plan may identify new possible funding sources for capital improvement projects and may result in modifications to proposed projects based on results of the risk assessment.
- **Building Code and Fire Code**—The City's adoption of the 2016 California Building and Fire codes incorporated local modifications to account for the climatic, topographic and geographic conditions that exist in the City.
- **General Plan 1999, amended 2014**—The general plan includes a "Safety, Services, and Infrastructure" element to protect the community from unreasonable risk by establishing policies and actions to avoid or minimize the following hazards:
    - Geologic and seismic hazards
    - Fire hazards
    - Hazardous materials
    - Flood control

- Impacts from climate change.

- **Climate Action Plan, 2013**—The City's Climate Action Plan includes projects for reducing greenhouse gas emissions and adapting to likely impacts of climate change. These projects were reviewed to identify cross-planning initiates that serve both adaptation and mitigation objectives.

Resources listed in Section 6.11 were used to provide information for this annex on hazard events and local capabilities within the jurisdiction.

6.5.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the City of El Cerrito will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan in actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Zoning Code**—The City of El Cerrito is committed to updating its zoning code at least once every two years to make changes that further the goals of health and safety.
- **General Plan**—The city of El Cerrito is considering funding opportunities to implement a new General Plan. If that funding is found, the new Plan would provide a strong opportunity for integration of hazard mitigation goals.
- **Capital Improvement Projects**—Capital improvement project proposals may take into consideration hazard mitigation potential as a means of evaluating project prioritization.

6.6 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 6-10 lists past occurrences of natural hazards for which specific damage was recorded in the City of El Cerrito. Other hazard events that broadly affected the entire planning area, including the City of El Cerrito, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 6-10. Past Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Severe Storm	DR-305	1/22/2017	$150,00
Severe Storm	DR-4301	2016-2017 Storms	$17,220
Fire	NA	2006	$1,000
Landslide	NA	1996	$50,000
Flood	NA	1996	$200,000
Severe Weather/Wind	NA	1992	$10,000
Severe Weather/Freeze	NA	1991	$10,000
Landslide	NA	1990	$100,000
Flood	NA	1990	$200,000

6.7 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for the jurisdiction.

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 2
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: Unknown

Other noted vulnerabilities include the following:

- Some critical facilities located in the City are not built to earthquake standards for critical facilities.
- Some neighborhoods in the city have the potential to have ingress and egress cut off as the result of a hazard event, such as a flood or earthquake do to one-way ingress/egress.
- A substantial number of buildings in one area of the community are in the Very High fire Hazard Severity Zone and not build to modern fire resistive standards

6.8 HAZARD RISK RANKING

Table 6-11 presents a local ranking for the City of El Cerrito of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 6-11. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake[b]	54	High
1	Landslide[e]	54	High
1	Wildfire[e]	54	High
2	Severe weather	30	Medium
3	Flood[c]	18	Medium
4	Sea level rise[d]	12	Low
5	Drought	9	Low
6	Dam and levee failure[a]	6	Low
7	Tsunami	0	None

a. Based on the level of detail conducted in the risk assessment, the risk ranking for this hazard is focused solely on dam failure impacts. See Chapter 6.4 of Volume 1 for combined dam inundation list on which this assessment is based.
b. Haywired M7.05 event was used to assign probability and impacts
c. 1-percent annual chance event was used to assign probability and impacts
d. 2100 upper range estimates and extreme tide are used to assign probability and impacts
e. Very High and High severity zones were used to assign probability and impacts

6.9 STATUS OF PREVIOUS PLAN ACTIONS

Table 6-12 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 6-12. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
EC-1—Develop and maintain/enhance the Cities classification under the Community Rating System		X		
Comment: The City does not have a substantial policy base to justify the administrative costs of joining the CRS program. The City will consider adopting best practices put forth by the program as appropriate.				
EC-2—Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan	X		X	EC-2
Comment:				
EC-3—Upgrade Emergency Operations Center (EOC) Internal Communications and maintain the EOC in a fully functional state of readiness	X		X	EC-5
Comment: In place with continued maintenance and upgrades				
EC-4—Develop and Conduct a Multi-Hazard Seasonal Public Awareness Program to Include Exercises	X		X	EC-6
Comment: Needs to be conducted annually				
EC-5—The FD to conduct a Mass Care and Shelter Drill which involve City, County Employees, Non-Government Agencies, CERT volunteers, and the public. To be scheduled for the summer of 2010.	X		X	EC-7
Comment: Needs to be conducted annually				
EC-6—Participate in the FCC P-25 East Bay Regional Communications System (Alameda & Contra Costa County) System will be a 36-site, 2 county P-25 compliant communication system designed to provide fully interoperable communications to all public agencies within Alameda and Contra Costa counties. Refer to website www.ebrcsa.org for complete project description.	X		X	EC-8
Comment: Need to fund maintenance cost and upgrades / expansion				
EC-7—Continue to support implementation, monitoring, maintenance and updating of this plan as defined NFIP	X		X	EC-3
Comment: Continued Maintenance				
EC-8—Enhance/Improve City Code language and enforcement including: City Building and Fire Codes to Increase Compliance with SB 1369 Defensible Space and Other Fire Safe Requirements within the City.	X		X	EC-9
Comment: The City amends and adopts the CA Building and Fire Codes reinforce the Cities Vegetation Management Standards and Chapter 7a of these codes.				
EC-9—Improve, expand and develop new programs that increase awareness of and reduce risk to wildfires including: Support Diablo Fire Safe Council & Fire Dept. Chipper Program	X		X	EC-11
Comment: Continued outreach and education is required as 1/3 of El Cerrito is In the VHFHSZ				
EC-10—Install micro and/or surveillance cameras around critical public assets tied to a web based software, and develop a surveillance protocol to monitor cameras	X		X	EC-10
Comment: City hall and the Public Safety Building are complete, other city buildings still need to be completed				
EC-11—Ensure that government-owned facilities are subject to the same or more stringent regulations as imposed on privately owned development	X			
Comment: Are built to the Essential services standards for those types of buildings				

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update: Check if Yes	Carried Over to Plan Update: Enter Action #
EC-12—Prior to acquisition of property to be used as a critical facility, conduct a study to ensure the absence of significant hazards	X		X	EC-12
Comment: The City conducts these studies before acquiring properties for critical facilities to ensure the land is usable or what the feasibility of mitigation or construction cost make the land feasible to build critical facilities on.				
EC-13—Establish a framework and process for pre-event planning for post-event recovery that specifies roles, priorities, and responsibilities for various departments within local government organization, and that outlines structure and process for policy-making involving elected and appointed advisory committees	X		X	EC-13
Comment: Is in the EOP.				
EC-14—Establish a goal for the resumption of local government services that may vary from function to function	X		X	EC-14
Comment: Is in the EOP.				
EC-15—Maintain and update as necessary the local government's Standardized Emergency Management System Plan	X		X	EC-15
Comment: Ongoing training for all new employees who require the training				
EC-16—Purchase command vehicles for use as mobile command/EOC vehicles if current vehicles are unsuitable or inadequate	X		X	CE-16
Comment: Command vehicles have limited service life and must be replaced				
EC-17—Continue to participate not only in general mutual-aid agreements, but also in agreements with adjoining jurisdictions for cooperative response to all hazards and disasters	X		X	EC-17
Comment: Mutual aid and automatic aid agreements are in place and have been expanded to the city of Berkeley				
EC-18—Develop a business continuity plan that includes backup storage of vital records, such as essential medical records and financial information	X		X	EC-18
Comment: Data storage demands and technological advances require continued upgrades				
EC-19—Create incentives for 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 Guidelines for Rehabilitation	X		X	EC-19
Comment: Done when permits are requested				
EC-20—Require engineered plan sets for retrofitting of heavy two-story homes with living spaces over garages, split level homes, homes on hillsides.	X		X	EC-20
Comment: Through building code and local amendments				
EC-21— Require engineered plan sets for voluntary or mandatory soft-story retrofits until a standard plan set and construction details become available	X		X	EC-21
Comment: Through building code and local amendments				
EC-22—Require engineered plan sets for retrofitting of Unreinforced masonry buildings	X		X	EC-22
Comment: Through building code and local amendments				

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
EC-23—Increase efforts to reduce hazards in existing development in Very High Fire Hazard Fire Severity Zones (VHFHSZ) through improving engineering design and vegetation management standards for mitigation, appropriate code enforcement and public education on defensible space mitigation strategies.	X		X	EC-23
Comment: Through CBC chapter 7a and local amendments				
EC-24—Require new homes in Wildland-Urban-Interface and VHFHSZ threatened communities to be constructed of fire resistant building materials to increase structural survivability and reduce ignitability	X		X	EC-24
Comment: Through CBC chapter 7a and local amendments				
EC-25—Ensure new development provides required improvements to the storm drainage system necessary to accommodate increased flows from the development	X		X	EC-25
Comment: Through the storm water runoff plan				
EC-26—Ensure that new subdivisions are designed to reduce or eliminate flood damage by requiring lots and rights-of-way are laid out for the provisions of approved sewer and drainage facilities, providing on-site detention facilities as required	X		X	EC-26
Comment: Through the storm water runoff plan				
EC-27—Provide land slide stabilization to critical roadways maintaining emergency access			X	EC-27
Comment: Work in progress				
EC-28—Apply floodplain management regulations for development in the floodplain and floodway	X		X	EC-4
Comment: Regulations are applied routinely				
EC-29—Provide sandbags and plastic sheeting to residents in anticipation of rainstorms, deliver materials to the disabled and elderly and provide public information on where these materials are stored and how to get them.	X		X	EC-28
Comment: Is done at the beginning of the rainy season and replenished as needed				
EC-30—Support County-wide initiatives identified in Volume 1.	X		X	EC-29
Comment: Ongoing				
EC-31—Continue to maintain compliance and good standing under the National Flood Insurance Program (NFIP).	X		X	EC-4
Comment: Ongoing				
EC-32—Where appropriate, support retrofitting, purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority.			X	EC-1
Comment: No action to date				

6.10 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 6-13 lists the actions that make up the City of El Cerrito hazard mitigation action plan. Table 6-14 identifies the priority for each action. Table 6-15 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 6-13. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
EC-1— Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	Building Dept.	High	HMGP, PDM, FMA	Short-term
EC-2— Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including the General Plan.						
New and Existing	All Hazards	1, 4, 5, 7, 11, 12, 14, 17	Community Development	Low	Staff Time, General Funds	Ongoing
EC-3— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 16	Fire Department	Low	Staff Time, General Funds	Short-Term
EC-4—Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: • Enforce the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts.						
New and Existing	Flood	3, 5, 6, 9, 10, 11, 15	Public works	Low	Staff Time, General Funds	Ongoing
EC-5—Upgrade Emergency Operations Center (EOC) Internal Communications and maintain the EOC in a fully functional state of readiness						
Existing	All Hazards	1, 2, 3, 4, 5	Fire Dept.	Medium	Staff time general fund/ grants HMGP, EMPG	Ongoing
EC-6—Develop and Conduct a Multi-Hazard Seasonal Public Awareness Program to Include Exercises						
N/A	All Hazards	2, 3, 4, 5	Fire Department	Medium	Staff time general fund/ grants, EMPG	Ongoing
EC-7—The FD to conduct a Mass Care and Shelter Drill which involve City, County Employees, Non-Government Agencies, CERT volunteers, and the public.						
N/A	All Hazards	1, 5	Fire Dept.	Low	Staff time general funds	Ongoing
EC-8—Participate in the FCC P-25 East Bay Regional Communications System (Alameda & Contra Costa County) System will be a 36-site, 2 county P-25 compliant communication system designed to provide fully interoperable communications to all public agencies within Alameda and Contra Costa counties. Refer to website www.ebrcsa.org for complete project description.						
Existing (Retrofit communications systems)	All Hazards	1, 2, 5	Fire Dept.	Medium	Staff time, general funds, grants HMGP, PDM	Ongoing
EC-9—Enhance/Improve City Code language and enforcement including: City Building and Fire Codes to Increase Compliance with SB 1369 Defensible Space and Other Fire Safe Requirements within the City.						
New and existing	Wildfire	1, 2, 3, 4, 5	Building Dept.	Low	General fund/staff time	Ongoing
EC-10—Install micro and/or surveillance cameras around critical public assets tied to a web based software, and develop a surveillance protocol to monitor cameras						
New and existing	All Hazards	1, 2, 3,	IT	Medium	General fund, staff time and Grants HMGP, PDM	Ongoing
EC-11—Improve, expand and develop new programs that increase awareness of and reduce risk to wildfires including: Support Diablo Fire Safe Council & Fire Dept. Chipper Program						
New and existing	Wildfire	1, 2, 3, 4, 5	Fire	Low	General fund, Staff time	Ongoing
EC-12—Prior to acquisition of property to be used as a critical facility, conduct a study to ensure the absence of significant hazards						
New	All Hazards	1, 2, 3, 4, 5	Community Development	Low	General fund, staff time	Ongoing

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
EC-13—Establish a framework and process for pre-event planning for post-event recovery that specifies roles, priorities, and responsibilities for various departments within local government organization, and that outlines structure and process for policy-making involving elected and appointed advisory committees						
New and existing	All Hazards	1, 2, 3, 4, 5	City Manager	Low	General fund, staff time	Ongoing
EC-14—Establish a goal for the resumption of local government services that may vary from function to function						
New	All Hazards	1, 2, 3, 4, 5	Fire	Low	General fund, staff time	Ongoing
EC-15—Maintain and update as necessary the local government's Standardized Emergency Management System Plan						
Existing	All Hazards	1, 2, 3, 4, 5	Fire	Low	General Fund, staff time	Ongoing
EC-16—Purchase command vehicles for use as mobile command/EOC vehicles if current vehicles are unsuitable or inadequate						
Existing	All Hazards	1, 3, 5	Fire	Low	General fund, staff time	Ongoing
EC-17—Continue to participate not only in general mutual-aid agreements, but also in agreements with adjoining jurisdictions for cooperative response to all hazards and disasters						
Existing	All Hazards	1, 2, 3, 5	Fire	Low	General Fund, Staff time	Ongoing
EC-18—Develop a business continuity plan that includes backup storage of vital records, such as essential medical records and financial information						
Existing	All Hazards	2, 3, 4, 5	IT	Medium	General fund, staff time and grants HMGP, PDM	Ongoing
EC-19—Create incentives for 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 Guidelines for Rehabilitation						
Existing	All Hazards	1, 2, 3,	Community Development	Low	General fund, staff time	Ongoing
EC-20—Require engineered plan sets for retrofitting of heavy two-story homes with living spaces over garages, split level homes, homes on hillsides.						
Existing	Earthquake, Landslide	1, 2, 3, 4, 5	Building Dept.	Low	General Fund, staff time	Ongoing
EC-21— Require engineered plan sets for voluntary or mandatory soft-story retrofits until a standard plan set and construction details become available						
Existing	All Hazards	1, 2, 3, 4, 5	Building Dept.	Low	General Fund, staff time	Ongoing
EC-22—Require engineered plan sets for retrofitting of Unreinforced masonry buildings						
Existing	All Hazards	1, 2, 3, 4	Building Dept.	Low	General Fund, staff time	Ongoing
EC-23—Increase efforts to reduce hazards in existing development in Very High Fire Hazard Fire Severity Zones (VHFHSZ) through improving engineering design and vegetation management standards for mitigation, appropriate code enforcement and public education on defensible space mitigation strategies.						
Existing	Wildfire	1, 2, 3, 4, 5	Fire	High	General fund, staff time, grants HMGP, PDM, FMA	Ongoing
EC-24—Require new homes in Wildland-Urban-Interface and VHFHSZ threatened communities to be constructed of fire resistant building materials to increase structural survivability and reduce ignitability						
Existing	Wildfire	1, 2, 3, 4, 5	Fire	Low	General fund, staff time	Ongoing
EC-25—Ensure new development provides required improvements to the storm drainage system necessary to accommodate increased flows from the development						
Existing	Flood	1, 2, 3, 4, 5	Public Works	Low	General fund, staff time	Ongoing
EC-26—Ensure that new subdivisions are designed to reduce or eliminate flood damage by requiring lots and rights-of-way are laid out for the provisions of approved sewer and drainage facilities, providing on-site detention facilities as required						
Existing	Flood	1, 2, 3, 4, 5	Public Works	Low	General Fund, Staff time	Ongoing

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
EC-27—Provide landslide stabilization to critical roadways maintaining emergency access						
New	Severe Weather/ Flood	1, 2, 3, 4, 5	Public Works	High	Grants HMGP, PDM, FMA	Long-Term 10 years
EC-28—Provide sandbags and plastic sheeting to residents in anticipation of rainstorms, deliver materials to the disabled and elderly and provide public information on where these materials are stored and how to get them.						
Existing	Flood	1, 2, 3, 4, 5	Public Works	Low	General fund, Staff Time	Ongoing
EC-29—Support County-wide initiatives identified in Volume 1.						
Existing	All Hazards	1, 2, 3, 4, 5	Fire Dept.	Low	General Fund, Staff Time	Ongoing
EC-30—Replace or retrofit the El Cerrito Public Safety Building to meet current essential services building earthquake standards						
New	Earthquake	1, 2, 3, 4, 5	Fire Dept.	High	General Fund	Long-term
EC-31—Manage fire fuels within the Very High Fire Severity Zone by removing non-native fire prone vegetation with fire/drought resistant vegetation.						
New	Wildfire	1, 2, 3, 4, 5	Fire Dept.	High	General Funds, Staff Time, HMGP Grants	Ongoing

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 6-14. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
EC-1	8	High	High	Yes	Yes	No	Medium	Low
EC-2	8	Medium	Low	Yes	No	Yes	High	Low
EC-3	3	Low	Low	Yes	No	Yes	High	Low
EC-4	7	Medium	Low	Yes	No	Yes	High	Low
EC-5	4	Medium	Low	Yes	Yes	No	Medium	Low
EC-6	4	Medium	Low	Yes	No	Yes	High	Low
EC-7	2	Low	Low	Yes	No	Yes	High	Low
EC-8	3	Medium	High	No	Yes	No	Medium	Low
EC-9	5	Low	Low	Yes	No	Yes	High	Low
EC-10	3	Medium	Medium	Yes	Yes	No	Medium	Medium
EC-11	3	Medium	Medium	Yes	No	Yes	High	Low
EC-12	5	Low	High	No	Yes	No	Medium	High
EC-13	5	Low	Low	Yes	No	No	Medium	Low
EC-14	5	Low	Low	Yes	Yes	No	Medium	High
EC-15	5	Low	Low	Yes	No	Yes	High	Low
EC-16	3	Low	High	No	Yes	No	Medium	High
EC-17	4	Low	Medium	No	No	Yes	Medium	Low
EC-18	4	Medium	Medium	Yes	Yes	No	Medium	Medium
EC-19	3	Low	High	No	Yes	No	Medium	Medium
EC-20	5	Low	Low	Yes	No	Yes	High	Low
EC-21	5	Low	Low	Yes	No	Yes	High	Low

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
EC-22	4	Low	Low	Yes	No	Yes	High	Low
EC-23	5	High	High	Yes	Yes	No	Medium	High
EC-24	5	Low	Low	Yes	No	Yes	High	Low
EC-25	5	Low	Low	Yes	No	Yes	High	Low
EC-26	5	Low	Low	Yes	No	Yes	High	Low
EC-27	5	High	High	Yes	Yes	No	Medium	High
EC-28	5	Low	Low	Yes	No	Yes	High	Low
EC-29	5	High	High	Yes	Yes	No	Medium	Medium
EC-30	5	High	High	Yes	Yes	No	Medium	High
EC-31	5	High	High	Yes	Yes	Yes	High	Low

a. See the introduction to this volume for explanation of priorities.

Table 6-15. Analysis of Mitigation Actions

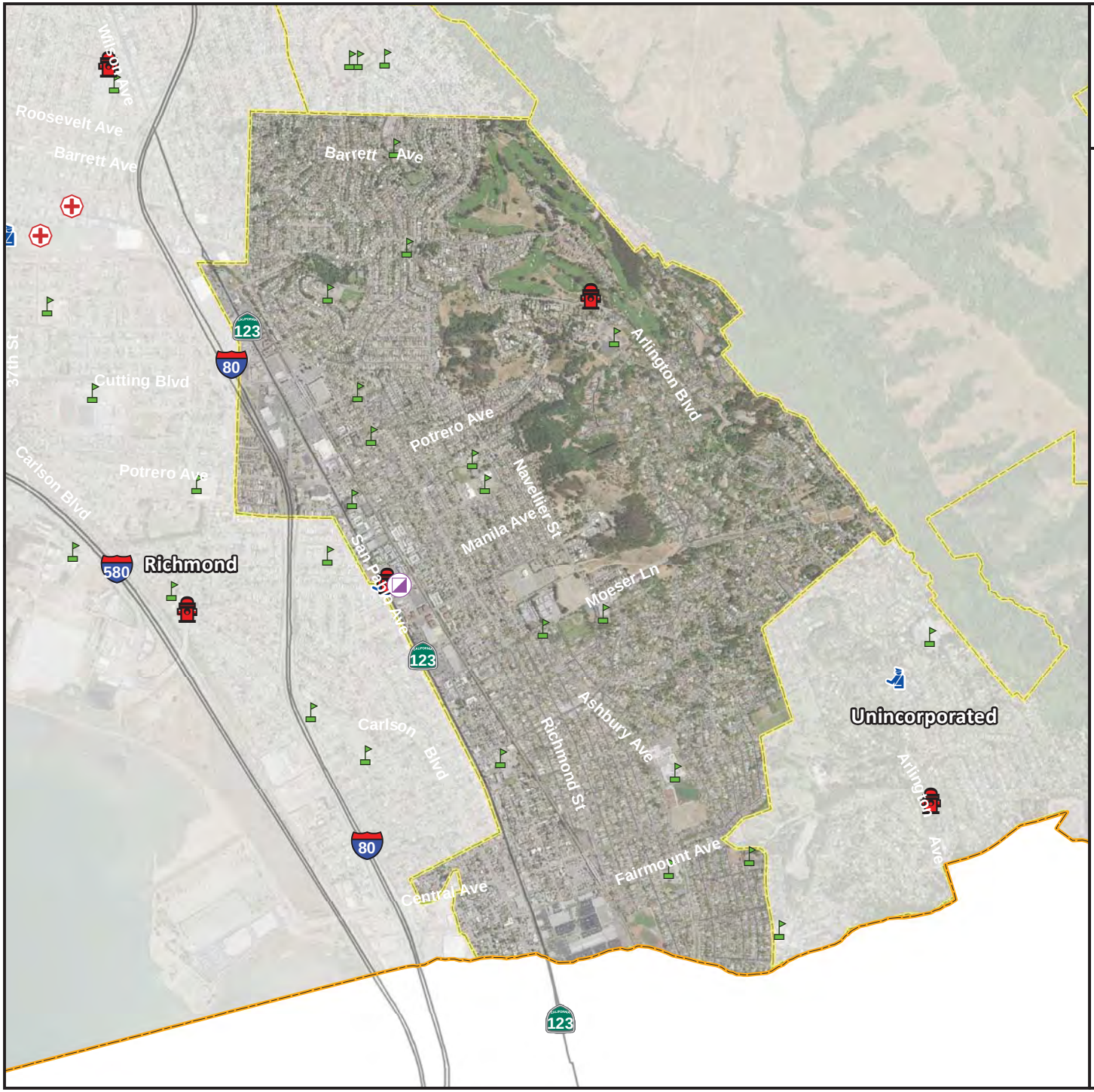
Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	EC-2, 12, 17, 29	EC-1, 19, 29	EC-2, 6, 7, 29	EC-29	EC-5, 6, 7, 8, 10, 16, 17, 29	EC-29	EC-29	EC-2, 3, 7, 13, 14, 15, 17, 18, 29
Dam and Levee failure	EC-4	EC-4	EC-4	EC-4				EC-4
Drought		EC-31		EC-31				
Earthquake	EC-20, 21, 22	EC-20, 21, 22, 30			EC-30			
Flood	EC-4, 25, 26	EC-4, 28	EC-4, 28	EC-4	EC-28		EC-25, 26	EC-4, 28
Landslide	EC-20	EC-20, 27			EC-27	EC-27		
Severe weather								
Tsunami								
Wildfire	EC-9, 23, 24	EC-24, 31	EC-11, 23	EC-31				EC-23

a. See the introduction to this volume for explanation of mitigation types.

6.11 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **City of El Cerrito Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of El Cerrito Flood Damage Prevention Ordinance**—The flood damage prevention ordinance was reviewed for compliance with the National Flood Insurance Program.
- **El Cerrito Emergency Operations Plan**—The EOP was used to review emergency response, recovery, continuity of government
- **El Cerrito Specific Plan**—The plan was used to review development guidelines
- **El Cerrito City Budget**—CIP amendments were reviewed.
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.



The City of El Cerrito

Critical Facilities

- Emergency Operations Centers (Government)
- Fire Stations (Protective Functions)
- Hazardous Materials
- Medical Facilities
- Police Stations (Protective Functions)
- Schools & Educational Facilities
- Contra Costa County Boundary
- City Boundaries

0 0.25 0.5 1

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA

The City of El Cerrito

Critical Infrastructure

- Airports (Other Critical Functions)
- Bus Facilities (Other Infrastructure)
- Communication Facilities
- Electric Power Facilities
- Highway Bridges
- Highway Tunnels (Other Infrastructure)
- Light Rail (Other Infrastructure)
- Natural Gas (Other Infrastructure)
- Port Facilities (Other Critical Functions)
- Water Supply Facilities
- Rail Facilities (Other Infrastructure)
- Wastewater Facilities
- Contra Costa County Boundary
- City Boundaries

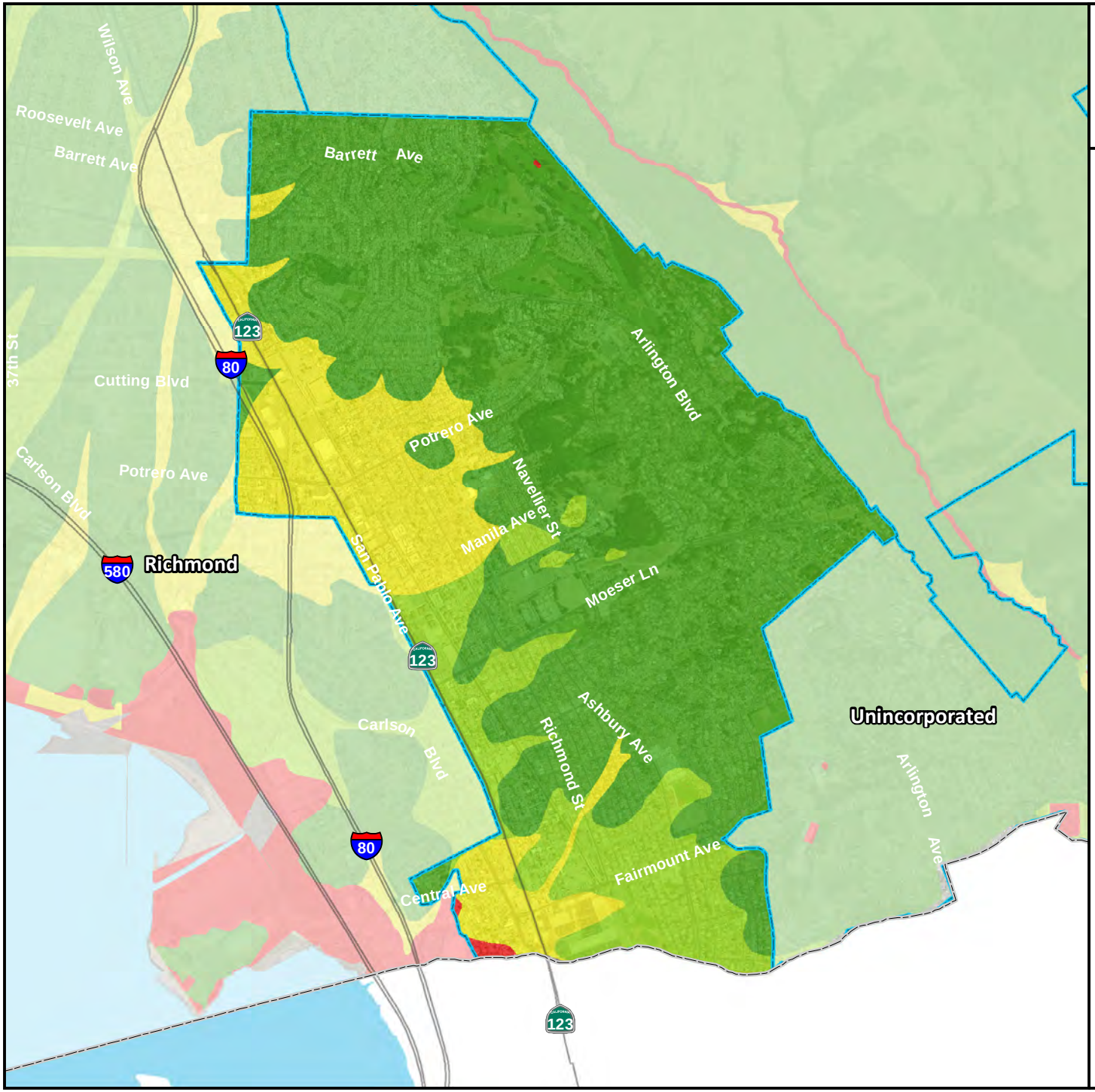
0 0.25 0.5 1

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of El Cerrito

Liquefaction Susceptibility

Contra Costa County Boundary

City Boundaries

Water Bodies

Susceptibility to Liquefaction

Very Low

Low

Medium

High

Very High

No Liquefaction Data Available

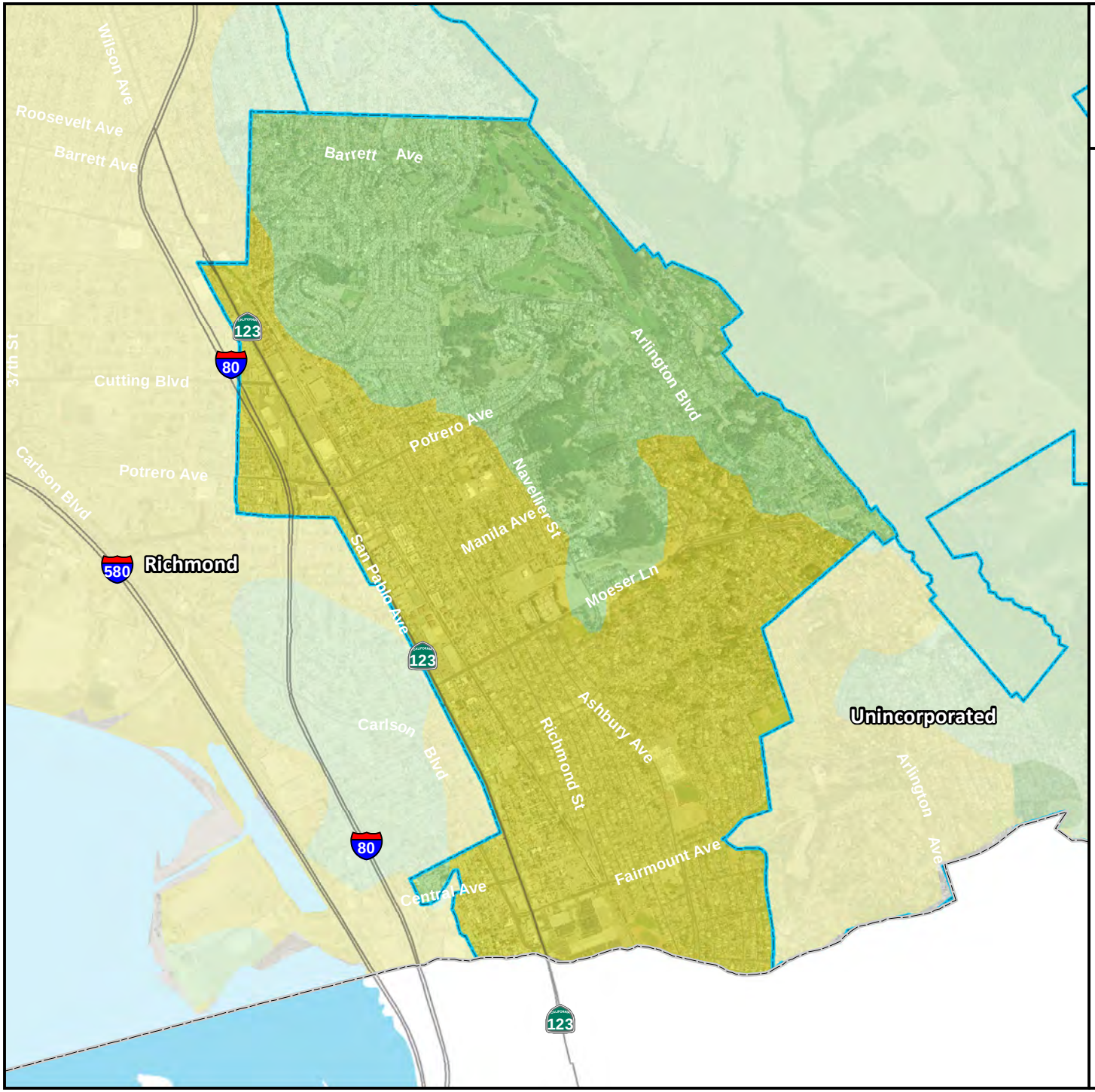
0 0.25 0.5 1

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The City of El Cerrito

National Earthquake Hazard Reduction Program (NEHRP) Soil Class

Contra Costa County Boundary

City Boundaries

Water Bodies

NEHRP Site Class / Soil Profile

B / Rock

C / Very Dense Soil - Soft Rock

D / Stiff Soil

E / Soft Soil

No Soil Data Available

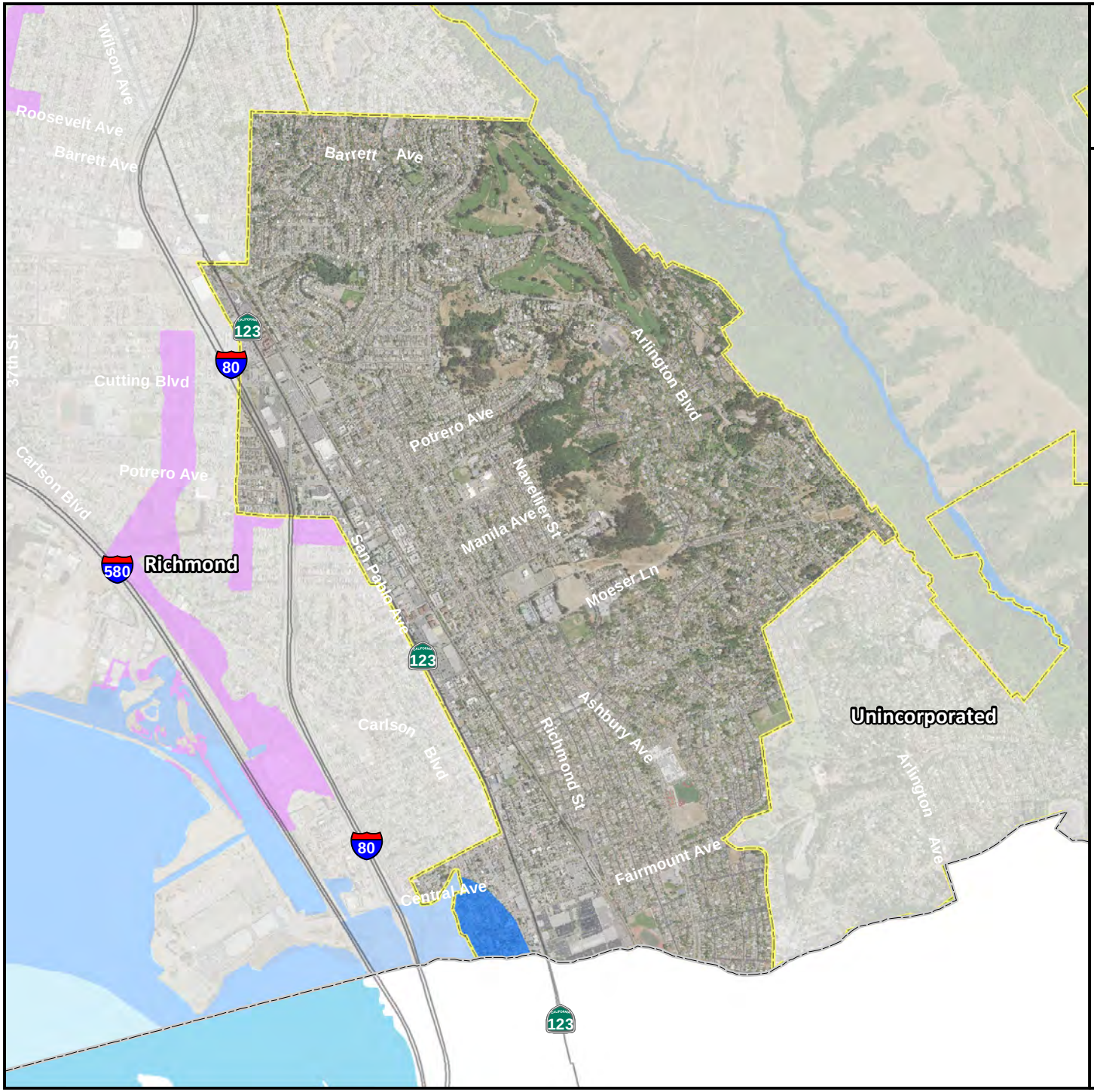
0 0.25 0.5 1

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Department of Conservation, USDA



The City of El Cerrito

FEMA DFIRM Flood Hazard Areas

- 1% Annual Chance (100-Year) Flood Zone
- 0.2% Annual Chance (500-Year) Flood Zone
- Contra Costa County Boundary
- City Boundaries
- Water Bodies

Flood hazard areas as depicted on Effective FEMA Digital Flood Insurance Rate Maps (DFIRM)

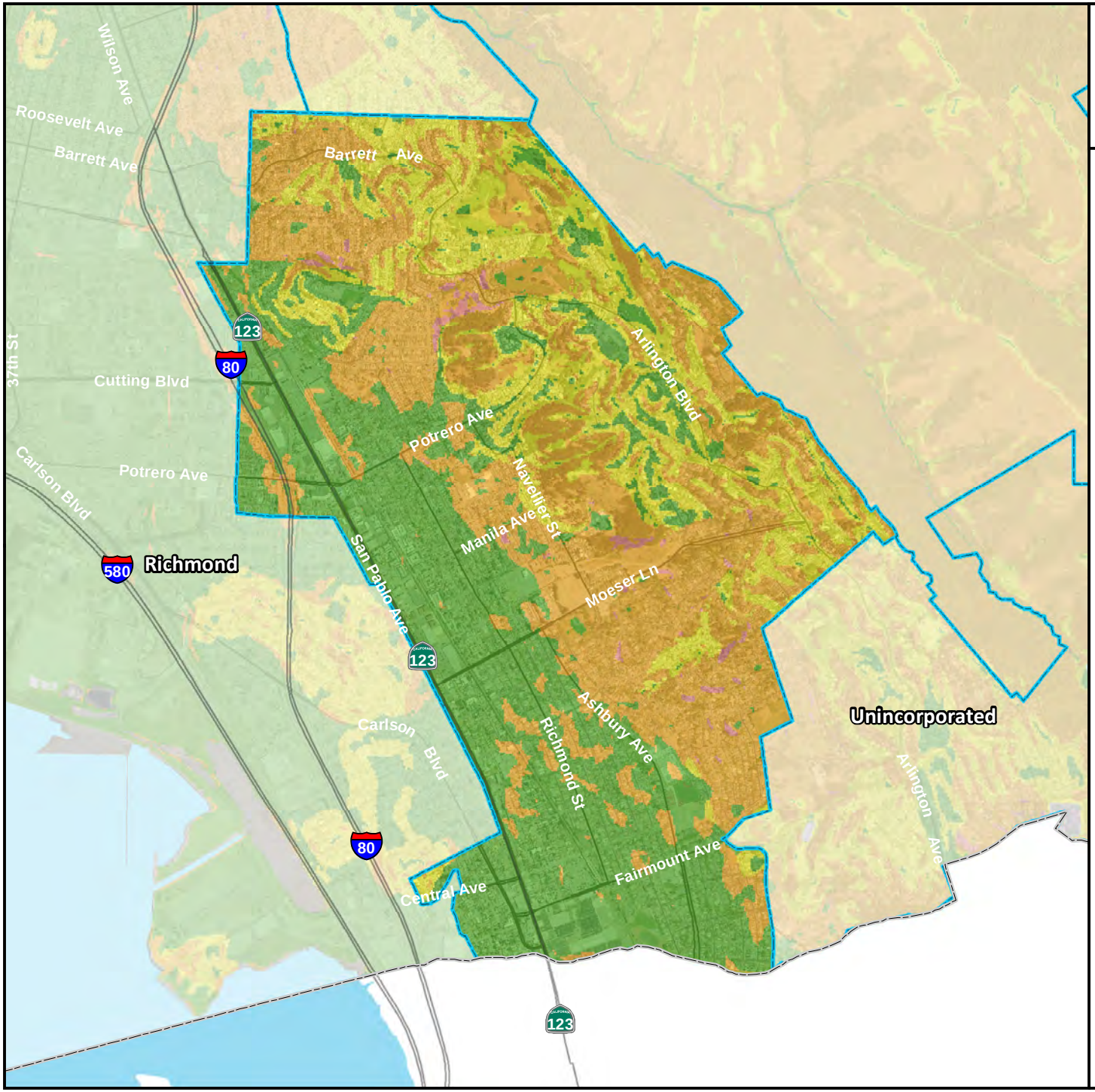
0 0.25 0.5 1

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, FEMA, USDA



The City of El Cerrito

Landslide Susceptibility Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Type

Low

Moderate

High

Very High / Existing

Data Not Available

Source dataset created by Wills C.J., Perez, F., Gutierrez, C., 2011, Susceptibility to deep-seated landslides in California: California Geological Survey Map Sheet 58

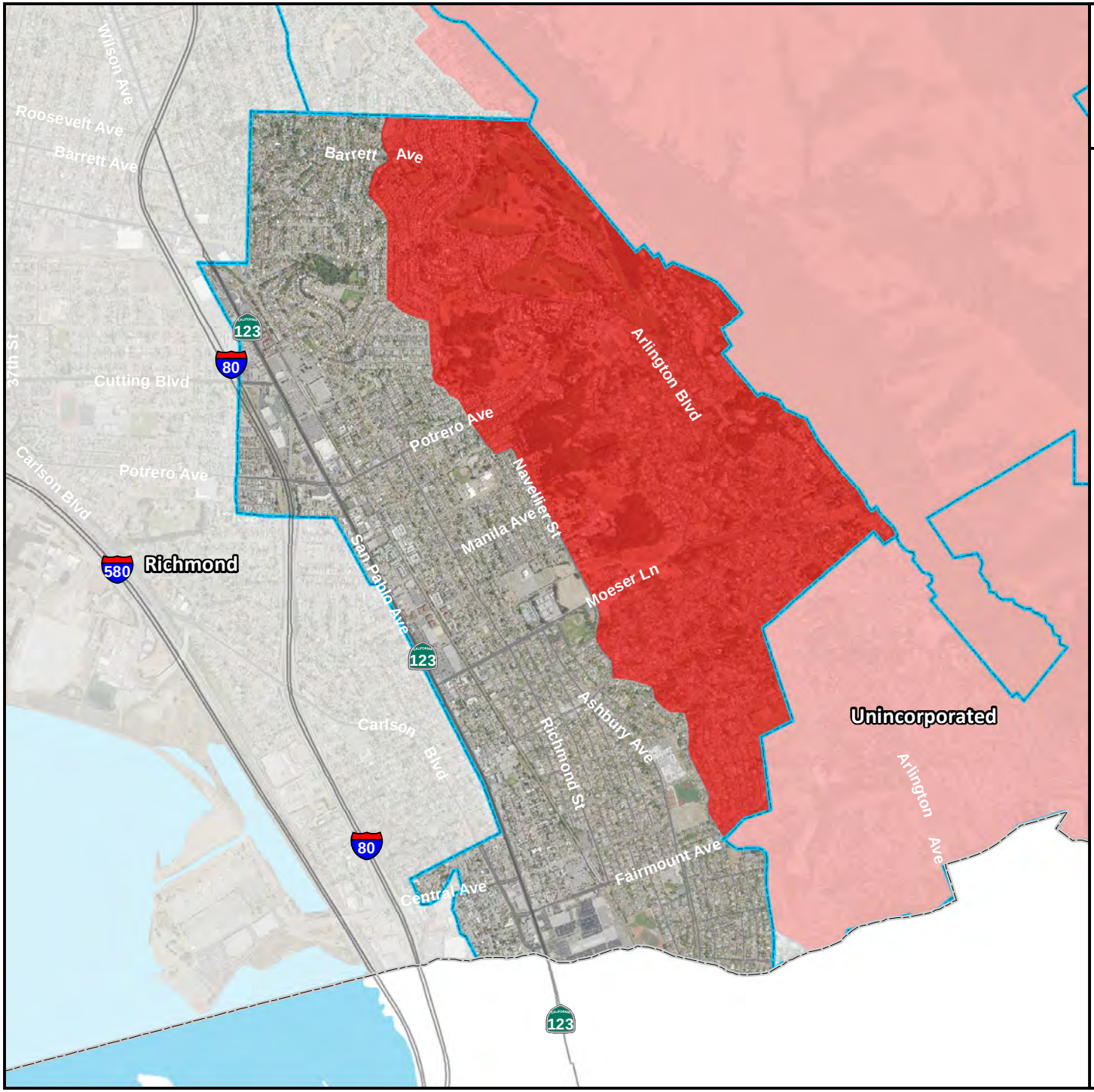
0 0.25 0.5 1

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The City of El Cerrito

Wildfire Severity Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Wildfire Severity Zone

Moderate

High

Very High

0 0.25 0.5 1

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, CalFIRE, USDA

7. CITY OF LAFAYETTE

7.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Cathy Surges-Moscato, Records Supervisor
3675 Mount Diablo Road
Lafayette, CA 94549
(925)299-3220
CSurges@ci.lafayette.ca.us

Alternate Point of Contact
Eric Christensen, Chief of Police
3675 Mount Diablo Road
Lafayette, CA 94549
(925) 299-3221
echri@so.cccounty.us

7.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation** —July 28, 1968
- **Current Population**— 25,199 (CA DOF estimate as of January 1, 2017)
- **Population Growth**—Less than 1 percent annual increase
- **Location and Description**—Lafayette has a total area of 15.4 square miles. 15.2 square miles of it is land and 0.2 square miles of it is water. The city is part of the greater San Francisco Bay Area and has its own station on the BART public transit system. Lafayette is situated between Walnut Creek, Moraga, and Orinda, and, together with the latter two towns, is considered locally as part of "Lamorinda." Lafayette is separated from greater Berkeley and Oakland by the Berkeley Hills (and the Caldecott Tunnel running beneath), a geographical boundary within the East Bay which also represents interesting meteorological, cultural, and political distinctions.
- **Brief History**—Lafayette's history began more than 10,000 years ago when the Saclans, a Miwok sub-group settled here in a number of villages. In 1797, the Saclans fought a battle with the Spaniards on what was later to become Lafayette soil.

  In 1847, Elam Brown, one of the first Yankee settlers in Contra Costa County, led a fourteen family wagon train through the Donner Pass just days before the ill-fated Donner party. When he arrived, Brown bought a 3,329 acre Mexican land grant called Rancho Acalanus, which is now almost all of present day Lafayette. He built his first of three homes in February of 1848, making it the first community in central Contra Costa County.
  Brown and his neighbor Nathaniel Jones became farmers. Tired of the 7-10 day trip to San Jose to the nearest mill, Brown built his own horse-drawn grist mill. With business going well, Brown decided to build a steam powered mill on Lafayette Creek near First street. Once that mill was built, the commercial center of Lafayette began to grow at the present day intersection of Mt. Diablo Blvd. and Moraga Road. These first businesses were a blacksmith's shop, a bar, a general store and rooming houses.
  During the 1850's redwood lumber harvested in Canyon and Moraga was hauled to Martinez for shipment to San Francisco. Lafayette became the ideal spot for people to rest, eat, drink, and repair their wagons during this long trip.
  Benjamin Shreve came to Lafayette after failing to make a fortune in the Gold Rush. He built and ran

Lafayette's first school. In 1857 Shreve became postmaster of the town and he decided to give it a name. It was previously called Acalanus, a different spelling of the land grant, but the town wanted an identity of its own. Previously assumed names were Dog Town, Brown's Corner, Brown's Mill, Acalanus, and Centerville. He requested the name Centerville, but it was rejected because there was another Centerville in the state. So he used his second choice, La Fayette. In 1932 it was changed to today's spelling, "Lafayette." The most historic event that occurred in Lafayette was in the early 1860's when the Pony Express rode through town stopping to get a fresh horse at what is now the intersection of Moraga Road and Mt. Diablo Blvd. It remained a quiet farming village until the post-World War II building boom when many houses were built here.

- **Climate**— Like the rest of the San Francisco Bay Area, Lafayette has a Mediterranean climate; however, the climate differences can be striking: during the summer, temperatures can soar beyond 100°F in Lafayette and its neighboring cities while the areas west of the hills and nearer to the bay remain up to 20 degrees cooler. Summers are warm, dry and very sunny (although mornings can be foggy); winters are cool and damp, with occasional freezes. Most of the annual rainfall comes in the winter, although there are still plenty of clear days during that time. The record high temperature is 115°F, set in July 1972. The record low temperature is 19°F, set in December 1990. The region directly east of the hills is generally known for its more suburban or rural atmosphere, and features rolling, grassy hills which highlight a more peaceful and domestic aura. In the southwestern part of Lafayette, is the Lafayette Reservoir, and Briones Regional Park extends into the northern part of Lafayette. Lafayette's wildlife communities include mixed woods and oak woodlands.
- **Governing Body Format**—The City of Lafayette is a general law city and functions as a Council-Manager form of government. Under the council-manager form, authority is concentrated in the elected council, which hires a professional administrator (City Manager) to implement its policies. The City Council is responsible for making policy, passing ordinances, voting appropriations, and having overall supervisory authority in the city government. In such a government, the Mayor acts as a member and presiding officer of the council. The Mayor serves a one-year term and performs various ceremonial duties on behalf of the City and Council. There are five elected officials who serve staggered 4-year terms. Their service is voluntary, with no monetary compensation. In addition to hiring the City Manager, the City Council also hires the City Attorney who serves as the City's primary legal advisor. The City has a wide variety of Commissions, Committees, and Subcommittees that are appointed by the City Council and are comprised of Lafayette residents. The City Council assumes responsibility for the adoption of this plan; and the City Manager will oversee its implementation.

7.3 DEVELOPMENT TRENDS

Since its adoption in 1974, the Lafayette General Plan has been the guiding force behind all of Lafayette's land-use decisions. Despite the continued pressures of residential growth, Lafayette strives to protect its ridgelines and sensitive hillside areas through the application of residential design guidelines, control of hillside densities, and the careful review of the environmental and visual impacts of development. The major themes of the General Plan are as follows:

- Maintain Lafayette's semi-rural character
- Maintain the character of existing residential neighborhoods
- Protect environmentally sensitive areas
- Reinforce Downtown as the City's center for business, civic and cultural activities
- Provide for housing opportunities
- Provide a network of trails and pedestrian paths
- Balance future growth with infrastructure.

Table 7-1 summarizes development trends in the performance period since development of the previous hazard mitigation plan and expected future development trends.

Table 7-1. Recent and Expected Future Development Trends

Criterion	Response					
Has your jurisdiction annexed any land since the development of the previous hazard mitigation plan? • If yes, give the estimated area annexed and estimated number of parcels or structures.	No N/A					
Is your jurisdiction expected to annex any areas during the performance period of this plan?	No					
Are any areas targeted for development or major redevelopment in the next five years? • If yes, please briefly describe	No N/A					
How many building permits were issued in your jurisdiction since the development of the previous hazard mitigation plan?		2012	2013	2014	2015	2016
	Single Family	13	6	11	13	6
	Multi-Family	49	9	143	3	70
	Other (commercial, mixed use, etc.)	0	0	0	0	0
Please provide the number of permits for each hazard area or provide a qualitative description of where development has occurred.	Development has occurred throughout the city during the performance period for this plan. For those hazards with a clearly defined extent and location, the City cannot estimate specific development impacts. For those hazards with impacts city-wide, it is safe to assume that this new development could be subject to impacts from those hazards. However, it is important to note that all new development was consistent with General Plan policies and municipal code standards and as a result most development has occurred outside of identified hazard zones.					

7.4 CAPABILITY ASSESSMENT

The City of Lafayette performed an inventory and analysis of existing capabilities, plans, programs and policies that enhance its ability to implement mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of legal and regulatory capabilities is presented in Table 7-2.
- Development and permitting capabilities are presented in Table 7-3.
- An assessment of fiscal capabilities is presented in Table 7-4.
- An assessment of administrative and technical capabilities is presented in Table 7-5.
- An assessment of education and outreach capabilities is presented in Table 7-6.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 7-7.
- Classifications under various community mitigation programs are presented in Table 7-8.
- The community's adaptive capacity for the impacts of climate change is presented in Table 7-9.

Table 7-2. Legal and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code *Comment: CA 2016 Building Code*	No	Yes	Yes	Yes
Zoning Code *Comment: LMC Title 6*	Yes	No	Yes	No
Subdivisions *Comment: LMC Title 6, Part 6*	Yes	No	Yes	No
Stormwater Management *Comment: LMC Title 5, Chapter 5*	Yes	No	Yes	No
Post-Disaster Recovery *Comment:*	No	No	No	No
Real Estate Disclosure *Comment: Cal. Civ. Code §1102 et seq.*	No	Yes	Yes	No
Growth Management *Comment: Cal. Gov. Code §65300 et seq.*	Yes	Yes	No	No
Site Plan Review *Comment: LMC Title 6*	Yes	Yes	No	No
Environmental Protection *Comment: California Environmental Quality Act*	Yes	Yes	Yes	No
Flood Damage Prevention *Comment: LMC Title 6, Part 4, Chapter 6-18*	Yes	Yes	Yes	No
Emergency Management *Comment: Title 8, Chapter 3*	Yes	Yes	Yes	Yes
Climate Change *Comment: California SB-379: Land Use: General Plan: Safety Element*	No	Yes	Yes	Yes
Other: *Comment: None identified*	N/A	N/A	N/A	N/A
Planning Documents				
General Plan *Is the plan compliant with Assembly Bill 2140?* Yes *Comment: Adopted by Resolution 2002-56*	Yes	Yes	Yes	No
Capital Improvement Plan *How often is the plan updated?* Annually *Comment:*	Yes	Yes	Yes	Yes
Floodplain or Watershed Plan *Comment: Contra Costa Flood Control and Water Conservation District*	No	Yes	Yes	No
Stormwater Plan *Comment: None located*	No	No	No	No
Urban Water Management Plan *Comment: East Bay Municipal Utility District*	No	Yes	No	No
Habitat Conservation Plan *Comment: East Contra Costa Habitat Conservation Plan*	No	Yes	Yes	No

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Economic Development Plan *Comment: Part of General Plan*	No	No	Yes	Yes
Shoreline Management Plan *Comment: None located*	No	No	No	No
Community Wildfire Protection Plan *Comment: Diablo Fire Safe Council*	No	Yes	Yes	No
Forest Management Plan *Comment: None located*	No	No	No	No
Climate Action Plan *Comment: City of Lafayette Environmental Action Plan, 2010*	Yes	Yes	Yes	No
Comprehensive Emergency Management Plan *Comment: Emergency Operations Plan, Contra Costa County OES*	Yes	Yes	Yes	Yes
Threat & Hazard Identification & Risk Assessment (THIRA) *Comment: None located*	No	No	No	No
Post-Disaster Recovery Plan *Comment: None located*	No	No	No	No
Continuity of Operations Plan *Comment: None located*	No	No	No	No
Public Health Plan *Comment: None located*	No	No	No	No
Other: *Comment: None identified*	N/A	N/A	N/A	N/A

Table 7-3. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? • If no, who does? If yes, which department?	Yes N/A
Does your jurisdiction have the ability to track permits by hazard area?	Yes, Although the City has the ability to track permits by hazard area, this capability is not currently being utilized.
Does your jurisdiction have a buildable lands inventory? • If yes, please briefly describe. • If no, please quantitatively describe the level of buildout in the jurisdiction.	Yes There is relatively little land in the City where additional development can occur. Most of the remaining vacant or underdeveloped land is located in environmentally constrained areas characterized by steep hillsides, oak woodlands, and unstable soil conditions; this land is designated Rural Residential on the Land Use Map. The majority of new single-family residential construction will be on infill lots scattered throughout the City's existing residential neighborhoods and in mixed-use developments located Downtown. A N/A

Table 7-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	Yes
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	No

Table 7-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Planning and Engineering
Engineers or professionals trained in building or infrastructure construction practices	Yes	Engineering
Planners or engineers with an understanding of natural hazards	Yes	Planning and Engineering
Staff with training in benefit/cost analysis	Yes	Planning and Engineering
Surveyors	No	N/A
Personnel skilled or trained in GIS applications	Yes	Planning and Engineering
Scientist familiar with natural hazards in local area	No	N/A
Emergency Manager	Yes	Administration, Police, Planning, Engineering
Grant writers	Yes	Administration, Police, Planning, Engineering
Other	No	N/A

Table 7-6. Education and Outreach Capability

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe.	No N/A
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe.	Yes Police Department and Emergency Preparedness Commission
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly describe.	Yes Public Works Commission Emergency Preparedness Commission
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe.	Yes Various email lists and notification systems
Do you have any established warning systems for hazard events? • If yes, please briefly describe.	Yes Nixle, CWS

Table 7-7. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	County
Who is your floodplain administrator? (department/position)	County
Are any certified floodplain managers on staff in your jurisdiction?	No
What is the date that your flood damage prevention ordinance was last amended?	Insert appropriate information
Does your floodplain management program meet or exceed minimum requirements? • If exceeds, in what ways?	Meets N/A
When was the most recent Community Assistance Visit or Community Assistance Contact?	Unknown
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? • If so, please state what they are.	No N/A
Do your flood hazard maps adequately address the flood risk within your jurisdiction? • If no, please state why.	Yes N/A
Does your floodplain management staff need any assistance or training to support its floodplain management program? • If so, what type of assistance/training is needed?	No N/A
Does your jurisdiction participate in the Community Rating System (CRS)? • If yes, is your jurisdiction interested in improving CRS Classification? • Is your jurisdiction interested in joining the CRS program?	No N/A No
How many Flood Insurance policies are in force in your jurisdiction?[a] • What is the insurance in force? • What is the premium in force?	212 $65,260,400 $223,914
How many total loss claims have been filed in your jurisdiction?[a] • How many claims were closed without payment/are still open? • What were the total payments for losses?	63 44/0 $173,138

a. According to FEMA statistics as of December 31, 2016

Table 7-8. Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	No	N/A	N/A
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A

Table 7-9. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: None provided*	Low
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: None provided*	Low
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: None provided*	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: None provided*	Low
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: None provided*	Low
Participation in regional groups addressing climate risks *Comments/Additional Information: None provided*	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: None provided*	Medium
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: None provided*	Low
Identified strategies for adaptation to impacts *Comments/Additional Information: None provided*	Low
Champions for climate action in local government departments *Comments/Additional Information: None provided*	Medium
Political support for implementing climate change adaptation strategies *Comments/Additional Information: None provided*	Medium
Financial resources devoted to climate change adaptation *Comments/Additional Information: None provided*	Low
Local authority over sectors likely to be negative impacted *Comments/Additional Information: None provided*	Low
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: None provided*	Medium
Local residents support of adaptation efforts *Comments/Additional Information: None provided*	Medium
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Medium
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

7.5 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

7.5.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the City of Lafayette made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **Lafayette General Plan Safety Element**— The City of Lafayette has a Safety Element in its General Plan that includes a discussion of fire, earthquake, flooding, and landslide hazards. This plan was adopted as an implementation appendix to the Safety Element.
- **City of Lafayette Municipal Code**—The Municipal Code was reviewed for relevant information regarding regulatory consistency with plan goals and objectives and opportunities for action plan integration. Portions of the Municipal Code create the disaster council and appoint an emergency manager for the City.
- **Capital Improvements Plan**—The Capital Improvements Plan was reviewed to identify cross-planning initiatives for inclusion as mitigation projects.
- **California Environmental Quality Act (CEQA)**—The City of Lafayette enforces the requirements of CEQA, which, since 1988, requires mitigation for identified natural hazards.

Resources listed in Section 7.12 were used to provide information for this annex on hazard events and local capabilities within the jurisdiction.

7.5.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the City of Lafayette will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan in actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Public Outreach**—Develop a program that addresses hazard mitigation as part of a targeted outreach program, expanding on what the City already has in the plan.
- **Climate Action Plan**—The implementation of the Climate Action Plan is consistent with the HMP's goal of mitigating natural hazards, in that it works to reduce greenhouse gas (GHG) emissions throughout the community, implement alternative fuel use, adopt a Green Building Ordinance for new construction, and implement a 75 percent waste diversion rate to slow the impacts of climate change, risks of increased sea levels, reduced snow packs, decreasing air quality, shifts in climate patterns and increased frequency of extreme weather events.

7.6 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 7-10 lists past occurrences of natural hazards for which specific damage was recorded in the City of Lafayette. Other hazard events that broadly affected the entire planning area, including the City of Lafayette, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 7-10. Past Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Severe Weather	DR-4308	FEB 17	Mudslides, roadway blockages, with debris flow $50,000
Severe Weather	DR-4305	Jan 2017	Mudslides, roadway slippage $250,000
Severe Weather	DR-4301	Jan 2017	$ 20,000
Freeze	N/A	Dec 2013	Freeze warning issued throughout Bay
Severe Weather	N/A	Dec 2012	Flooded roadways with $500,000 in damage to roadway culvert
Flood	DR-1628	12/17/2005 to 1/12/2006	Flooding and slides on multiple arterials and local roads
Oakland Hills Firestorm	N/A	1991	25 deaths; 150 injuries; 10,000 displaced; 3,400 homes damaged; $1.5 billion in damages
Earthquake (Loma Prieta)	DR-845	1989	$25 million in the County

7.7 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for the jurisdiction.

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 2
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: Unknown

Other noted vulnerabilities include the following:

- There are a number of historic buildings located within City limits that would be vulnerable to hazard events, particularly earthquake events.
- Approximately one-third of the population lives in areas designated as very high or high fire severity hazard.
- More than half of the population lives in areas designated as very high and high landslide susceptibility.

7.8 HAZARD RISK RANKING

Table 7-11 presents a local ranking for the City of Lafayette of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 7-11. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake[b]	54	High
1	Landslide[e]	54	High
1	Wildfire[e]	54	High
2	Severe weather	30	Medium
3	Dam and levee failure[a]	26	Medium
4	Flood[c]	18	Medium
5	Drought	9	Low
6	Sea level rise[d]	0	None
6	Tsunami	0	None

a. Based on the level of detail conducted in the risk assessment, the risk ranking for this hazard is focused solely on dam failure impacts. See Chapter 6.4 of Volume 1 for combined dam inundation list on which this assessment is based.
b. Haywired M7.05 event was used to assign probability and impacts
c. 1-percent annual chance event was used to assign probability and impacts
d. 2100 upper range estimates and extreme tide are used to assign probability and impacts
e. Very High and High severity zones were used to assign probability and impacts

7.9 STATUS OF PREVIOUS PLAN ACTIONS

Table 7-12 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 7-12. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update: Check if Yes	Carried Over to Plan Update: Enter Action #
1—Encourage owners of properties in floodplain to consider purchasing flood insurance			X	L-12
Comment: This will be done by the City Public Works Department in 3rd Qtr 2017				
2—Provide public information regarding hazard mitigation			X	L-13
Comment: This will be accomplished by the emergency preparedness Commission in the FY 17/18 Workplan.				
3— Create incentives for historic buildings to undertake mitigation			X	L-14
Comment: To be added to the Planning Department's FY 17/18 Workplan				
4—Prepare emissions inventory			X	L-15
Comment: This will be done by the environmental task force.				

7.10 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 7-13 lists the actions that make up the City of Lafayette hazard mitigation action plan. Table 7-14 identifies the priority for each action. Table 7-15 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 7-13. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency	Estimated Cost	Sources of Funding	Timeline
L-1— Where appropriate, support retrofitting or relocation of structures located in high hazard areas, prioritizing structures that have experienced repetitive losses or are exposed to hazards ranked as "high" (earthquake, landslide, wildfire)						
Existing	Earthquake, Landslide, Wildfire, Flood, Dam Failure	1, 4, 7, 9, 12, 14, 15, 17	Bldg. Dpt.	High	HMGP, PDM, FMA	Short-term
L-2— Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including the General Plan and the design review commission.						
New and Existing	All hazards that have a clearly defined extent and location: Dam Failure, Earthquake, Flood Landslide and Wildfire	1, 4, 5, 7, 11, 12, 14, 17	Planning Department	Low	Staff Time, General Funds	Ongoing
L-3— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All hazards assessed by this plan	3, 8, 16	Emergency Preparedness Coordinator	Low	Staff Time, General Funds	Short-term
L-4—Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: • Enforce the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts.						
New and Existing	Flood, Dam and Levee Failure	3, 5, 6, 9, 10, 11, 15	Engineering Dept.	Low	Staff Time, General Funds	Ongoing
L-5—Continue to support the Planning Area-wide actions identified in this plan.						
New and Existing	All hazards assessed by this plan	1, 4, 5, 6, 9	City manager	Low	Local Budget	Ongoing
L-6—Based on EOC staffing capabilities assessment, ensure that mandated training is provided to all employees in SEMS,FEMA ICS-100, ICS-200, IS-700, and IS-800; and ensure that employee training records are securely maintained						
Existing	All Hazards	1, 4, 5, 6, 9	Emergency Manager	Low	Local Budget	Ongoing
L-7—Based on EOC staffing capabilities assessment, ensure that mandated training is provided to employees who require advanced knowledge and application of the ICS, such as primary and alternate EOC Section Chiefs and senior field personnel, to include at least ICS-300, ICS-400, and the FEMA Professional Development Series; and ensure that employee training records are securely						
Existing	All Hazards	1, 4, 5, 6, 9	Emergency Manager	Low	Local Budget	Ongoing
L-8—Based on EOC staffing capabilities assessment, ensure that all Police Department staff who may be assigned the role of incident commander at an emergency/disaster scene have received Incident Commander training; and ensure that employee training records are securely maintained.						
Existing	All Hazards	1, 4, 5, 6, 9	Police Department	Medium	Local Budget	Ongoing
L-9—Monitor local availability of upcoming training opportunities for city staff regarding incident staffing, disaster response, and recovery.						
New	All Hazards	1, 4, 5, 6, 9	Emergency Manager	Medium	Local Budget	Ongoing
L-10—Conduct EOC tabletop exercise(s) to evaluate capabilities and train employees in their assigned EOC role(s).						
NA	All Hazards	1, 4, 5, 6, 9	Emergency Manager	Medium	Local Budget	Long-term
L-11—Exercise the city's Disaster Debris Management Plan.						
New	All Hazards	1, 4, 5, 6, 9	Emergency Manager	Medium	Local Budget	Long-term

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency	Estimated Cost	Sources of Funding	Timeline
L-12—Encourage owners of properties in floodplain to consider purchasing flood insurance						
Existing	Flood	3, 9	Public Works Department	Low	Staff Time, General Funds	Short-term
L-13—Provide public information regarding property protection measures for hazards that impact the City, with a priority given to hazards ranked as "high" (earthquake, landslide, wildfire).						
New and Existing	Earthquake, Landslide, Wildfire, Dam Failure, Drought, Flood and Severe Weather	3, 5	Emergency Preparedness Commission	Low	Staff Time, General Funds	Short-term
L-14—Create incentives for historic buildings to undertake mitigation						
Existing	Flood, Earthquake, Landslide, Dam and Levee Failure	3, 4, 5, 7	Planning Department	Low	Staff Time, General Funds	Short-term
L-15—Prepare emissions inventory						
Existing	Climate Change; All Hazards	11, 12, 18	Environmental Task Force	Low	Staff Time, General Funds	Short-term

Table 7-14. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
L-1	8	High	High	Yes	Yes	No	Medium	High
L-2	8	Medium	Low	Yes	No	Yes	High	Low
L-3	3	Low	Low	Yes	No	Yes	High	Low
L-4	7	Medium	Low	Yes	No	Yes	High	Low
L-5	5	Medium	Low	Yes	No	Yes	High	Low
L-6	5	Medium	Low	Yes	No	Yes	High	Low
L-7	5	Medium	Low	Yes	No	Yes	High	Low
L-8	5	Medium	Low	Yes	No	Yes	High	Low
L-9	5	Medium	Low	Yes	No	Yes	High	Low
L-10	5	Medium	Low	Yes	No	Yes	Medium	Low
L-11	5	Medium	Low	Yes	No	Yes	Medium	Low
L-12	2	Medium	Low	Yes	No	Yes	High	Low
L-13	2	Low	Low	Yes	No	Yes	High	Low
L-14	4	Medium	Low	Yes	No	Yes	High	Low
L-15	3	Low	Low	Yes	No	Yes	High	Low

a. See the introduction to this volume for explanation of priorities.

Table 7-15. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	L-2, 3, 5	L-1, 2, 3, 5	L-1, 2, 3, 13	L-1, 2, 3	L-5, 6, 7, 8, 9, 10, 11	L-1, 2, 3	L-1, 2, 3, 5, 15	L-1, 2, 3, 5, 15
Dam and Levee failure	L-4, 14	L-4	L-4, 12					L-12
Drought								
Earthquake	L-14							
Flood	L-4, 14	L-4	L-4, 12					L-12
Landslide	L-14							
Severe weather								
Tsunami								
Wildfire								

a. See the introduction to this volume for explanation of mitigation types.

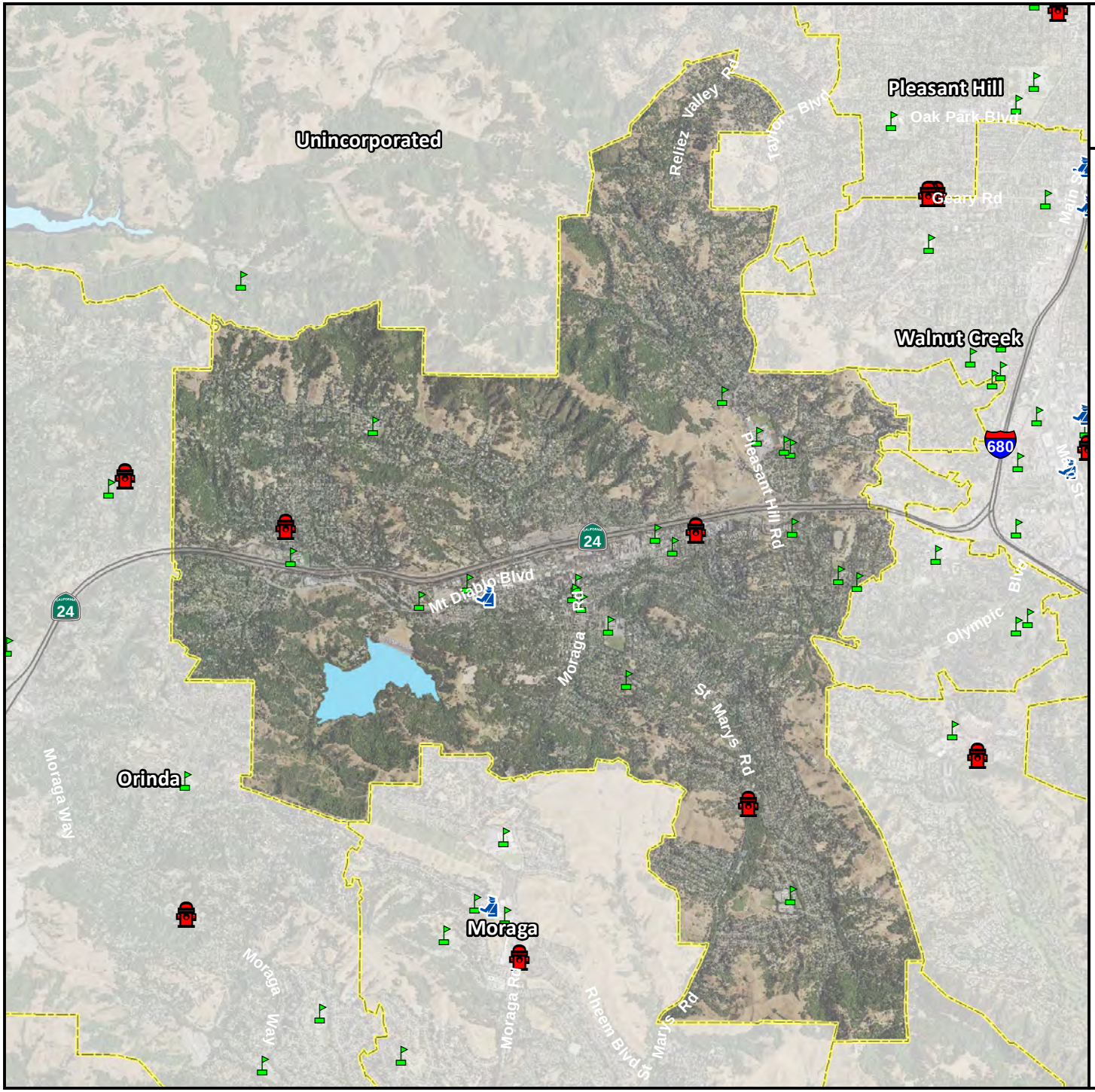
7.11 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

Assigning this task to the City's Emergency Preparedness Commission would result in significantly greater understanding of the risks and vulnerabilities facing the community, and would provide needed ongoing support.

7.12 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **City of Lafayette Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Lafayette Flood Damage Prevention Ordinance**—The flood damage prevention ordinance was reviewed for compliance with the National Flood Insurance Program.
- California Department of Finance (DOF), 2016, Population Estimates for Cities, Counties, and the State – January 1, 2015 and 2016
- California Office of Historic Preservation (OHP), 2016, http://ohp.parks.ca.gov/ListedResources/Detail/503, Site of First County Courthouse
- Swenson, T. 2005, http://museumoflocalhistory.org/wordpress2/wp-content/uploads/2014/10/UCcollection.pdf, used for brief history discussion
- The Weather Company (TWC), 2016 http://www.intellicast.com/Local/History.aspx?location=USCA1177, used in development of jurisdiction profile
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.



The City of Lafayette

Critical Facilities

- Emergency Operations Centers (Government)
- Fire Stations (Protective Functions)
- Hazardous Materials
- Medical Facilities
- Police Stations (Protective Functions)
- Schools & Educational Facilities
- Contra Costa County Boundary
- City Boundaries

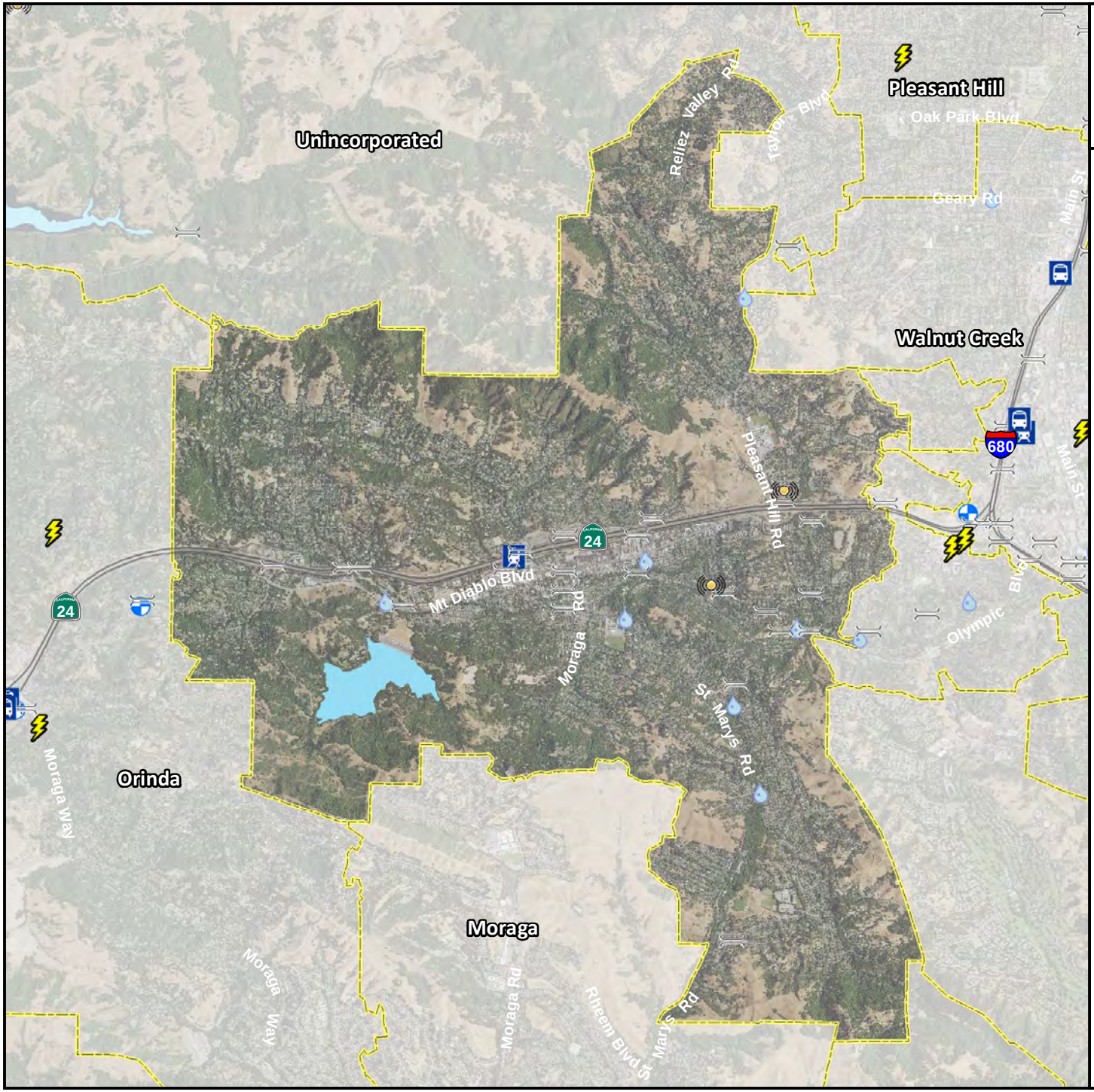
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of Lafayette

Critical Infrastructure

- Airports (Other Critical Functions)
- Bus Facilities (Other Infrastructure)
- Communication Facilities
- Electric Power Facilities
- Highway Bridges
- Highway Tunnels (Other Infrastructure)
- Light Rail (Other Infrastructure)
- Natural Gas (Other Infrastructure)
- Port Facilities (Other Critical Functions)
- Water Supply Facilities
- Rail Facilities (Other Infrastructure)
- Wastewater Facilities
- Contra Costa County Boundary
- City Boundaries

0 0.5 1 2

Miles

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W E
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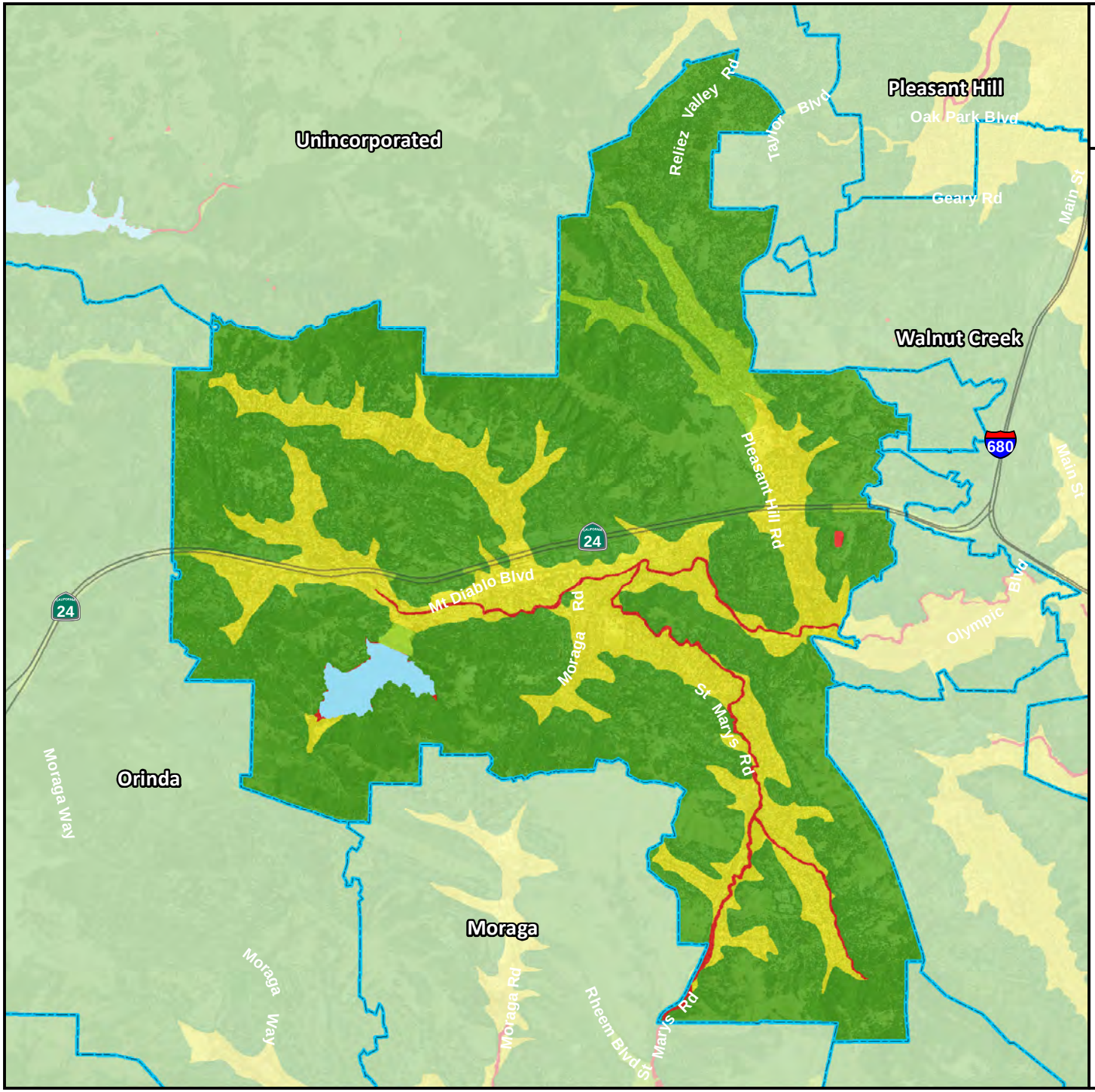
TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of Lafayette

Liquefaction Susceptibility

- Contra Costa County Boundary
- City Boundaries
- Water Bodies

Susceptibility to Liquefaction

- Very Low
- Low
- Medium
- High
- Very High
- No Liquefaction Data Available

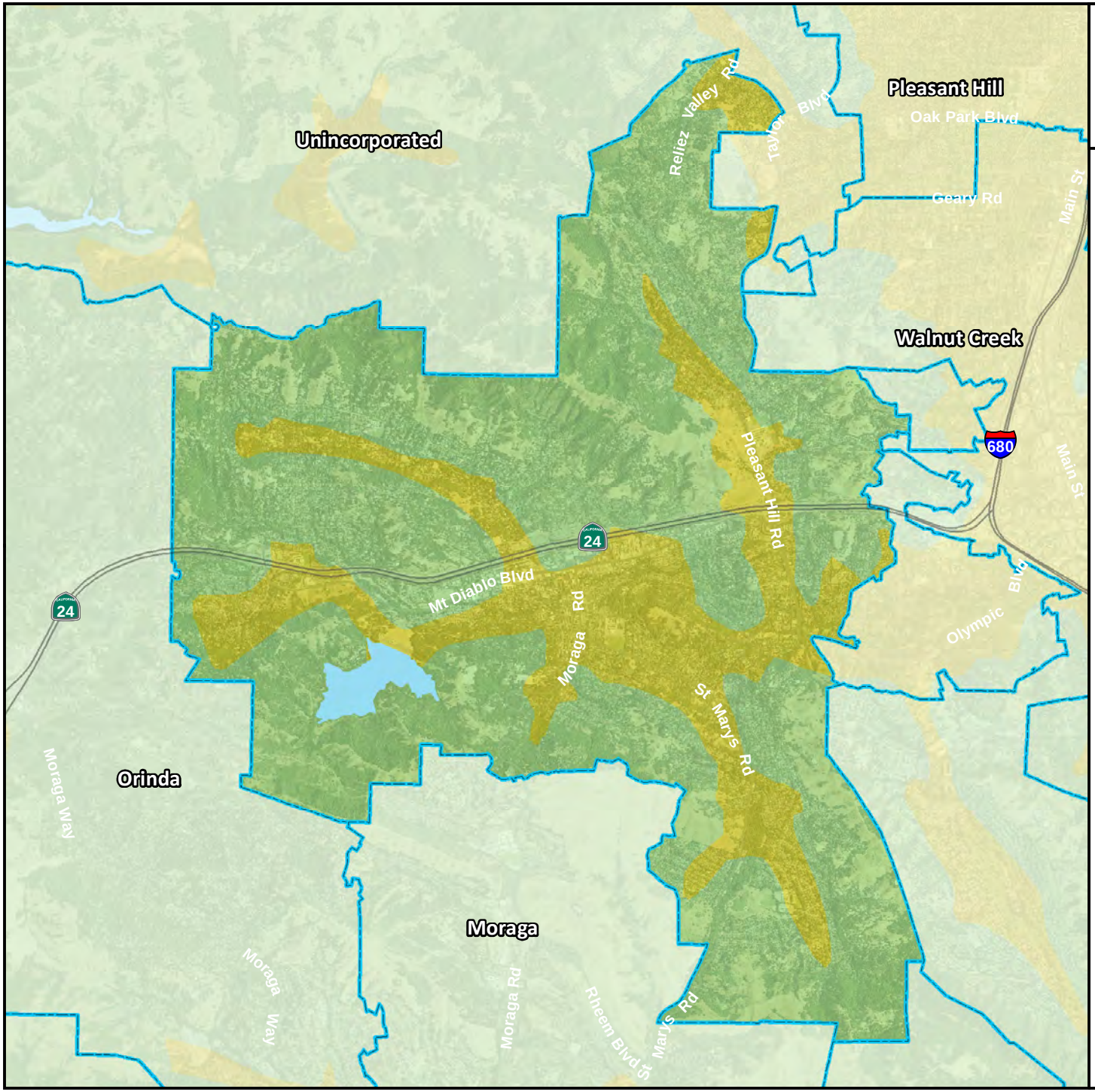
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The City of Lafayette

National Earthquake Hazard Reduction Program (NEHRP) Soil Class

Contra Costa County Boundary

City Boundaries

Water Bodies

NEHRP Site Class / Soil Profile

- B / Rock
- C / Very Dense Soil - Soft Rock
- D / Stiff Soil
- E / Soft Soil
- No Soil Data Available

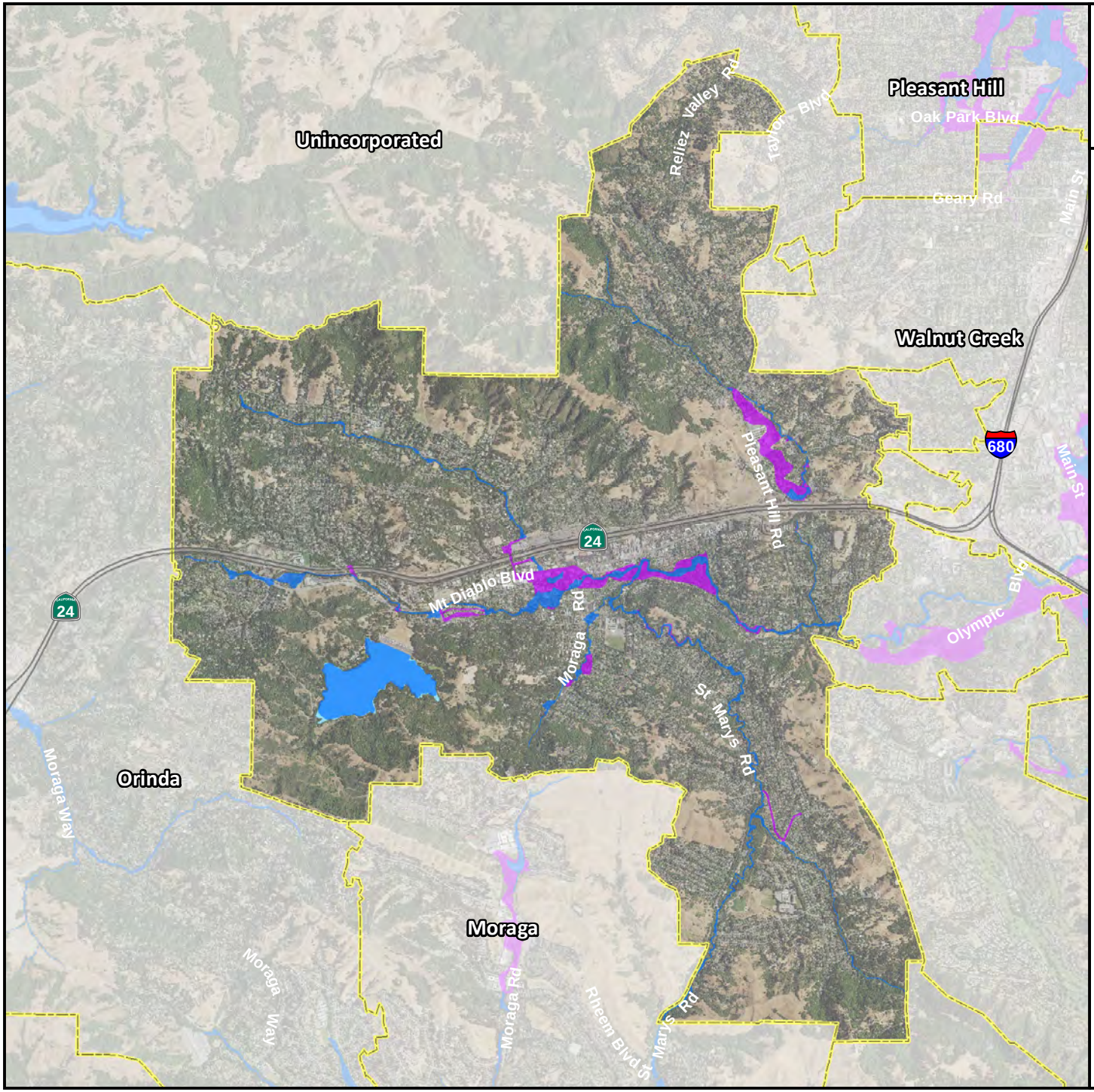
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Department of Conservation, USDA



The City of Lafayette

FEMA DFIRM Flood Hazard Areas

- 1% Annual Chance (100-Year) Flood Zone
- 0.2% Annual Chance (500-Year) Flood Zone
- Contra Costa County Boundary
- City Boundaries
- Water Bodies

Flood hazard areas as depicted on Effective FEMA Digital Flood Insurance Rate Maps (DFIRM)

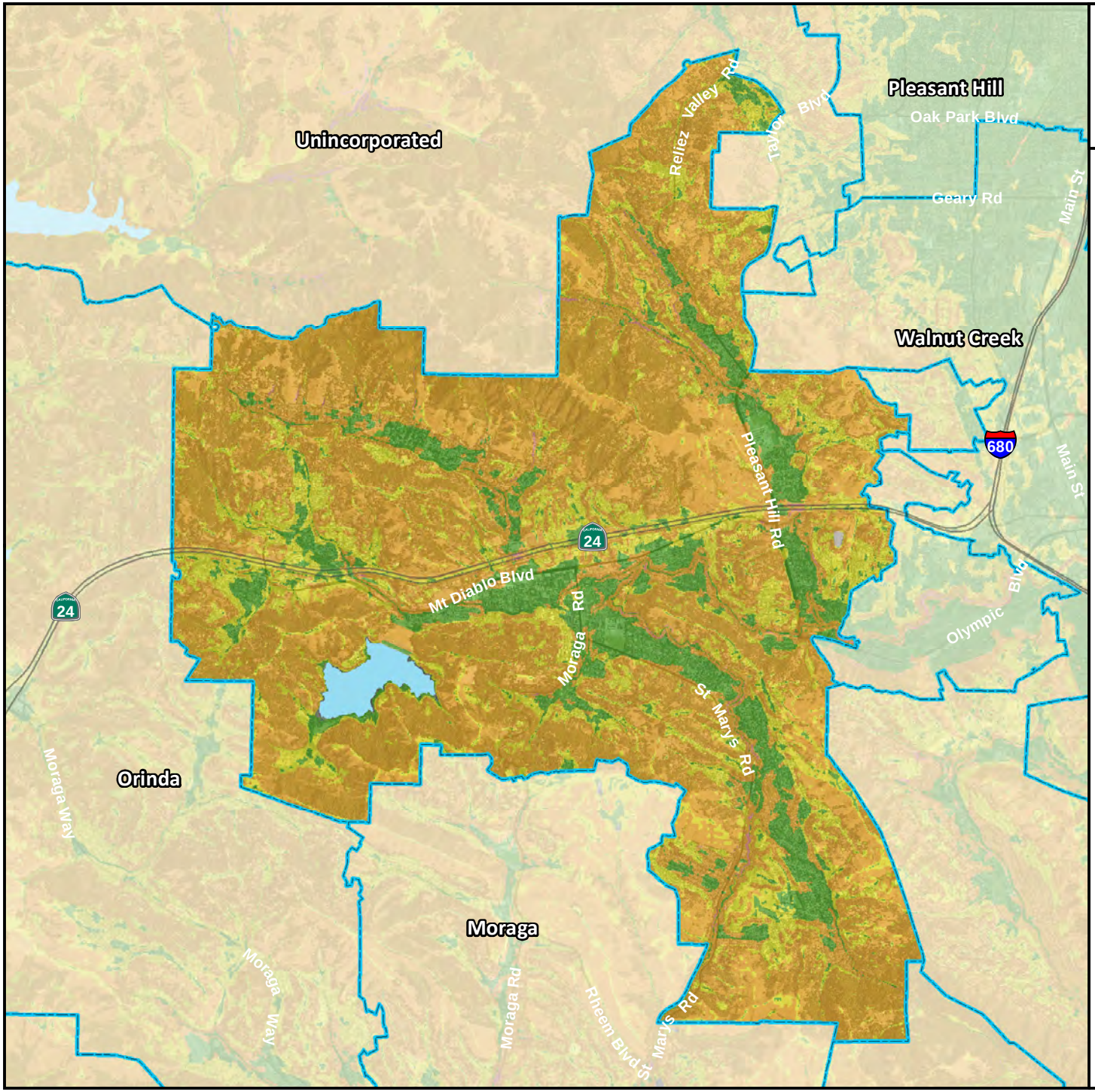
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, FEMA, USDA



The City of Lafayette

Landslide Susceptibility Zones

Contra Costa County Boundary
City Boundaries
Water Bodies

Type

Low
Moderate
High
Very High / Existing
Data Not Available

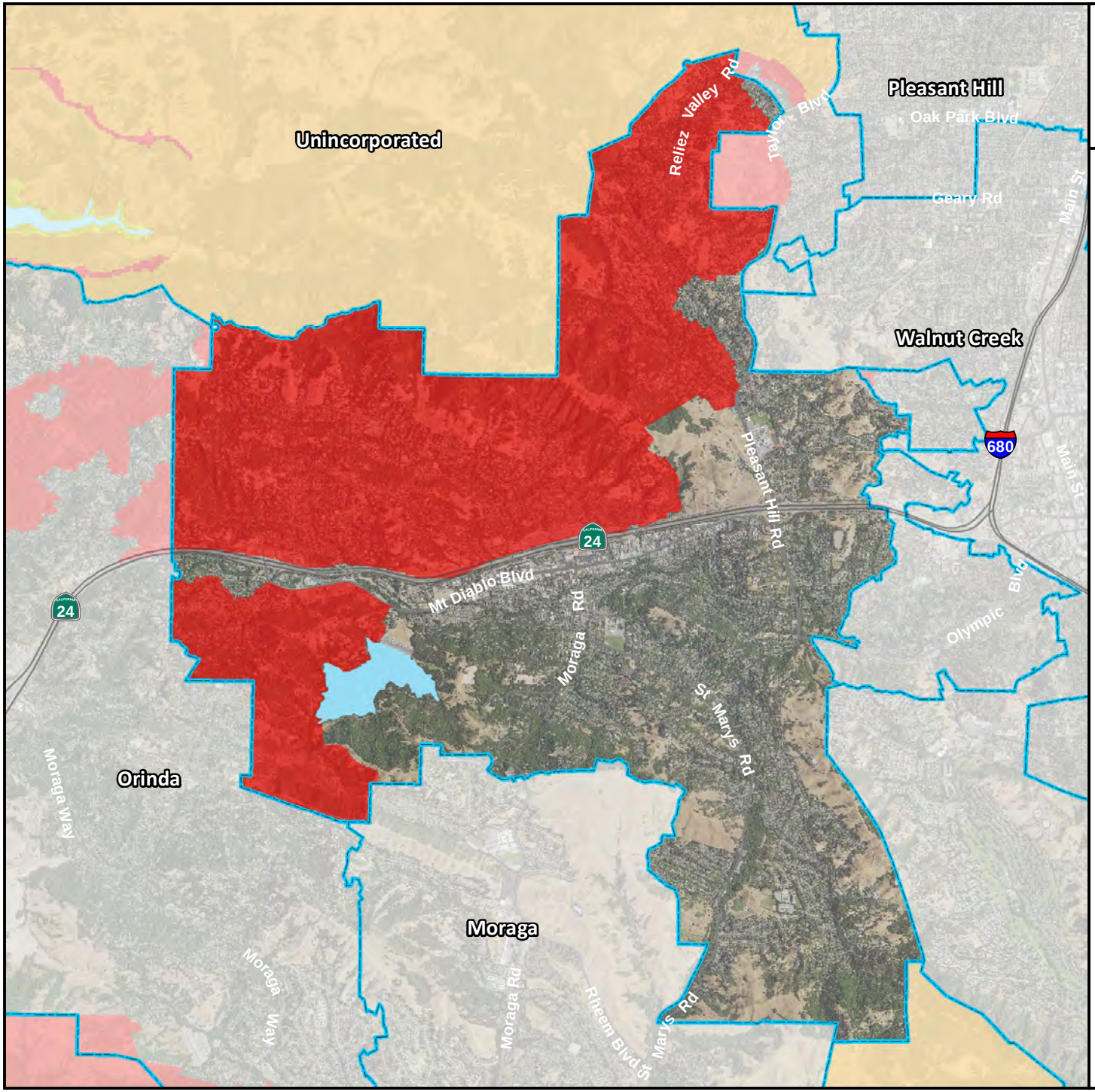
Source dataset created by Wills C.J., Perez, F., Gutierrez, C., 2011, Susceptibility to deep-seated landslides in California: California Geological Survey Map Sheet 58

0 0.5 1 2
Miles

N
W E
S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The City of Lafayette

Wildfire Severity Zones

Contra Costa County Boundary
City Boundaries
Water Bodies

Wildfire Severity Zone

Moderate
High
Very High

0 0.5 1 2
Miles

N
W E
S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, CalFIRE, USDA

8. CITY OF MARTINEZ

8.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Tim Tucker, City Engineer
525 Henrietta Street
Martinez, CA 94553
Telephone: 925-372-3562
e-mail Address: ttucker@cityofmartinez.org

Alternate Point of Contact

Eric Ghisletta, Commander
525 Henrietta Street
Martinez, CA 94553
Telephone: 925-372-3447
e-mail Address: eghisletta@cityofmartinez.org

8.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation**—1876
- **Current Population**—37,658 (CA Dept. of Finance 1/1/2016)
- **Population Growth**—The City of Martinez is generally a built out community. Based on Federal census data the population of Martinez showed no increase from 2000 to 2010. Since the end of the Great Recession several stalled housing development were constructed increasing the housing stock in Martinez. In addition, an annexation of developed unincorporated county territory occurred in 2004. This has resulted in a minor (2.7 percent) population increase since 2000, which includes a 1.2 percent increase for 2006.
- **Location and Description**—Martinez is generally carved into rolling hills. The developed area ranges in elevation from sea level at the marina to approximately 500 feet above sea level at the southwest portion of town. Martinez is bordered to the west by East Bay Regional Park Land open space. The City of Pleasant Hill borders the town to the south and southwest. Shell Refinery property borders the town to the east from Pacheco Boulevard to the shoreline. The city is bisected by State Route 4. Two major rail lines (BNSF Railway and Union Pacific) with accompanying fuel lines also bisect the city. BNSF Railway runs through the central portion of the city, surrounded primarily by residential development; Union Pacific primarily runs parallel to the shoreline along the northern border of the downtown business district.
- **Brief History**—Incorporated in 1876, Martinez is the county seat of Contra Costa County. It is located along the Sacramento and San Joaquin Rivers in the central part of the county. The City's roots can be traced to the late 1840s, when it served as a ferryboat transit point across the Carquinez straits on the way to the gold fields. By the time of its incorporation, Martinez had evolved into one of the area's most significant trading posts and shipping ports. Today, the City covers 12.5 square miles and has approximately 36,700 residents. As one of California's first towns, Martinez retains a strong sense of history and family. The renowned naturalist John Muir made Martinez his home for nearly a quarter of a century and in 1915, the year after Muir's passing, baseball star Joe DiMaggio was born here. Many of the downtown shops retain their early 20th century look and charm, and some homes date back more than 125 years.

Martinez has modernized both its infrastructure and its downtown. The City opened an award-winning Intermodal Facility in 2001 that has become a popular stop along the Amtrak line. It also completed a major restoration of Alhambra Creek that beautifies the downtown and controls flooding, and has embarked on a program to make Martinez a cultural-historical attraction as the home of the John Muir Festival Center. An outdoor amphitheater is the first realization of this long-term program.

- **Governing Body Format—**Martinez is governed by an elected Mayor and City Council. The City is run through a City Manager office. Current departments are Police Services, Finance, Administrative Services, City Attorney (contracted), Public Works (building and maintenance), and Community and Economic Development (engineering, planning, recreation and economic development).
  The City operates a water system managed through the Public Works Department. The water system serves approximately 10,000 customers, including unincorporated Alhambra Valley and the Mountain View area and a small portion of Pleasant Hill. Contra Costa Water District provides potable water to a southwestern portion of the City.
  Sanitary services are provided by two independent districts. Central Contra Costa Sanitary District serves the western and southwestern portion of Martinez. Sewage primarily flows via a gravity system to a pump station near the shoreline at the west end of town. Sewage is then pumped to the District's treatment facility in north Concord. Mt. View Sanitary District serves the eastern and southeastern portion of Martinez. Its system flows via a gravity system to a pump station east of Morello Avenue adjacent to the BNSF Railway right of way. Sewage is then pumped to a treatment plant on the west side of I-680 north of Pacheco Boulevard.
  Fire service is provided by Contra Costa County Fire Protection District, which staffs several fire stations in and round Martinez. Development plans for commercial and residential subdivisions are routed to the fire district for review. The District also provides routine and new construction inspections.
  The Contra Costa County Flood and Conservation District does not have jurisdiction or own or operate flood control improvements within the City. The City has adopted many of the flood district's standards. The Public Works Director is the City's floodplain manager. He implements FEMA flood protection requirements.
  City Council assumes responsibility for adoption of this plan, City Manager will oversee its implementation.

8.3 DEVELOPMENT TRENDS

Development trends for the City of Martinez are anticipated to be low to moderate, consisting primarily of residential development. California law requires counties and cities to prepare and adopt a comprehensive long range plan to guide community development. The plan must consist of an integrated and internally consistent set of goals, policies, and implementation measures. In addition, the plan must focus on issues of the greatest concern for the community and be written in a clear and concise manner. City actions, such as those relating to land use allocations, annexations, zoning, subdivision and design review, redevelopment, and capital improvements, must be consistent with the plan. The City of Martinez adopted its general plan under this state mandate in 1973 and has made continuous updates pursuant to state and local requirements since its inception. A major update will be completed to the general plan in 2017. Future growth and development in the City of Martinez will be managed as identified in the general plan.

Table 8-1 summarizes development trends in the performance period since development of the previous hazard mitigation plan and expected future development trends.

Table 8-1. Recent and Expected Future Development Trends

Criterion	Response					
Has your jurisdiction annexed any land since the development of the previous hazard mitigation plan? • If yes, give the estimated area annexed and estimated number of parcels or structures.	Yes Alhambra Valley Annexation, 2012 316.4 acres comprised of 104 parcels, the majority of which are developed single family residents.					
Is your jurisdiction expected to annex any areas during the performance period of this plan?	No					
Are any areas targeted for development or major redevelopment in the next five years? • If yes, please briefly describe	No N/A					
How many building permits were issued in your jurisdiction since the development of the previous hazard mitigation plan?		2012	2013	2014	2015	2016
	Single Family	3	30	48	43	23
	Multi-Family	0	1	0	1	0
	Other (commercial, mixed use, etc.)	0	1	1	1	1
Please provide the number of permits for each hazard area or provide a qualitative description of where development has occurred.	• Special Flood Hazard Areas: 3 • Landslide: 0 • High Liquefaction Areas: 0 • Dam Failure Inundation Area: 0 • Wildfire Risk Areas: 3					

8.4 CAPABILITY ASSESSMENT

The City of Martinez performed an inventory and analysis of existing capabilities, plans, programs and policies that enhance its ability to implement mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of legal and regulatory capabilities is presented in Table 8-2.
- Development and permitting capabilities are presented in Table 8-3.
- An assessment of fiscal capabilities is presented in Table 8-4.
- An assessment of administrative and technical capabilities is presented in Table 8-5.
- An assessment of education and outreach capabilities is presented in Table 8-6.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 8-7.
- Classifications under various community mitigation programs are presented in Table 8-8.
- The community's adaptive capacity for the impacts of climate change is presented in Table 8-9.

Table 8-2. Legal and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code	Yes	No	Yes	Yes
Comment: 2013 (CBC), Title 15, Chapter 15.04.010 MMC, adopted 12/4/2013				
Zoning Code	Yes	No	No	Yes
Comment: Title 22 MMC				
Subdivisions	Yes	No	Yes	Yes
Comment: Title 21 MMC				
Stormwater Management	Yes	No	Yes	Yes
Comment: Title 15, Sec 15.06 MMC				
Post-Disaster Recovery	No	No	No	Yes
Comment: None Located				
Real Estate Disclosure	No	Yes	Yes	No
Comment: CA Code 1102 requires disclosure on natural hazard exposure for sale of all real property				
Growth Management	Yes	Yes	No	No
Comment: Cal. Gov. Code §65300 et seq.				
Site Plan Review	Yes	No	No	Yes
Comment: Title 22, Sec 34 MMC last updated 2000				
Environmental Protection	Yes	Yes	Yes	Yes
Comment: CEQA review of new Projects				
Flood Damage Prevention	Yes	No	Yes	Yes
Comment: Title 15 Sec 15.30 MMC				
Emergency Management	Yes	No	No	Yes
Comment: Title 14				
Climate Change	Yes	No	Yes	Yes
Comment: Refer to Martinez Climate Action Plan				
Other:	No	No	No	No
Comment: None identified				
Planning Documents				
General Plan	No	Yes	Yes	Yes
Is the plan compliant with Assembly Bill 2140? No				
Comment: General Plan currently being updated (2017) including to be consistent with AB 2140.				
Capital Improvement Plan	Yes	No	No	Yes
How often is the plan updated? Bi-annually				
Comment: 5-Year CIP Required by CCTA				
Floodplain or Watershed Plan	No	Yes	No	Yes
Comment: FEMA, CA Water Resource Board, Basin Plan				
Stormwater Plan	Yes	Yes	Yes	No
Comment: CA Water Resource Board, Basin Plan				
Urban Water Management Plan	Yes	No	Yes	Yes
Comment: Urban Water Management Plan 2010 Update				
Habitat Conservation Plan	No	Yes	No	No
Comment: East Contra Costa County Habitat Conservation Plan, The East Contra Costa County Habitat Conservancy, 12/19/2006				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Economic Development Plan	Yes	No	No	No
Comment: City of Martinez, Downtown Specific Plan, 2006				
Shoreline Management Plan	No	Yes	Yes	No
Comment: California Coastal Commission				
Community Wildfire Protection Plan	No	Yes	Yes	Yes
Comment: Diablo Fire Safe Council, Community Wildfire Protection Plan, Contra Costa County				
Forest Management Plan	No	No	No	No
Comment: None located				
Climate Action Plan	Yes	No	Yes	No
Comment: City of Martinez Climate Action Plan, June 2009				
Comprehensive Emergency Management Plan	Yes	No	No	Yes
Comment: Contra Costa Operational Area, Emergency Operations Plan, 2011				
Threat & Hazard Identification & Risk Assessment (THIRA)	No	No	No	No
Comment: None located				
Post-Disaster Recovery Plan	Yes	No	No	Yes
Comment: Contra Costa Operational Area, Earthquake, Concept of Operations Plan, 2010				
Continuity of Operations Plan	No	No	No	No
Comment: None located				
Public Health Plan	No	Yes	No	No
Comment: Contra Costa Health Services, Public Health Division				
Other:	No	No	No	No
Comment: None identified				

Table 8-3. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? • If no, who does? If yes, which department?	Yes Community Development Department
Does your jurisdiction have the ability to track permits by hazard area?	Yes
Does your jurisdiction have a buildable lands inventory? • If yes, please briefly describe. • If no, please quantitatively describe the level of buildout in the jurisdiction.	No N/A 94%

Table 8-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes (Voter approval, Prop 218 regulated)
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes (Voter approval, Prop 218 regulated)
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	No

Table 8-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Community and Economic Development Dept. (CEDD)
Engineers or professionals trained in building or infrastructure construction practices	Yes	CEDD
Planners or engineers with an understanding of natural hazards	Yes	CEDD
Staff with training in benefit/cost analysis	Yes	CEDD, Engineering Division
Surveyors	No	
Personnel skilled or trained in GIS applications	Yes	CEDD
Scientist familiar with natural hazards in local area	No	
Emergency Manager	Yes	Police/City Manager
Grant writers	No	
Other	No	

Table 8-6. Education and Outreach Capability

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe.	Yes GIS Community View Maps (FIRM info)
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe.	No N/A
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly describe.	No N/A
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe.	Yes e-mail
Do you have any established warning systems for hazard events? • If yes, please briefly describe.	Yes Shelter in Place sirens

Table 8-7. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Public Works Dept., Building Division
Who is your floodplain administrator? (department/position)	Public Works/Deputy Director
Are any certified floodplain managers on staff in your jurisdiction?	Yes
What is the date that your flood damage prevention ordinance was last amended?	2015
Does your floodplain management program meet or exceed minimum requirements? • If exceeds, in what ways?	Meets N/A
When was the most recent Community Assistance Visit or Community Assistance Contact?	2015
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? • If so, please state what they are.	No N/A
Do your flood hazard maps adequately address the flood risk within your jurisdiction? • If no, please state why.	Yes N/A
Does your floodplain management staff need any assistance or training to support its floodplain management program? • If so, what type of assistance/training is needed?	Yes FEMA refresher courses e.g. Managing Floodplain Development
Does your jurisdiction participate in the Community Rating System (CRS)? • If yes, is your jurisdiction interested in improving CRS Classification? • Is your jurisdiction interested in joining the CRS program?	No N/A Yes
How many Flood Insurance policies are in force in your jurisdiction?[a] • What is the insurance in force? • What is the premium in force?	529 $135,481,900 $638,943
How many total loss claims have been filed in your jurisdiction?[a] • How many claims were closed without payment/are still open? • What were the total payments for losses?	130 48/0 $45,417

a. According to FEMA statistics as of December 31, 2016

Table 8-8. Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection[a]	Yes	3/9	N/A
Storm Ready[b]	No	N/A	N/A
Firewise	No	N/A	N/A

a. The City of Martinez is part of the Contra Costa Consolidated Fire District
b. Contra Costa County is a Storm Ready County

Table 8-9. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: 2016 Adapting to Rising Tide (ART) Project*	High
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: None provided*	High
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: Requires consultant assistance*	Medium
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: None provided*	High
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: None provided*	Medium
Participation in regional groups addressing climate risks *Comments/Additional Information: None provided*	High
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: None provided*	High
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: None provided*	High
Identified strategies for adaptation to impacts *Comments/Additional Information: None provided*	Medium
Champions for climate action in local government departments *Comments/Additional Information: None provided*	High
Political support for implementing climate change adaptation strategies *Comments/Additional Information: None provided*	High
Financial resources devoted to climate change adaptation *Comments/Additional Information: None provided*	Medium
Local authority over sectors likely to be negative impacted *Comments/Additional Information: None provided*	Medium
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: None provided*	Medium
Local residents support of adaptation efforts *Comments/Additional Information: None provided*	Medium
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Medium
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Medium
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Medium

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

8.5 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

8.5.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the City of Martinez made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **2017-2022 Capital Improvement Program—**The Capital Improvement Program list both funded and unfunded projects. Funded projects include the removal of accumulated silt in drainage conveyance systems, primarily Alhambra Creek, in the downtown area. The segment of Alhambra Creek from Green street to the Bay Trail pedestrian bridge is the maintenance responsibility of the City of Martinez. It is anticipated that accumulated silt well be removed in these areas in 2018 returning the facilities to "As Built" capacity when completed. Unfunded projects include major storm drain infrastructure projects that would be designed to reduce the likelihood of flooding in the identified flood zone along the Alhambra Avenue corridor.
- **2017-19 Maintained Operating Budget**—The annual maintenance budget includes funding (NPDES) for the clearing of ditches and roadway culverts. This maintenance activity is completed just prior to the rainy season each year. This activity is intended to reduce local flooding due to blocked drainage facilities.
- **Seismic Retrofit Program**—Over the previous plan period the City adopted an ordinance requiring retrofit of un-reinforced masonry structures located in the downtown. All but one facility has been either demolished, retrofitted or is currently being retrofitted. The remaining building will be retrofitted over by the end of 2018.
- **NPDES Program**—One component of the City's NPDES permit addresses new development stormwater run-off controls. Storm water is required to be treated and detained. Stormwater runoff cannot exceed predevelopment levels for the 10-year storm.
- **Climate Action Plan**—The City's Climate action Plan includes projects for reducing greenhouse gas emissions and adapting to likely impact of climate changes.

Resources listed in Section 8.12 were used to provide information for this annex on hazard events and local capabilities within the jurisdiction.

8.5.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the City of Martinez will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan in actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Capital Improvement Programs**—The five-year Capital Improvement Program is updated every two years. The Program will continue to have annual silt removal projects proposed for implementation. (see above)
- **Storm Drain Facility Cleaning**—Public Works operating budget is updated every two years. Future budgets will be proposed to include funding for storm drain facility cleaning. (see above)
- **General Plan Update—**The City's General Plan is currently being updated with completion planned in late 2018. The Plan is required and will have goals and policies for mitigating flood, landslide and other hazards.
- **Marina Master Plan—**The Marina Masterplan is scheduled for updating beginning in 2018. The Plan will address rising tide issues.
- **Zoning Ordinance Update—**It is anticipated over the next five years the City will begin the process of a major Zoning Ordinance Update. New development guidelines will include requirements for creek setbacks and development in hazard areas.

8.6 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 8-10 lists past occurrences of natural hazards for which specific damage was recorded in the City of Martinez. Other hazard events that broadly affected the entire planning area, including the City of Martinez, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 8-10. Past Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment (Public/Private)
Flood	DR-4308	February 2017	$200,000/Not Available
Flood	DR-4301	January 2017	$300,000/Not Available
Fire	N/A	September 6, 2009	$1,5000,000
Wild Fire	N/A	July 10, 2008	Information not available
Winter Weather	N/A	January 2007	Information not available
Flood	N/A	December 31, 2005/January 1, 2006	Information not available
Wild Fire	N/A	June 26, 2004	$800,000
Flood	N/A	February 2000	Information not available
Flood	N/A	February 1998	Information not available
Flood	N/A	December 1997	Information not available
Flood	N/A	January 1995	Information not available
Flood	N/A	January 1994	Information not available
Flood	N/A	November/December 1993	Information not available
Earthquake	N/A	October 18, 1989	Information not available
Freeze	N/A	December 1988	Information not available
Flood	N/A	February 1986	Information not available
Flood	N/A	January 1982	Information not available
Flood	N/A	January 1980	Information not available

8.7 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for the jurisdiction.

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 13
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 1
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: Unknown

Other noted vulnerabilities include the following:

- Hillside Drive neighborhood has one paved roadway accessing approximately 50 residences. The access is subject to sliding which could potentially isolate the neighborhood from essential services. A gravel emergency access road has been graveled as opportunities have arisen. The emergency access should be inspected routinely and any required maintenance implemented immediately.
- Chemical vapor release—There are three petrochemical refineries and one chemical manufacturing facility in or near Martinez. In the case of major power outages and other mishaps these facilities are designed to flare chemicals in order to reduce risk to the public. Some events have require shelter in place warning to the community. The refineries have a community warning system that is tested monthly along with auto call notification capabilities.
- Two major railroads traverse the City. Railroads from time to time transport hazardous/flammable materials that can become a hazard to the community should derailment or other accident occurs.

8.8 HAZARD RISK RANKING

Table 8-11 presents a local ranking for the City of Martinez of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 8-11. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake[b]	48	High
2	Landslide[e]	39	Medium
3	Severe weather	30	Medium
3	Wildfire[e]	30	Medium
4	Flood[c]	24	Medium
5	Dam and levee failure[a]	12	Low
5	Sea level rise[d]	12	Low
6	Drought	9	Low
7	Tsunami	0	None

a. Based on the level of detail conducted in the risk assessment, the risk ranking for this hazard is focused solely on dam failure impacts. See Chapter 6.4 of Volume 1 for combined dam inundation list on which this assessment is based.
b. Haywired M7.05 event was used to assign probability and impacts
c. 1-percent annual chance event was used to assign probability and impacts
d. 2100 upper range estimates and extreme tide are used to assign probability and impacts
e. Very High and High severity zones were used to assign probability and impacts

8.9 STATUS OF PREVIOUS PLAN ACTIONS

Table 8-12 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 8-12. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter
M-1—Raise public awareness about regional hazard *Comment: Ongoing*	X		X	M-5
M-2—Promote the use of NOAA "All Hazards" radios for early warning and post-event information *Comment: Ongoing*	X		X	M-6
M-3—Maintain Political support for Hazard Mitigation and Response Programs. *Comment: Ongoing*	X		X	M-7
M-4—Establish and continue partnerships between public and private sectors including CERT *Comment: Ongoing*	x		X	M-8
M-5—Maintain the viability of all critical facilities and operations. *Comment: Ongoing*	X		X	M-9
M-6—Promote water conservation programs *Comment: Ongoing*	X		X	M-10
M-7—Develop reclaimed water sources *Comment: Ongoing*	x		X	M-11
M-8—Utilize native planting on City owned facilities *Comment: Ongoing*	X		X	M-12
M-9—Reduce water system losses *Comment: Ongoing*	X		X	M-13
M-10—Continue to Participate in National Flood Insurance Program *Comment: Ongoing*	X		X	M-4
M-11—Participate in Community Rating System (CRS) and investigate possibility of increasing rating to reduce flood insurance rates *Comment: Ongoing*			X	M-14
M-12—Mitigate potential increased run-off from new development *Comment: Ongoing*	X		X	M-15
M-13—Install Alhambra Creek By-pass pipe *Comment: Ongoing*			X	M-16
M-14—Clear drainage facilities prior to rainy season *Comment: Seasonal*	X		X	M-17
M-15—Formalize/advertise advance flood warning predictions *Comment: Seasonal*	X		X	M-18
M-16—Promote creek clean-up *Comment: Ongoing*	X		X	M-19
M-17—Participate in Clean Water Program (NPDES) *Comment: Ongoing*	X		X	M-20
M-18—Adopt International Building Code once ratified by the State *Comment: Routinely*	X		X	M-21
M-19—Investigate funding for retrofit of URM buildings downtown *Comment: Completed 2017*	X			

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter
M-20—Evaluate Critical Facilities and retrofit as needed *Comment: Completed phase 1 of Water Treatment Plant Seismic Upgrade in 2017*	X		X	M-22
M-21—Train staff on HAZUS *Comment: Ongoing*	X		X	M-23
M-22—Encourage purchase of earthquake insurance *Comment: Ongoing by others (Calif. Earthquake Authority/Private Insurance Co.)*	X			
M-23—Integrate landslide hazard maps into GIS *Comment: No progress*			X	M-24
M-24—Review/adopt regulations prohibiting development in high risk landslide hazard zones *Comment: Ongoing*	X		X	M-25
M-25—Bury utility cables in new developments, business zones and major transportation routes *Comment: Marina Vista Underground Project Completed; Ongoing*	X		X	M-26
M-26—Develop and maintain emergency access *Comment: Ongoing*	X		X	M-27
M-27—Clear fuels in City Open Space in accordance with CC fire requirements *Comment: Seasonal*	X		X	M-28
M-28—Require private property owners to create defensible space around structures *Comment: Seasonal; CCC Consolidated Fire, Code Enforcement Division*	X		X	M-29

8.10 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 8-13 lists the actions that make up the City of Martinez hazard mitigation action plan. Table 8-14 identifies the priority for each action. Table 8-15 summarizes the mitigation actions by hazard of concern and mitigation type.

8.11 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

Rising Tide – Staff education and local in depth study needs to be completed. This work would build on the Contra Costa ART Project. Specific strategies are mandated by 2020.

Table 8-13. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
M-1—Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	City	High	HMGP, PDM, FMA	Short-term
M-2— Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including General Plan, Zoning Ordinance, Climate Action Plan and Marina Master Plan.						
New and Existing	All Hazards	1, 4, 5, 7, 11, 12, 14, 17, 18	City	Low	Staff Time, General Funds	Ongoing
M-3—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 16, 17, 18	City	Low	Staff Time, General Funds	Short-term
M-4—Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: • Enforce the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts.						
New and Existing	Flood	3, 5, 6, 9, 10, 11, 15, 18	Public Works Dept., Building Division	Low	Staff Time, General Funds	Ongoing
M-5—Raise public awareness about regional hazards						
New and Existing	All Hazards	3, 6, 7, 16, 18	City	Medium $12,000	Grants/Gen. Fund	Ongoing
M-6—Promote the use of NOAA "All Hazards" radios for early warning and post-event information						
New and Existing	All Hazards	2, 8	City	Low $600	Gen. Fund	Ongoing
M-7—Maintain Political support for Hazard Mitigation and Response Programs.						
New and Existing	All Hazards	6, 12	City	Low $0	Staff Time, General Funds	Ongoing
M-8—Establish and continue partnerships between public and private sectors including CERT						
Existing	All Hazards	3, 6, 16	City	Low $12,000	Gen Funds	Ongoing
M-9—Maintain the viability of all critical facilities and operations.						
Existing	All Hazards	2, 6, 7, 11, 12, 15	City	High	Grants/Gen Funds	Ongoing
M-10—Promote water conservation programs						
New and Existing	Drought	3, 6, 16	City, CCWD	Medium $12,000	Water surplus fund	Ongoing
M-11—Develop reclaimed water sources						
New and Existing	Drought	1, 8, 10	City,* CCWD, Mt. View San	High	Water surplus fund/Grant	Ongoing
M-12—Utilize native planting on City owned facilities						
Existing	Drought	1, 4	City	Low	Park Bond – Gen Fund	Ongoing
M-13— Reduce water system losses						
Existing	Drought	1, 7	City	High $360,000	Water surplus fund	Ongoing
M-14—Participate in Community Rating System (CRS) and investigate possibility of increasing rating to reduce flood insurance rates						
New and Existing	Flood	1, 9, 10	City	Medium $6,000	NPDES Assessment	Ongoing

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
M-15—Mitigate potential increased run-off from new development						
New	Flood	1, 3, 4, 5, 6, 7, 10, 11, 12	City	Low	Developer	Ongoing
M-16—Install Alhambra Creek By-pass pipe						
New and Existing	Flood	1, 4, 5, 7, 10, 15	City	High $24 million	NPDES Assess./Grant	Long-term
M-17—Clear drainage facilities prior to rainy season						
Existing	Flood	1, 6, 8	City	High $24,000	NPDES Assessment	Ongoing; Seasonal
M-18—Formalize/advertise advance flood warning predictions						
Existing	Flood	2, 3, 6	City*/CC Flood Control District	Low	Gen Fund	Ongoing; Seasonal
M-19—Promote creek clean-up						
Existing	Flood	3, 4, 6, 8, 12	City	Low $4,800	NPDES Assessment	Ongoing
M-20—Participate in Clean Water Program (NPDES)						
New and Existing	Flood	3, 4, 6, 16	City	High $600,000	NPDES Assessment	Ongoing
M-21—Adopt International Building Code once ratified by the State						
New	Earthquake	1, 3, 6, 7	City	Low	Staff Time, General Funds	Ongoing; Routinely
M-22—Evaluate Critical Facilities and retrofit as needed						
Existing	Earthquake	1, 3, 4, 5, 7, 15	City	High	Grants	Ongoing
M-23—Train staff on HAZUS						
N/A	Earthquake	6, 8	City	Low	Grants	Ongoing
M-24—Integrate landslide hazard maps into GIS						
New and Existing	Landslide	3, 6, 8, 16	City	Low $6,000	Grants/Gen Funds	Ongoing
M-25—Review/adopt regulations prohibiting development in high risk landslide hazard zones						
New	Landslide	1, 4, 5, 7, 11, 14	City	Low $5,000	Gen Funds	Ongoing
M-26—Bury utility cables in new developments, business zones and major transportation routes						
New and Existing	Severe Weather	4, 5, 7, 8, 11	City	High	PG&E Rule 20, Gas Tax, Developer	Ongoing
M-27—Develop and maintain emergency access routes						
New and Existing	Wildfire	1, 2, 5, 11, 12, 13, 16	City/*CC Fire	Medium $6,000	Gas Tax	Ongoing
M-28—Clear fuels in City Open Space in accordance with CC fire requirements						
Existing	Wildfire	1, 2, 5, 11, 12, 13, 16	City	Medium $14,400	Gen Funds	Ongoing; Seasonal
M-29—Require private property owners to create defensible space around structures						
Existing	Wildfire	1, 2, 3, 5, 11, 13, 16	CC Fire	Low	Property Tax	Ongoing; Seasonal
M-30—Develop Rising Tide strategies and incorporate into Marina Master Plan						
New	Flood	3, 5, 6, 9, 10, 11, 15, 18	City	High	Grant/General Fund	Short-term; 2021

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 8-14. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
M-1	8	High	High	Yes	Yes	No	Medium	High
M-2	9	Medium	Low	Yes	No	Yes	High	Low
M-3	5	Low	Low	Yes	No	Yes	High	Low
M-4	8	Medium	Low	Yes	No	Yes	High	Low
M-5	5	Medium	Medium	Yes	Yes	Yes	High	High
M-6	2	Medium	Low	Yes	Yes	Yes	Medium	Low
M-7	2	Medium	Low	Yes	No	Yes	Medium	Low
M-8	3	High	Low	Yes	No	Yes	High	Low
M-9	6	High	High	Yes	Yes	Yes	Medium	High
M-10	3	High	Medium	Yes	No	Yes	High	Low
M-11	3	High	High	Yes	No	No	Low	High
M-12	2	Low	Low	Yes	No	Yes	Medium	Low
M-13	2	High	High	Yes	No	Yes	Medium	Low
M-14	3	High	Medium	Yes	No	No	Medium	Low
M-15	9	Medium	Low	Yes	No	Yes	High	Low
M-16	6	High	High	Yes	Yes	Yes	High	High
M-17	3	High	High	Yes	Yes	No	Medium	Low
M-18	3	High	Low	Yes	No	Yes	High	Low
M-19	5	High	Low	Yes	No	Yes	High	Low
M-20	4	Medium	High	No	No	Yes	High[b]	Low
M-21	4	High	Low	Yes	No	Yes	medium	Low
M-22	6	Medium	High	No	Yes	No	Medium	High
M-23	2	Medium	Low	Yes	No	Yes	Medium	High
M-24	4	Low	Low	Yes	No	No	Low	Medium
M-25	6	High	Low	Yes	No	No	Medium	Low
M-26	5	Medium	High	No	No	Yes	Medium	Low
M-27	7	Medium	Medium	Yes	No	No	Low	Low
M-28	7	High	Medium	Yes	No	Yes	High	Low
M-29	7	High	Low	Yes	No	Yes	High	Low
M-30	8	High	High	Yes	Yes	No	High	High

a. See the introduction to this volume for explanation of priorities.
b. This action is mandated.

Table 8-15. Analysis of Mitigation Actions

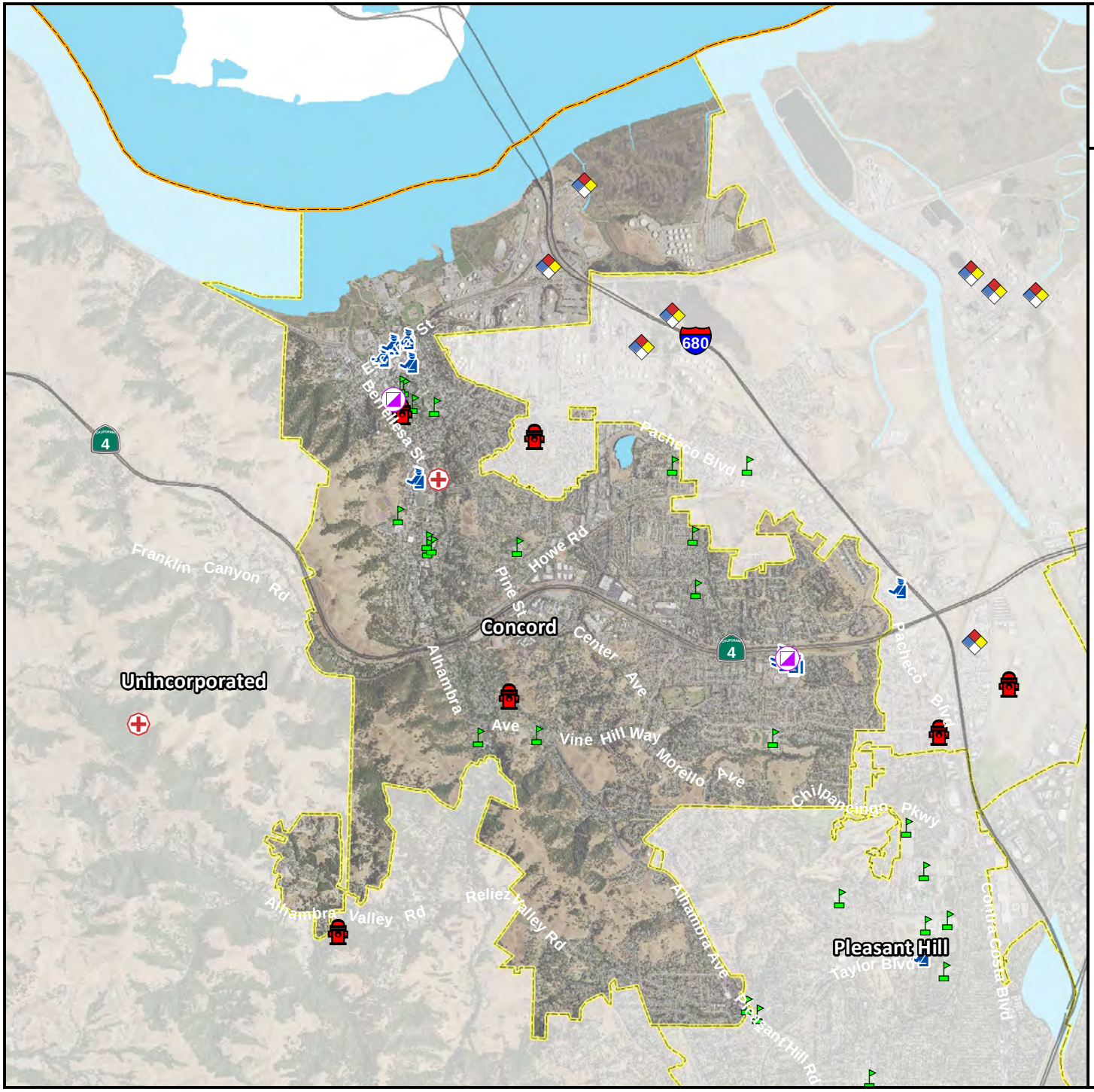
Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards			5, 8		8		2	5, 7, 8, 23
Dam and Levee failure								
Drought	5, 6, 7, 10, 11, 12, 13	5, 10, 11	5, 7, 9, 10, 11, 13	5, 12, 28	5, 6, 9	5		
Earthquake	5, 21	5, 21	5, 6, 7, 8, 9, 21	5	5, 6, 22	5, 6		
Flood	5, 6, 15, 16, 17	5, 16, 17, 19	5, 6, 7, 8, 9, 15, 17, 18, 19	5, 14, 19, 20	5, 6, 7, 8, 9	5, 16, 17, 19	30	4, 14, 18, 19
Landslide	5, 22, 24	5	5, 6, 8, 9, 22, 24	5, 16, 17	5, 6, 7, 8, 9	5, 16, 17		
Severe weather	5, 21, 27, 28, 29	5, 27, 29	5, 6, 7, 8, 9, 21, 27, 29	5, 27, 29	5, 6, 7, 8, 9, 28	5		
Tsunami	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wildfire	5, 21, 27, 28, 29	5, 27, 28, 29	5, 6, 7, 8, 9, 21, 27, 28, 29	5, 27, 28, 29	5, 6, 7, 8, 9, 27, 28, 29	5		

a. See the introduction to this volume for explanation of mitigation types.

8.12 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **City of Martinez Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Martinez Flood Damage Prevention Ordinance**—The flood damage prevention ordinance was reviewed for compliance with the National Flood Insurance Program.
- Draft General Plan-to support completion of the core capability assessment
- Zoning Ordinance- to support completion of the core capability assessment
- Climate Action Plan- to support completion of the core capability assessment
- **Technical Reports and Information—**The following **o**utside resources and references were reviewed:
    - **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.
    - **Contra Costa ART Program** (Adapting to Rising Tides)—This grant funded study is a follow-up to the Alameda County ART Program. The report focuses on the risks to the County form current and future flooding, as well as other challenges and opportunities related to expected rise in tides over the next 25 to 100 years. The ART data was used to support the development of the risk assessment date for sea level rise for this plan update.



The City of Martinez

Critical Facilities

- Emergency Operations Centers (Government)
- Fire Stations (Protective Functions)
- Hazardous Materials
- Medical Facilities
- Police Stations (Protective Functions)
- Schools & Educational Facilities
- Contra Costa County Boundary
- City Boundaries

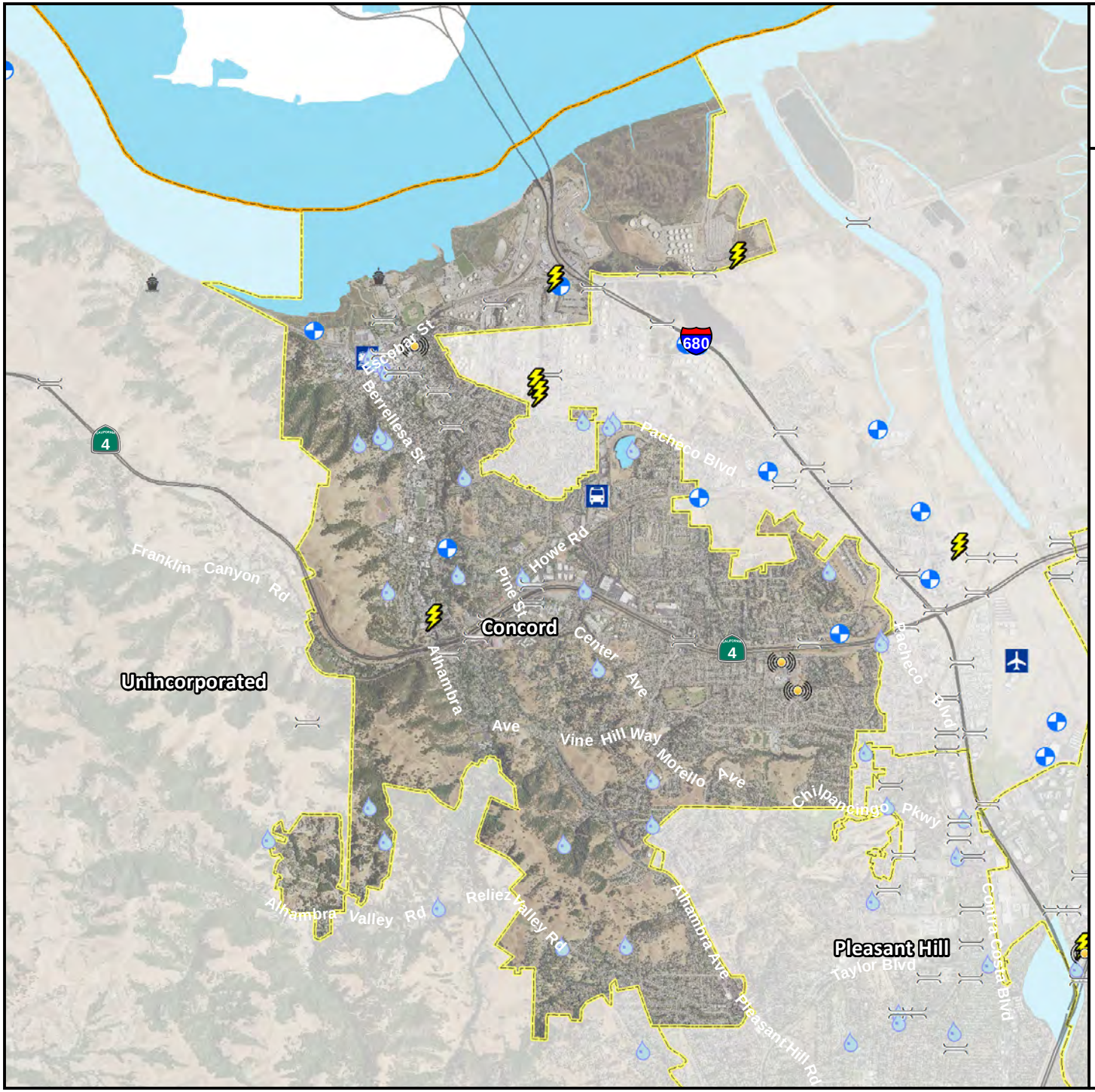
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of Martinez

Critical Infrastructure

- Airports (Other Critical Functions)
- Bus Facilities (Other Infrastructure)
- Communication Facilities
- Electric Power Facilities
- Highway Bridges
- Highway Tunnels (Other Infrastructure)
- Light Rail (Other Infrastructure)
- Natural Gas (Other Infrastructure)
- Port Facilities (Other Critical Functions)
- Water Supply Facilities
- Rail Facilities (Other Infrastructure)
- Wastewater Facilities
- Contra Costa County Boundary
- City Boundaries

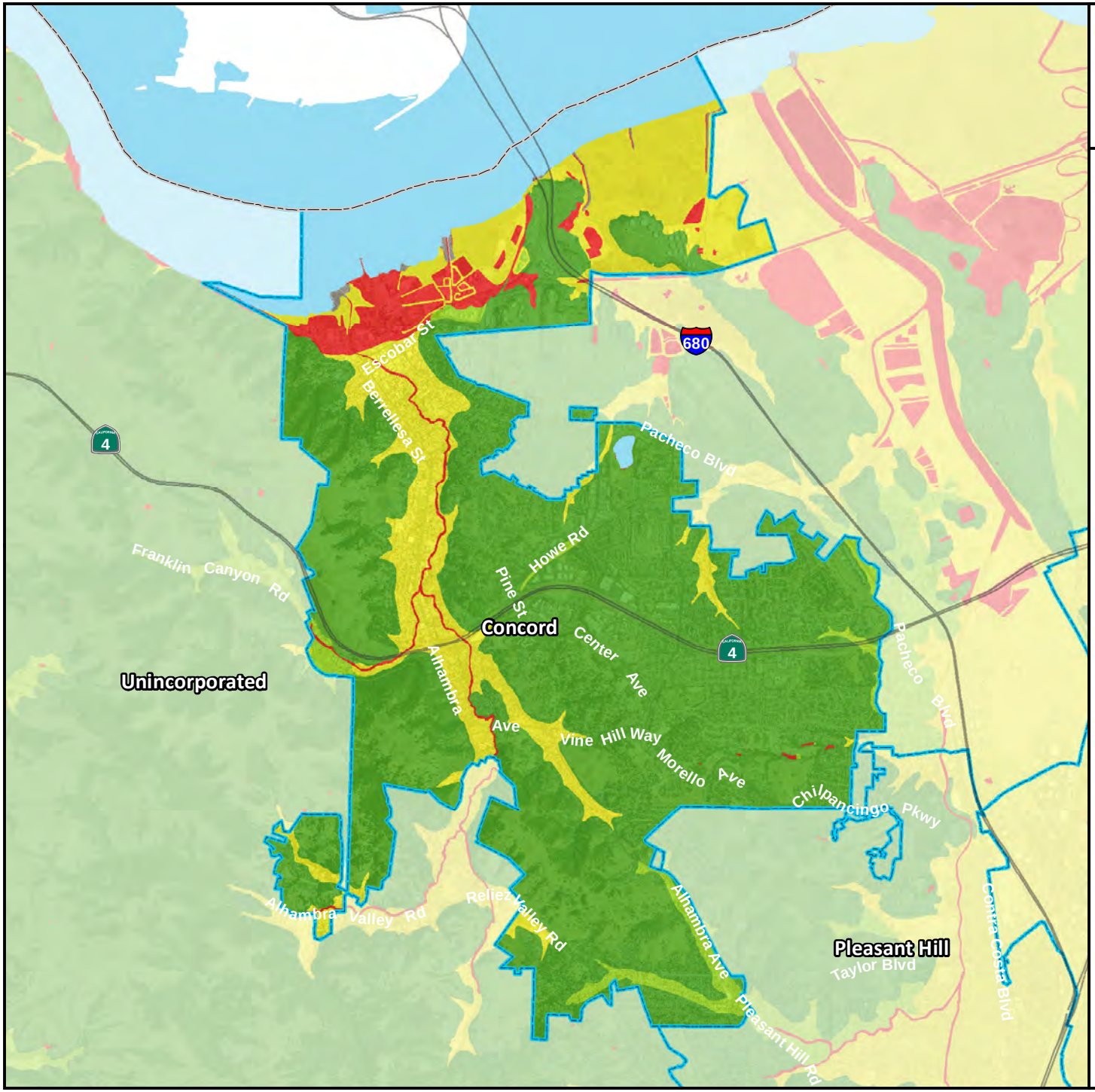
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of Martinez

Liquefaction Susceptibility

Contra Costa County Boundary

City Boundaries

Water Bodies

Susceptibility to Liquefaction

- Very Low
- Low
- Medium
- High
- Very High
- No Liquefaction Data Available

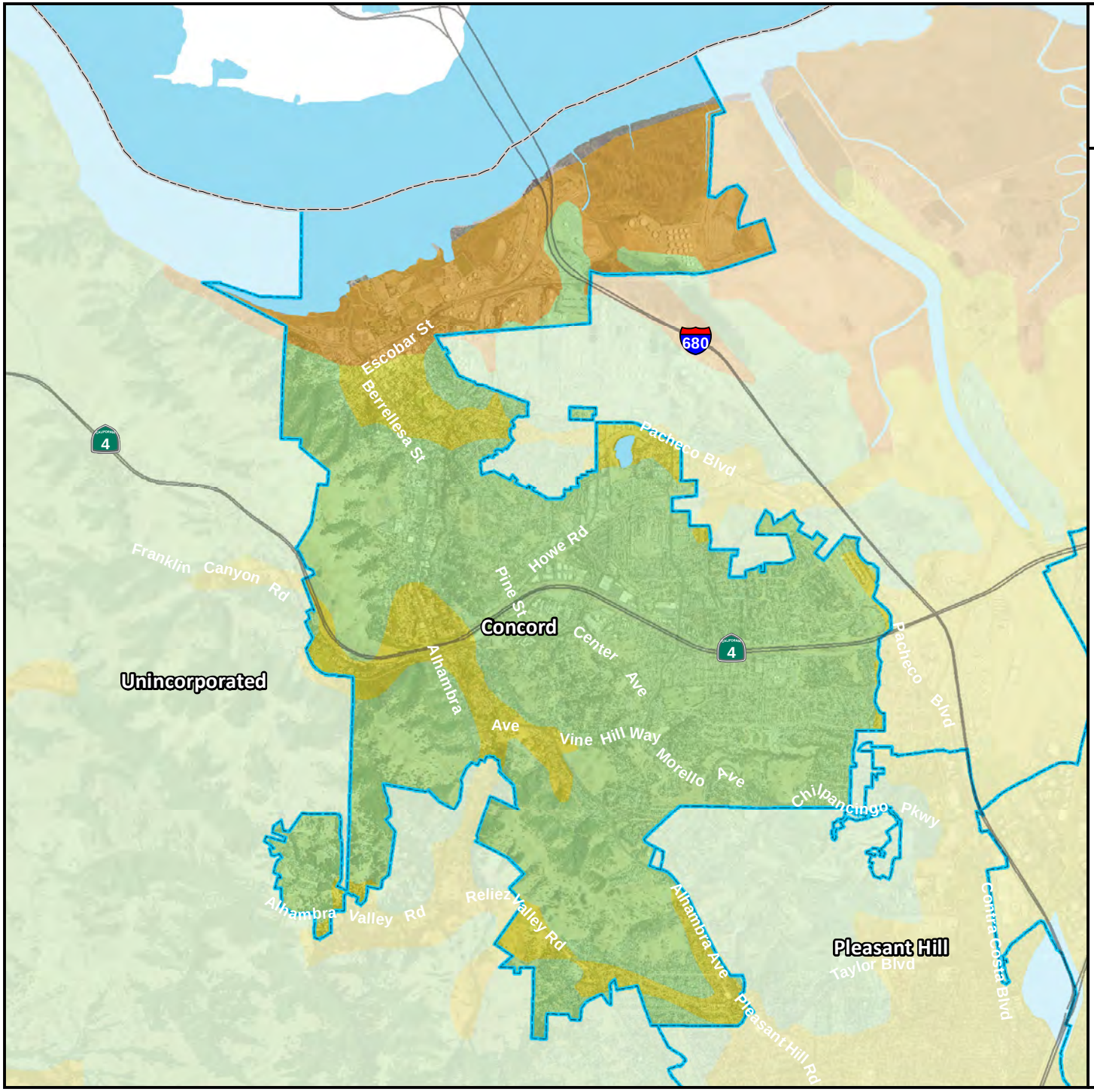
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The City of Martinez

National Earthquake Hazard Reduction Program (NEHRP) Soil Class

Contra Costa County Boundary

City Boundaries

Water Bodies

NEHRP Site Class / Soil Profile

- B / Rock
- C / Very Dense Soil - Soft Rock
- D / Stiff Soil
- E / Soft Soil
- No Soil Data Available

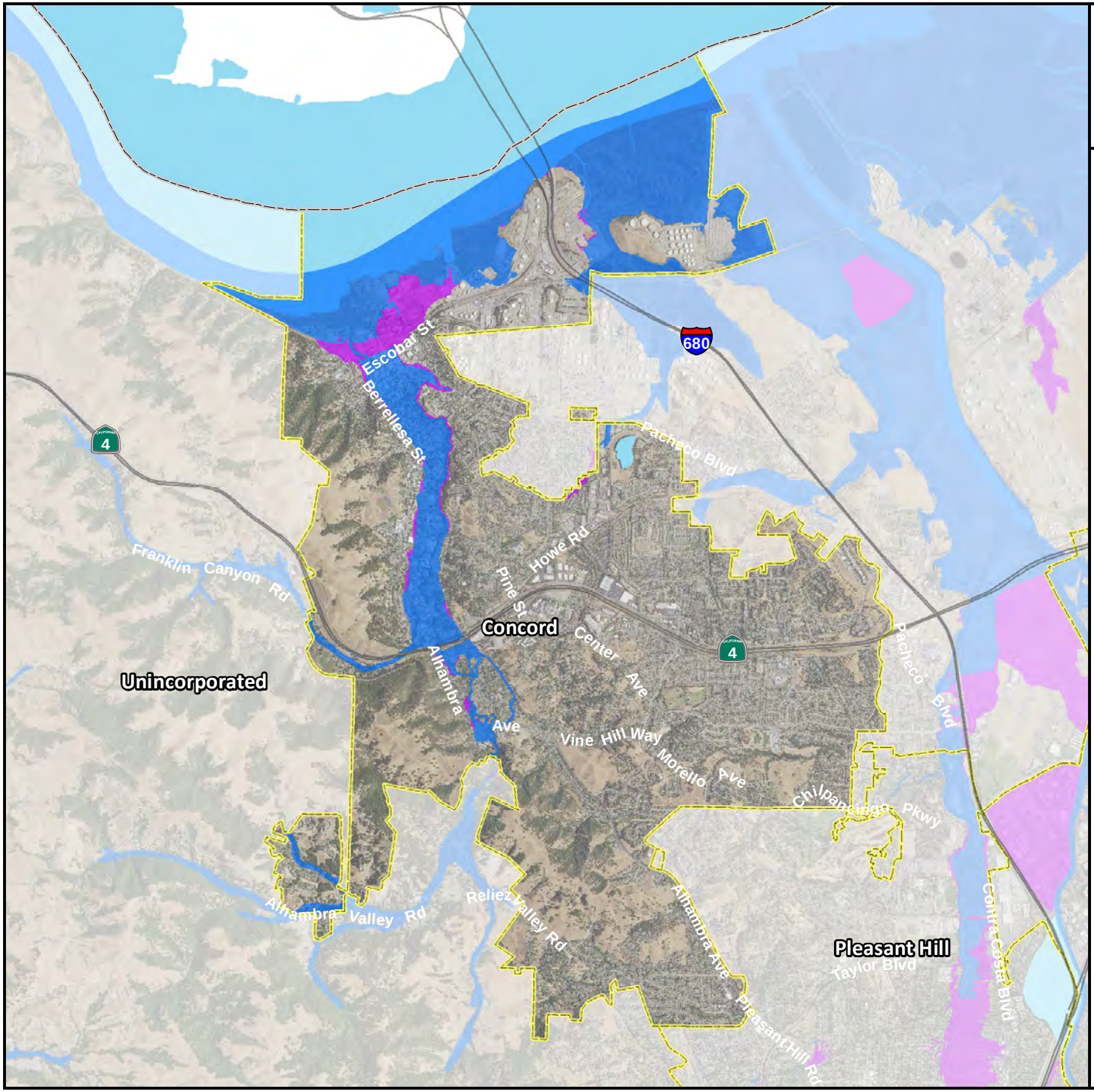
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Department of Conservation, USDA



The City of Martinez

FEMA DFIRM Flood Hazard Areas

- 1% Annual Chance (100-Year) Flood Zone
- 0.2% Annual Chance (500-Year) Flood Zone
- Contra Costa County Boundary
- City Boundaries
- Water Bodies

Flood hazard areas as depicted on Effective FEMA Digital Flood Insurance Rate Maps (DFIRM)

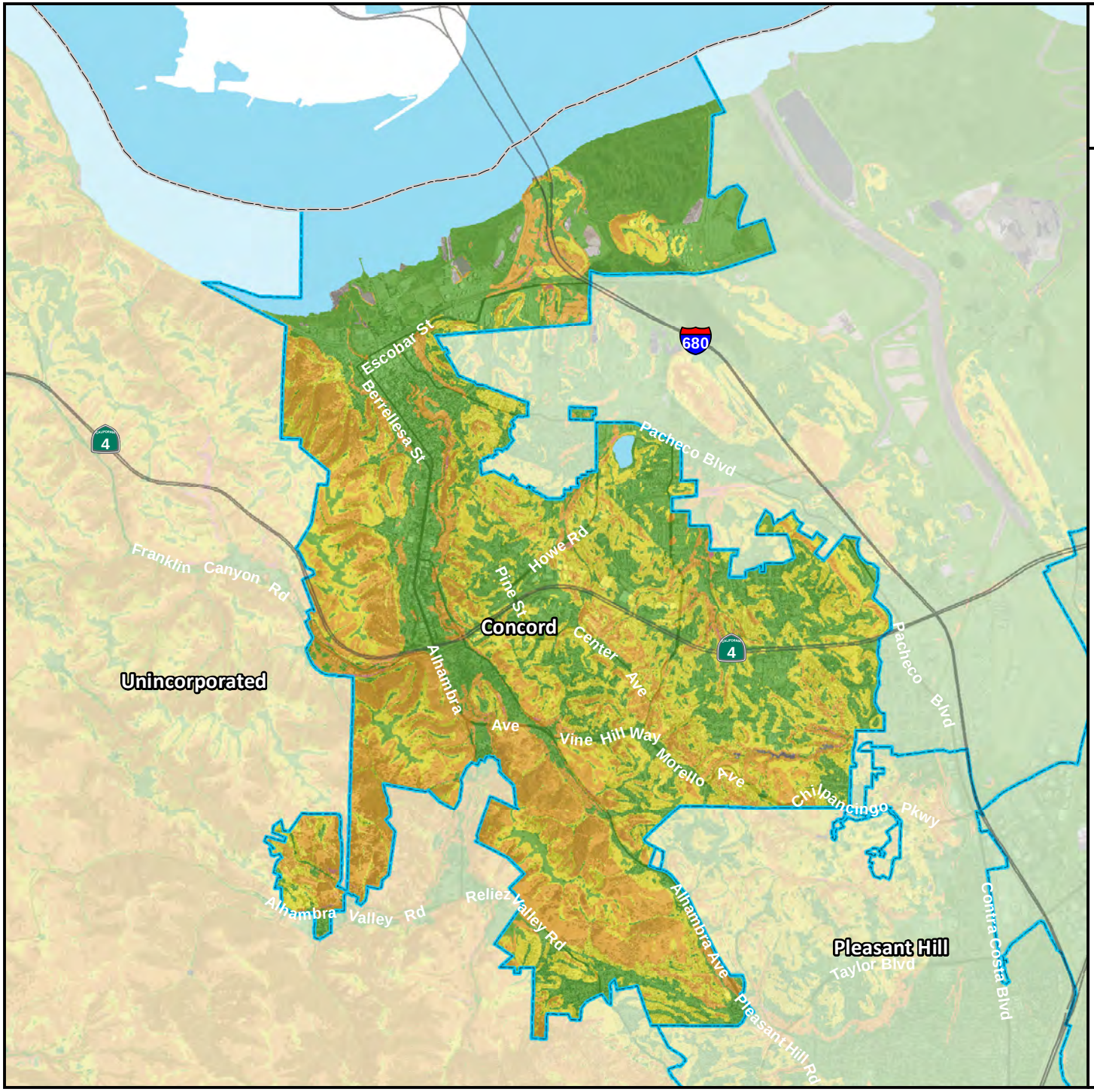
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, FEMA, USDA



The City of Martinez

Landslide Susceptibility Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Type

Low

Moderate

High

Very High / Existing

Data Not Available

Source dataset created by Wills C.J., Perez, F., Gutierrez, C., 2011, Susceptibility to deep-seated landslides in California: California Geological Survey Map Sheet 58

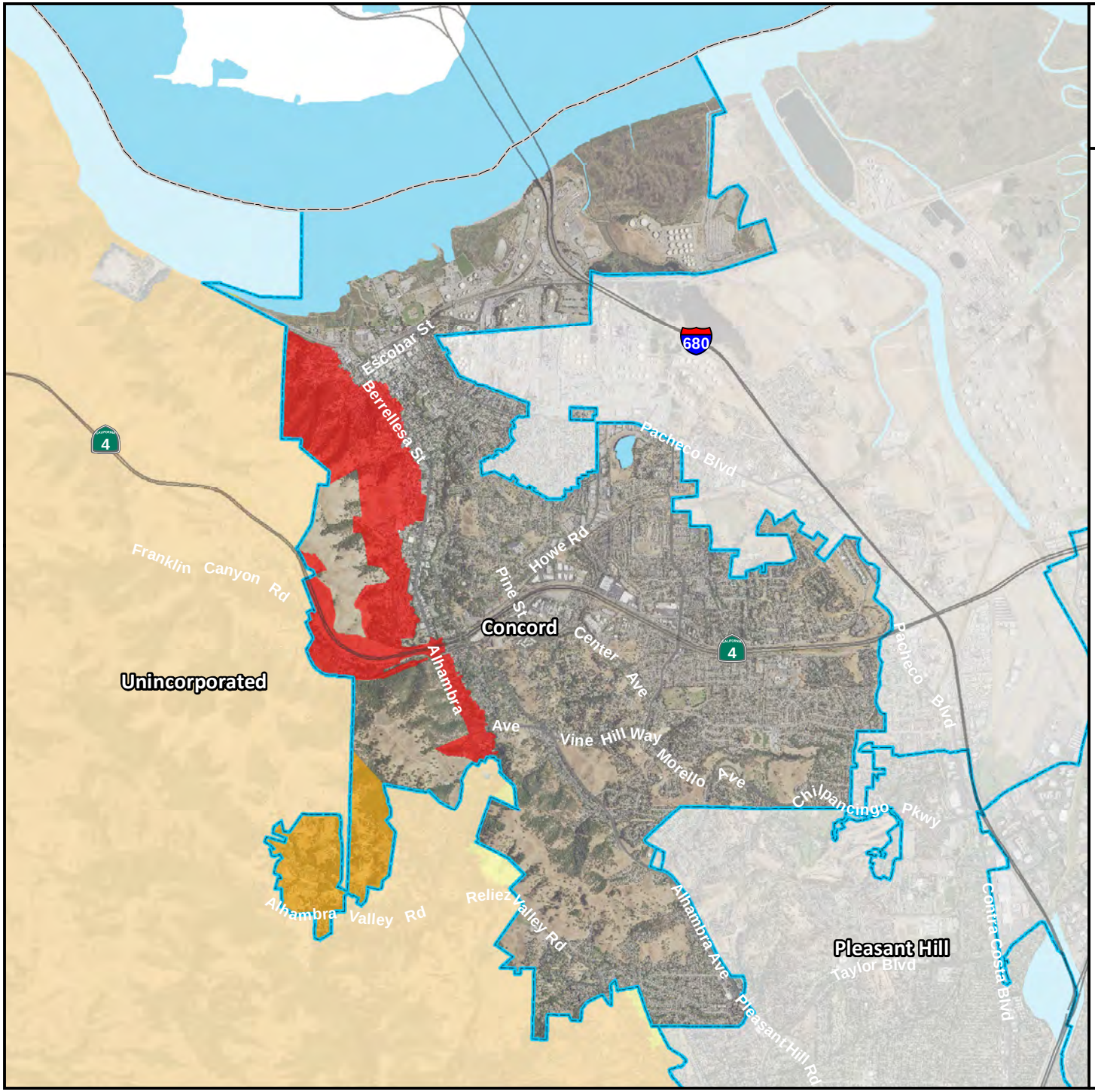
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The City of Martinez

Wildfire Severity Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Wildfire Severity Zone

Moderate

High

Very High

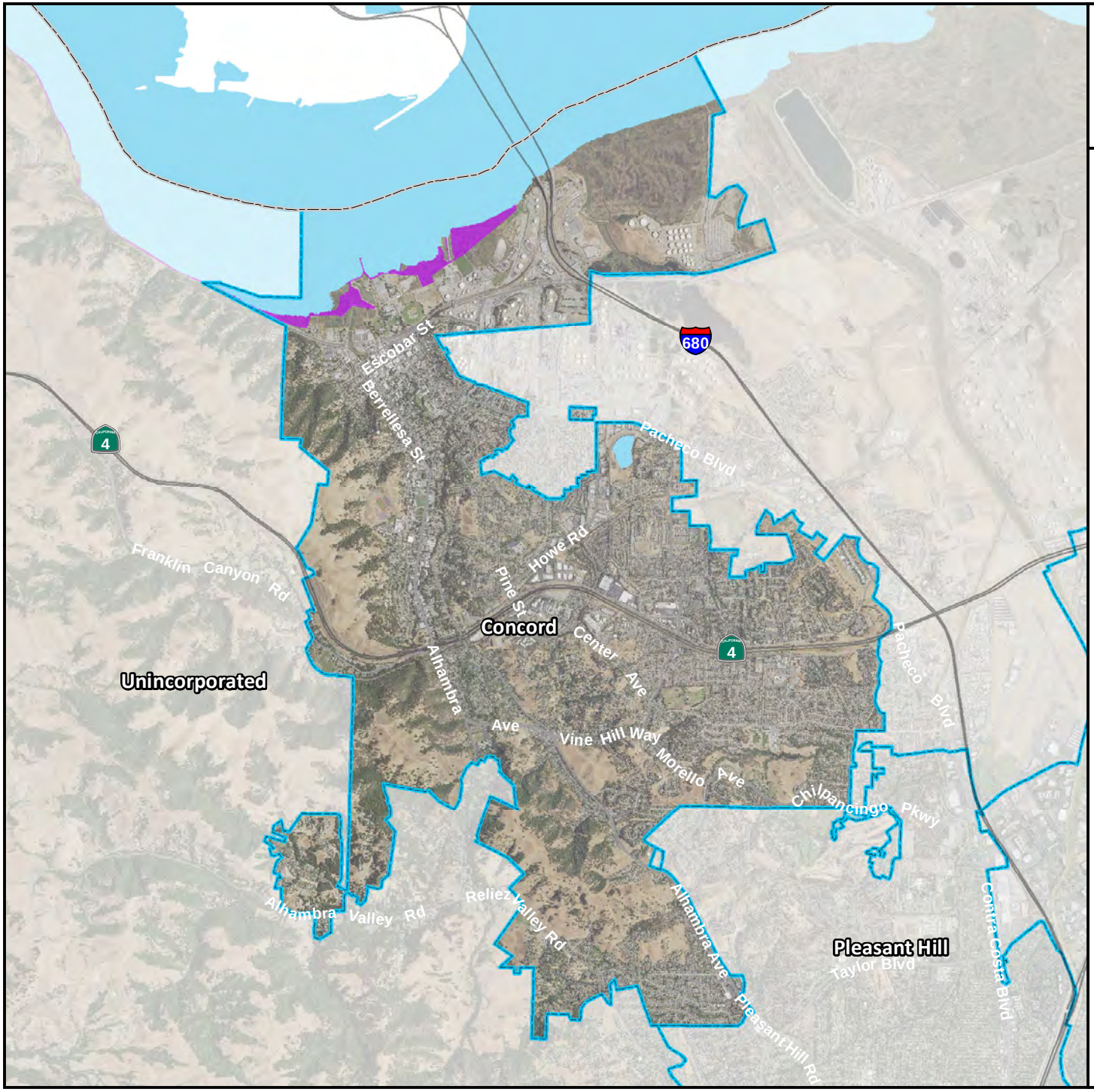
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, CalFIRE, USDA



The City of Martinez

Tsunami Inundation Zones

- Tsunami Evacuation Planning Scenario
- Contra Costa County Boundary
- City Boundaries
- Water Bodies

This tsunami inundation map was prepared to assist cities and counties in identifying their tsunami hazard. It is intended for local jurisdictional, coastal evacuation planning uses only.

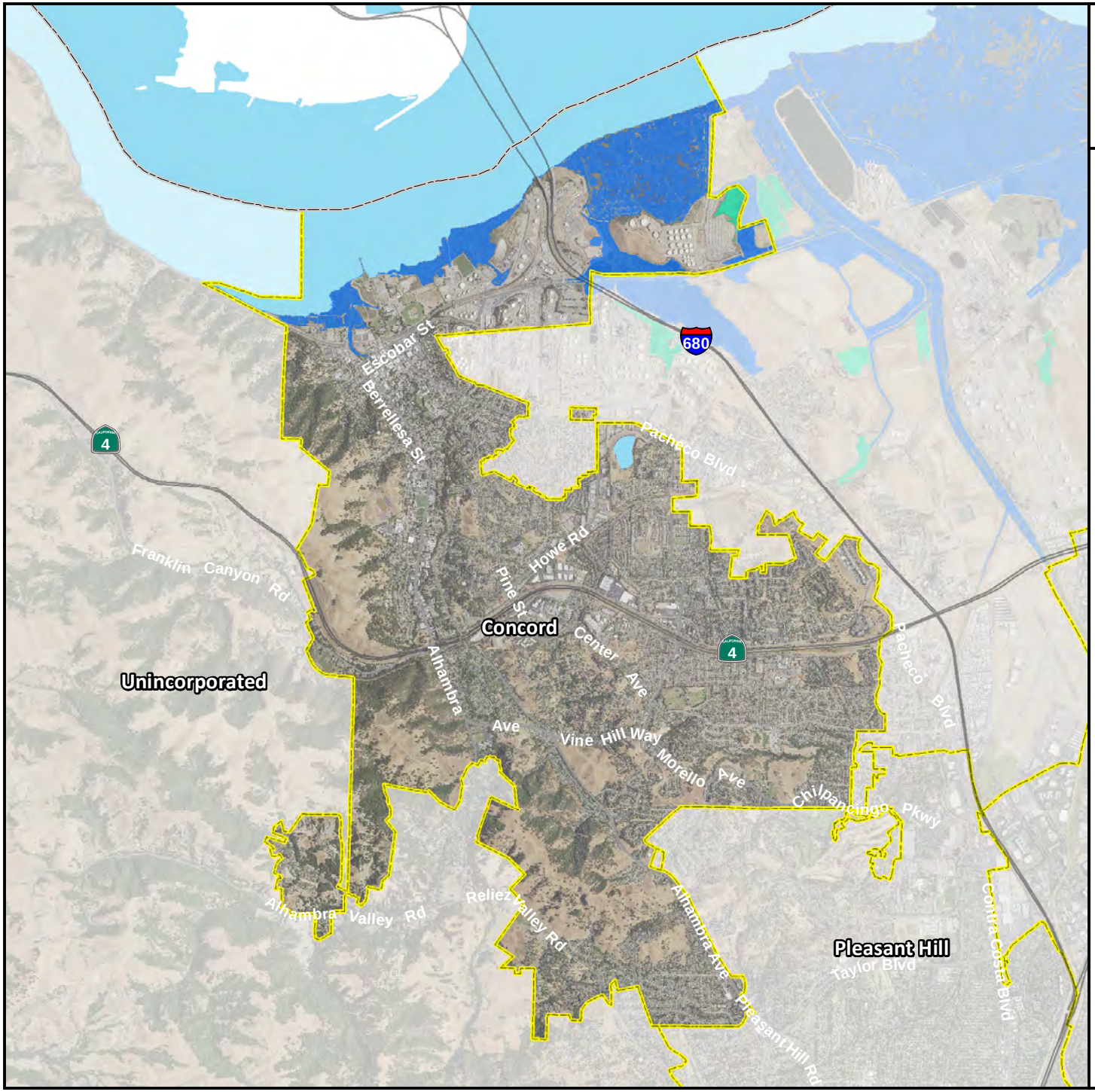
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, ABAG, USDA, USGS



The City of Martinez

Sea Level Rise - Mean Higher High Water Scenario Inundation Zones

- 12" Mean Higher High Water Scenario
- Low Lying Areas
- Contra Costa County Boundary
- City Boundaries

The inundation maps and the associated analyses are intended as planning level tools to illustrate the potential for inundation and coastal flooding under future SLR scenarios and (they) do not represent the exact location or depth of flooding or shoreline overtopping. The maps are based on model outputs and do not account for all of the complex and dynamic Bay processes or future conditions such as erosion, subsidence, future construction or shoreline protection upgrades, or other changes to San Francisco Bay or the region that may occur in response to SLR. For more context about the maps and analyses, including a description of the data and methods used, please see Adapting to Rising Tides: Transportation Vulnerability and Risk Assessment Pilot Project, Technical Report, November 2011.

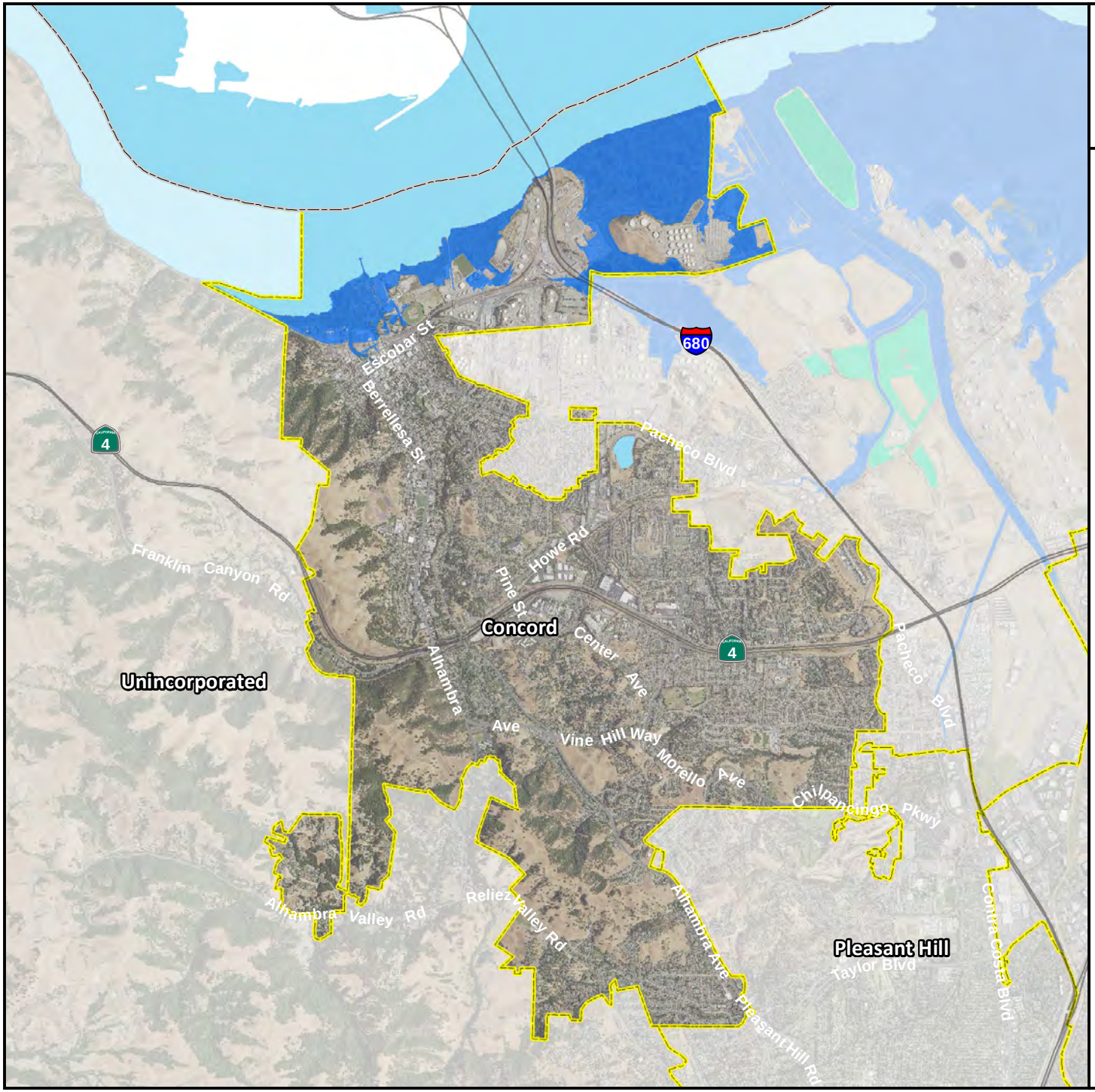
0 0.5 1 2

Miles

N
W E
S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, SFBCDC, USDA, USGS



The City of Martinez

Sea Level Rise - Mean Higher High Water Scenario Inundation Zones

- 12" Mean Higher High Water Plus 100-Year Extreme Tide
- Low Lying Areas
- Contra Costa County Boundary
- City Boundaries

The inundation maps and the associated analyses are intended as planning level tools to illustrate the potential for inundation and coastal flooding under future SLR scenarios and (they) do not represent the exact location or depth of flooding or shoreline overtopping. The maps are based on model outputs and do not account for all of the complex and dynamic Bay processes or future conditions such as erosion, subsidence, future construction or shoreline protection upgrades, or other changes to San Francisco Bay or the region that may occur in response to SLR. For more context about the maps and analyses, including a description of the data and methods used, please see Adapting to Rising Tides: Transportation Vulnerability and Risk Assessment Pilot Project, Technical Report, November 2011.

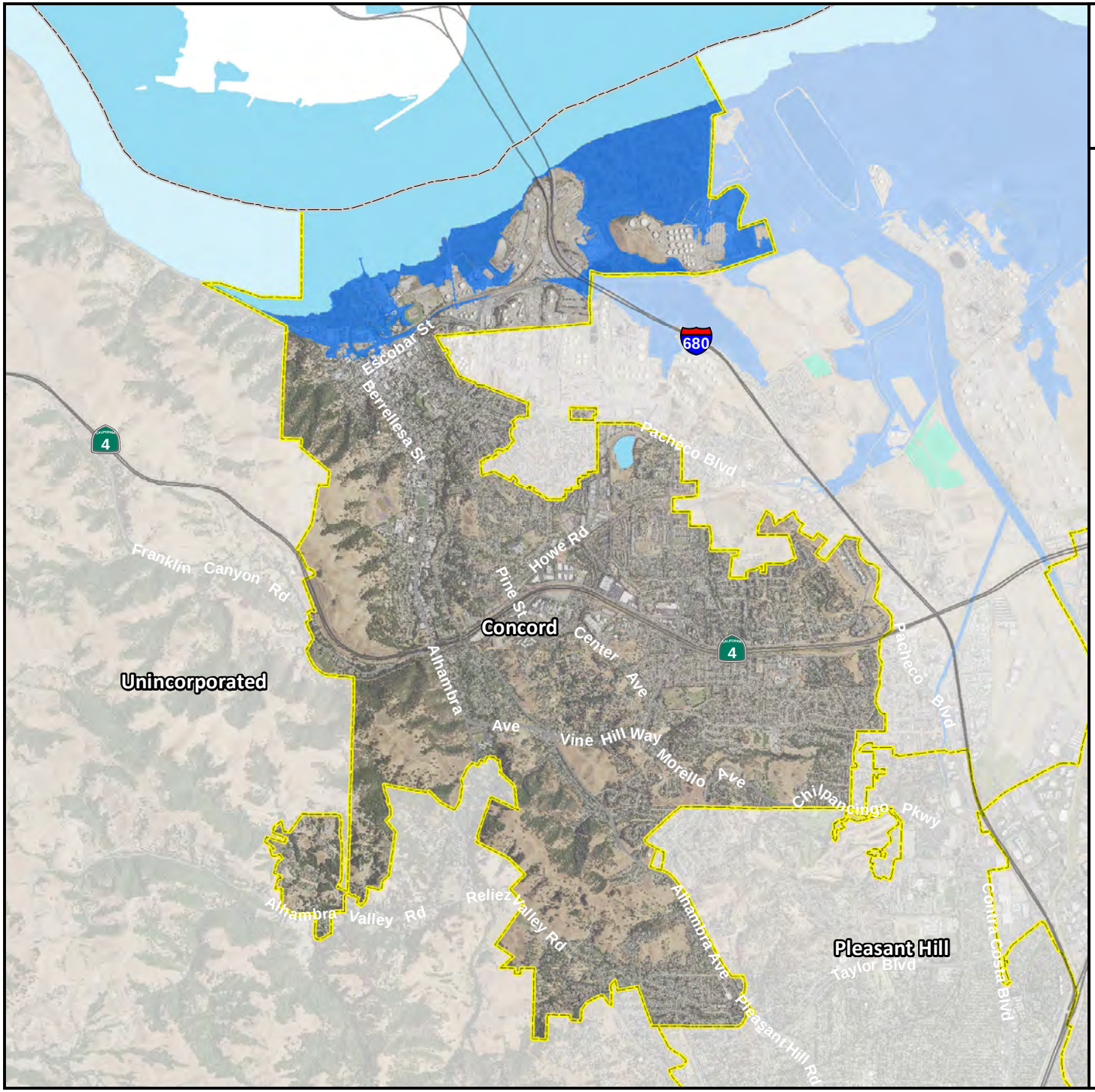
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, SFBCDC, USDA, USGS



The City of Martinez

Sea Level Rise - Mean Higher High Water Scenario Inundation Zones

66" Mean Higher High Water Scenario

Low Lying Areas

Contra Costa County Boundary

City Boundaries

The inundation maps and the associated analyses are intended as planning level tools to illustrate the potential for inundation and coastal flooding under future SLR scenarios and (they) do not represent the exact location or depth of flooding or shoreline overtopping. The maps are based on model outputs and do not account for all of the complex and dynamic Bay processes or future conditions such as erosion, subsidence, future construction or shoreline protection upgrades, or other changes to San Francisco Bay or the region that may occur in response to SLR. For more context about the maps and analyses, including a description of the data and methods used, please see Adapting to Rising Tides: Transportation Vulnerability and Risk Assessment Pilot Project, Technical Report, November 2011.

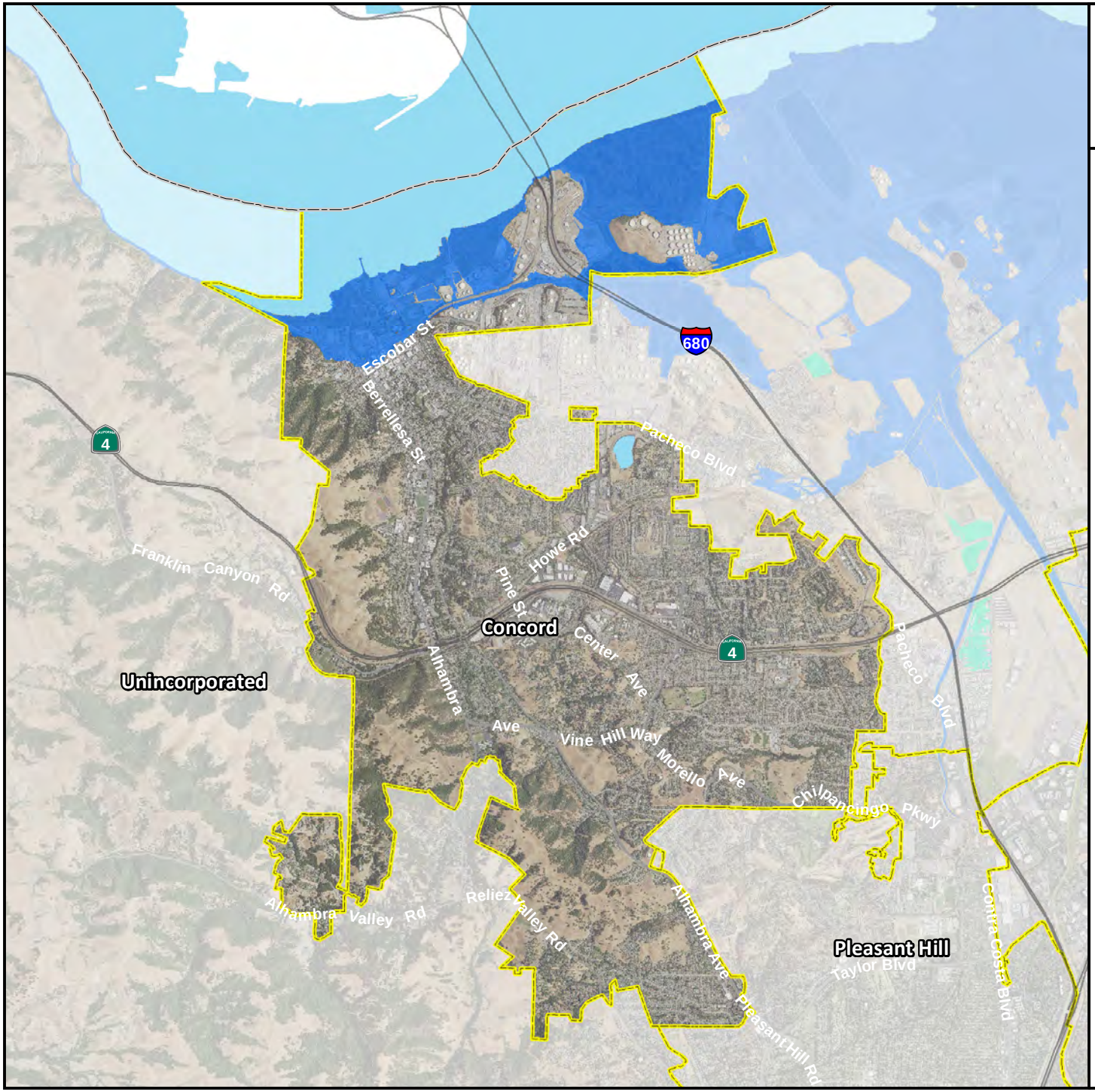
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, SFBCDC, USDA, USGS



The City of Martinez

Sea Level Rise - Mean Higher High Water Scenario Inundation Zones

66" Mean Higher High Water Plus 100-Year Extreme Tide

Low Lying Areas

Contra Costa County Boundary

City Boundaries

The inundation maps and the associated analyses are intended as planning level tools to illustrate the potential for inundation and coastal flooding under future SLR scenarios and (they) do not represent the exact location or depth of flooding or shoreline overtopping. The maps are based on model outputs and do not account for all of the complex and dynamic Bay processes or future conditions such as erosion, subsidence, future construction or shoreline protection upgrades, or other changes to San Francisco Bay or the region that may occur in response to SLR. For more context about the maps and analyses, including a description of the data and methods used, please see Adapting to Rising Tides: Transportation Vulnerability and Risk Assessment Pilot Project, Technical Report, November 2011.

0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, SFBCDC, USDA, USGS

9. TOWN OF MORAGA

9.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Ellen Clark, Planning Director
329 Rheem Boulevard
Moraga, CA 94556
Telephone: 925-888-7041
e-mail Address: eclark@moraga.ca.us

Alternate Point of Contact
Edric Kwan, Director of Public Works and Engineering
329 Rheem Boulevard
Moraga, CA 94556
Telephone: 925-888-7025
e-mail Address: ekwan@moraga.ca.us

9.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation**—1974
- **Current Population**—16,787 (2015 U.S. Census ACS estimate)
- **Population Growth**—The population of Moraga decreased 1.7 percent between 2000 and 2010. Between 2010 and 2015 the population increased 4.8 percent. The population is projected to increase to 16,900 (a 0.7 percent increase from 2015) by 2020 (Moraga Housing Element, 2015).
- **Location and Description**—Moraga is a small town in Contra Costa County, California. The Town is situated in the San Francisco Bay Area, just east of the Oakland Hills and approximately 8 miles east of Downtown Oakland. The Town is 9.4 square miles in area. The Town is bordered by Lafayette, Orinda, and unincorporated Contra Costa County, including the nearby community of Canyon. Moraga is a largely single-family residential community with most development located in valleys surrounded by hillside areas. The town has two commercial centers, and Saint Mary's College of California, a private college of approximately 3,000 students, is located in the east side of Moraga.
- **Brief History**— Moraga is named for Joaquin Moraga, the grandson of Joseph Joaquin Moraga the founder of San Francisco. The first European development in the area occurred in 1841. In the early 1910s the valley that is now Moraga developed as a community of cattle ranchers and farmers. The area was serviced by the Sacramento Northern Railroad with service between Chico and Oakland. In 1928 Saint Mary's College moved from Oakland to Moraga. Most of the homes, roads, and businesses in present day Moraga were built since 1960. Moraga incorporated in November, 1974.
- **Climate**—Moraga has a Mediterranean climate typical of Northern California with cool, rainy winters and warm, dry summers. Average low temperatures range from 42º F in the winter to 55º F in the summer, and high temperatures range from 58º F in the winter to 76º F in the summer. Historically, annual rainfall averages 26.3 inches with most precipitation occurring from November through March.
- **Governing Body Format**—Moraga is governed by a five member Town Council. The Town has six departments: Town Manager's Office, Administrative Services, Parks and Recreation, Planning, Police, and Public Works and Engineering. The Town has seven committees and commissions which advise the Town Council and membership appointed by the Council. The Town Council assumes responsibility for adoption of this plan. The Town Manager will oversee its implementation.

9.3 DEVELOPMENT TRENDS

In the past decade, Moraga has experienced very little growth, with most of that development focused in residential areas. Between 2007 and 2015, 11 single-family housing units were constructed. More recently, construction has begun on several small residential subdivisions on green field sites, with additional construction expected on entitled residential development projects over the next 5 to 7 years . In 2017, Saint Mary's College is seeking approval of an updated Campus Master Plan that includes development of new facilities and remodel and expansion of others, principally to serve the existing campus population with no substantial increase in enrollment projected, Implementation of the 2010 Moraga Center Specific Plan is anticipated to lead to a greater quantity of infill development, moderate density housing units, and commercial development in the next decade. The Town of Moraga adopted its General Plan in 2002 and updated the Housing Element in 2015. Land use issues related to future growth, density, zoning, subdivision, annexations, design review, and capital improvements, must be consistent with the General Plan.

Table 9-1 summarizes development trends in the performance period since development of the previous hazard mitigation plan and expected future development trends.

Table 9-1. Recent and Expected Future Development Trends

Criterion	Response
Has your jurisdiction annexed any land since the development of the previous hazard mitigation plan? • If yes, give the estimated area annexed and estimated number of parcels or structures.	No N/A
Is your jurisdiction expected to annex any areas during the performance period of this plan?	Potentially. A 23 acre property located adjacent to the southeastern portion of the Town, within Moraga's sphere of influence, has been proposed for annexation into the Town . If approved, this annexation would occur in 2018 or 2019.
Are any areas targeted for development or major redevelopment in the next five years? • If yes, please briefly describe	Yes Major developments approved or proposed (but construction not yet started) include: • Palos Colorados subdivision (Single-family residential, 123 units, 460 acres) • Bollinger Valley subdivision (Single-family residential, 126 units proposed, 186 acres) • Indian Valley subdivision (Single-family residential, 71 units proposed, 141 acres) • South Camino Pablo annexation and subdivision (Single-family residential and open space, 13 lots proposed, 23 acres) • Moraga Center Specific Plan area (plan approved for mixed-use, zoning not yet adopted) 36 townhome units approved to date.
How many building permits were issued in your jurisdiction since the development of the previous hazard mitigation plan?	

	2012	2013	2014	2015	2016
Total building permits issued:	237	458	460	585	513

The vast majority of building permits issued in Moraga are for residential projects such as additions and remodels, Very few permits for new homes or commercial development have been issued.

Please provide the number of permits for each hazard area or provide a qualitative description of where development has occurred.	The Town of Moraga does not have a database tracking the number of development permits issued in specific hazard areas. At the time an applicant proposes development in a specific location, if applicable, staff assesses hazard risk specific to individual projects. For example, areas with steep slopes/ potential landslide hazards require a hillside development permit and soils/geotechnical report.

9.4 CAPABILITY ASSESSMENT

The Town of Moraga performed an inventory and analysis of existing capabilities, plans, programs and policies that enhance its ability to implement mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of legal and regulatory capabilities is presented in Table 9-2.
- Development and permitting capabilities are presented in Table 9-3.
- An assessment of fiscal capabilities is presented in Table 9-4.
- An assessment of administrative and technical capabilities is presented in Table 9-5.
- An assessment of education and outreach capabilities is presented in Table 9-6.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 9-7.
- Classifications under various community mitigation programs are presented in Table 9-8.
- The community's adaptive capacity for the impacts of climate change is presented in Table 9-9.

Table 9-2. Legal and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code	Yes	Yes	Yes	No
Comment: Moraga Municipal Code, Title 15, CA Building Code adopted by reference with modifications as recommended by Contra Costa County. Building services are provided through Contra Costa County. The Town coordinates with the County for Code enforcement. Ordinance No. 2016-22 (effective January 31, 2017).				
Zoning Code	Yes	No	Yes	No
Comment: Title 8 of the Moraga Municipal Code (MMC) regulates Planning and Zoning in Moraga.				
Subdivisions	Yes	Yes	Yes	Yes
Comment: Moraga Municipal Code Chapter 16.04 addresses parcel mergers. The Town has adopted its subdivision ordinance in 1984, based on the Contra Costa County Subdivision Ordinance. California Subdivision Map Act. Ordinance No. 178, 2000.				
Stormwater Management	Yes	Yes	Yes	Yes
Comment: Moraga Municipal Code Chapter 13.04. Moraga Municipal Code Chapter 14.52. State Water Resources Control Board. Municipal Regional Permit. Ordinance No. 210, 2006; and No. 264, 2016.				
Post-Disaster Recovery	No	No	No	Yes
Comment: No local code identified.				
Real Estate Disclosure	No	Yes	Yes	No
Comment: CA Civil Code §1102.				
Growth Management	Yes	No	Yes	No
Comment: Growth Management Element (GM) of the General Plan; Cal. Gov. Code §65300 et seq.				
Site Plan Review	Yes	No	No	No
Comment: Moraga Municipal Code, Title 8. Ordinance No. 241, 2013.				
Environmental Protection	Yes	Yes	Yes	Yes
Comment: California Environmental Quality Act.				
Flood Damage Prevention	Yes	Yes	Yes	No
Comment: Moraga Municipal Code Chapter 8.108. State Dept. of Water Resources, FEMA, East Bay Municipal Utility District. Ordinance No. 214, 2007.				
Emergency Management	Yes	Yes	Yes	No
Comment: Moraga Municipal Code, Chapter 2.48; Contra Costa County Office of Emergency Services. Ordinance No 43, 1984.				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Climate Change	No	No	Yes	Yes
Comment: No local ordinance adopted related to climate change. Moraga Climate Action Plan accepted (but not adopted) by Council. CA SB-379.				
Other: Fire Code	Yes	Yes	Yes	No
Comment: Resolution 96-2016. Fire service is provided by the Moraga-Orinda Fire District.				
Planning Documents				
General Plan	Yes	No	Yes	Yes
Is the plan compliant with Assembly Bill 2140? No				
Comment: 2002 Town of Moraga General Plan. Governor's Office of Planning and Research.				
Capital Improvement Plan	Yes	No	No	Y
How often is the plan updated? Yearly.				
Comment: 5 year Capital Improvement Plan updated each fiscal year.				
Floodplain or Watershed Plan	No	Yes	No	No
Comment: No local planning document. Moraga Municipal Code Chapter 8.108 regulates flood hazard areas. East Bay Municipal Utility District (EBMUD) - East Bay Watershed Master Plan.				
Stormwater Plan	Yes	No	No	No
Comment: 2015 Storm Drain Master Plan.				
Urban Water Management Plan	No	Yes	Yes	No
Comment: No local plan. Water service provided by East Bay Municipal Utility District which is subject to a UWMP.				
Habitat Conservation Plan	No	No	No	No
Comment: No local plan identified. California Department of Fish and Wildlife. *U.S. Fish and Wildlife Service.*				
Economic Development Plan	No	No	No	No
Comment: No local plan identified.				
Shoreline Management Plan	N/A	N/A	N/A	N/A
Comment: Moraga does not have any coastal/shoreline areas.				
Community Wildfire Protection Plan	No	Yes	Yes	No
Comment: Moraga-Orinda Fire District Assessment of Wildfire Hazard Potential. California Fire Code (CFC).				
Forest Management Plan	N/A	N/A	N/A	N/A
Comment: No local forest areas subject to management plans exist in Moraga.				
Climate Action Plan	Yes	No	No	Yes
Comment: 2014 Climate Action Plan. The plan was accepted by the Town Council, but not adopted. The actions are primarily focused on GHG emissions reduction and no adaptation specific measures are included.				
Comprehensive Emergency Management Plan	Yes	No	Yes	No
Comment: Emergency Operations Plan (2012).				
Threat & Hazard Identification & Risk Assessment (THIRA)	No	Yes	No	No
Comment: No local plan identified. Contra Costa County Emergency Services.				
Post-Disaster Recovery Plan	No	No	No	No
Comment: No local plan identified.				
Continuity of Operations Plan	No	No	No	No
Comment: No local plan identified.				
Public Health Plan	No	No	No	No
Comment: No local plan identified.				

Table 9-3. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? • If no, who does? If yes, which department?	Yes Planning Department and Public Works Department (for projects in public right of way). Building permits are issued by the Contra Costa County under contract to Town of Moraga.
Does your jurisdiction have the ability to track permits by hazard area?	No
Does your jurisdiction have a buildable lands inventory? • If yes, please briefly describe. • If no, please quantitatively describe the level of buildout in the jurisdiction.	Yes An available land inventory created as part of the Town 2015-2023 Housing Element includes information on approved, proposed, and available land for development. The total undeveloped land in the Town is 967 acres, much of which is zoned Moraga Open Space (MOSO). Land with a MOSO zoning designation requires a condition use permit for residential development. Residentially zoned property is largely built out, with the exception of the Moraga Center Specific Plan area. N/A

Table 9-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes-requires voter approval
Incur Debt through Special Tax Bonds	Yes-requires voter approval
Incur Debt through Private Activity Bonds	Yes-requires voter approval
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	Yes. General Fund reserves.

Table 9-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Planning/Moraga/Planner Public Works/Moraga/Engineer
Engineers or professionals trained in building or infrastructure construction practices	Yes	Public Works/Moraga/Engineer
Planners or engineers with an understanding of natural hazards	No	
Staff with training in benefit/cost analysis	No	
Surveyors	No	No surveyors on staff
Personnel skilled or trained in GIS applications	Yes	Planning/Moraga/Planner
Scientist familiar with natural hazards in local area	Yes	Contracted
Emergency Manager	No	Town Manager
Grant writers	No	Contracted/Public Works/Planning
Other	No	N/A

Table 9-6. Education and Outreach Capability

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe.	No N/A
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe.	Yes The Town uses Nixle, Nextdoor, and Facebook.
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly describe.	No N/A
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe.	No N/A
Do you have any established warning systems for hazard events? • If yes, please briefly describe.	Yes Moraga uses a biweekly newsletter (About Town) to communicate information to the public. An automated telephone warning system is available through the Contra Costa County Sheriff's Office dispatch. Moraga PD uses Nixle as an additional notification system.

Table 9-7. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Public Works
Who is your floodplain administrator? (department/position)	Town Engineer / Director of Public Works
Are any certified floodplain managers on staff in your jurisdiction?	No
What is the date that your flood damage prevention ordinance was last amended?	September 26, 2007
Does your floodplain management program meet or exceed minimum requirements? • If exceeds, in what ways?	Adopted Ordinance No. 214 brought Moraga Municipal Code Chapter 8.108 ("Flood Hazard Area regulations") into compliance with FEMA standards in 2007. The ordinance includes regulations on freeboard, determining base flood elevations in unnumbered A Zones, determining market value of existing structures, increased cost of compliance (ICC) coverage—repetitive loss provisions and non-conversion of enclosed areas below the lowest floor. Additional requirements regarding Mudslide Prone Areas, Erosion Prone Areas, Crawlspace Construction and Alluvial Fans were also included.
When was the most recent Community Assistance Visit or Community Assistance Contact?	None on record
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? • If so, please state what they are.	No N/A
Do your flood hazard maps adequately address the flood risk within your jurisdiction? • If no, please state why.	Yes N/A
Does your floodplain management staff need any assistance or training to support its floodplain management program? • If so, what type of assistance/training is needed?	No N/A

Criterion	Response
Does your jurisdiction participate in the Community Rating System (CRS)?	No
• If yes, is your jurisdiction interested in improving CRS Classification?	N/A
• Is your jurisdiction interested in joining the CRS program?	No
How many Flood Insurance policies are in force in your jurisdiction?[a]	60
• What is the insurance in force?	$18,602,000
• What is the premium in force?	$24,538
How many total loss claims have been filed in your jurisdiction?[a]	9
• How many claims were closed without payment/are still open?	7/0
• What were the total payments for losses?	$11,267

a. According to FEMA statistics as of December 31, 2016

Table 9-8. Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	No	N/A	N/A
Storm Ready	Yes	N/A	N/A
Firewise	No	N/A	N/A

Table 9-9. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts	Low
Comments/Additional Information: None provided.	
Jurisdiction-level monitoring of climate change impacts	Low
Comments/Additional Information: None provided.	
Technical resources to assess proposed strategies for feasibility and externalities	Low
Comments/Additional Information: None provided.	
Jurisdiction-level capacity for development of greenhouse gas emissions inventory	Medium
Comments/Additional Information: A GHG inventory was created as part of the 2014 Climate Action Plan, but has not been updated.	
Capital planning and land use decisions informed by potential climate impacts	Low
Comments/Additional Information: None provided.	
Participation in regional groups addressing climate risks	Low
Comments/Additional Information: None provided.	
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes	Low
Comments/Additional Information: None provided.	
Identified strategies for greenhouse gas mitigation efforts	Medium
Comments/Additional Information: Strategies are identified in the 2014 Climate Action Plan, but the plan has not been adopted by the Town Council.	
Identified strategies for adaptation to impacts	Low
Comments/Additional Information: Adaptation strategies are not included in the 2014 Climate Action Plan.	
Champions for climate action in local government departments	Low

Criterion	Jurisdiction Rating[a]
Comments/Additional Information: Limited political will.	
Political support for implementing climate change adaptation strategies	Low
Comments/Additional Information: 2014 Climate Action Plan was accepted rather than adopted by the Town Council.	
Financial resources devoted to climate change adaptation	Low
Comments/Additional Information: None provided.	
Local authority over sectors likely to be negative impacted	Medium
Comments/Additional Information: Moraga has the authority to regulate land use, and improvements in the public right of way.	
Public Capacity	
Local residents knowledge of and understanding of climate risk	Low
Comments/Additional Information: None provided.	
Local residents support of adaptation efforts	Low
Comments/Additional Information: None provided.	
Local residents' capacity to adapt to climate impacts	Low
Comments/Additional Information: None provided.	
Local economy current capacity to adapt to climate impacts	Low
Comments/Additional Information: None provided.	
Local ecosystems capacity to adapt to climate impacts	Low
Comments/Additional Information: None provided.	

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

9.5 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

9.5.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the Town of Moraga made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. Progress on key measures included in the Town's 2011 Annex to the 2011 Association of Bay Area Governments Local Hazard Mitigation Plan is listed below:

- **General Plan Safety Element**—The Town has a Safety Element in its General Plan that includes a discussion of fire, earthquake, flooding, and landslide hazards. The 2011 hazard mitigation plan was adopted as an implementation appendix to the Safety Element.
- **California Environmental Quality Act (CEQA)**—The Town enforces the requirements of CEQA, which, since 1988, requires mitigation for identified natural hazards.

Resources listed in Section 9.11 were used to provide information for this annex on hazard events and local capabilities within the jurisdiction.

9.5.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the Town of Moraga will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan in actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **General Plan**—Opportunities to integrate additional hazard mitigation polices into the Town of Moraga General Plan overall.
- **General Plan Safety Element**—Opportunity to integrate fire hazard and climate adaptation polices compliant with state legislation as part of a safety element update.
- **Moraga Municipal Code/Building Code**—Opportunity to integrate hazard mitigation practices as ordinances are updated for new ordinances are adopted.
- **Town of Moraga Design Guidelines**—Opportunity to integrate new hazard mitigation guidelines and standards when the Design Guidelines are updated at a future date.
- **Capital Improvement Plan**—Opportunity to integrate LHMP actions into Capital Improvement projects in order to reduce hazard risk.
- **Debris Management Plan**—Opportunity to update local Debris Management Plan with information and estimates from LHMP.)
- **Public Outreach—**Opportunity to expand outreach channels and integrate hazard mitigation messaging as part of routine communications.
- **Emergency Operations Plan—**Opportunity to integrate information on hazards into next EOP update.
- **Climate Action Plan—**Update and adopt existing Climate Action strategy document.
- **Facilities Plan—**Integrate hazard mitigation into Town facilities planning.

9.6 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 9-10 lists past occurrences of natural hazards for which specific damage was recorded in the Town of Moraga. Other hazard events that broadly affected the entire planning area, including the Town of Moraga, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 9-10. Past Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Landslides	CCMOB81, CCMOC85, CCMOC80, CCMOC81, CCMOC82, CCMOC83, CCMOE80, CCMOC84, CCMOA80, CCMOB81	2017	Heavy rain led to landslides on the south side of town on EBMUD property and in the Moraga County Club. A deep seated landslide led to the Canyon Bridge being structural compromised and closed. Replacement of the bridge was required.
Localized Flooding		2016	Significant storms led to a sink hole at the corner of Rheem Boulevard and Moraga Road due to collapse of a 96-inch storm drain pipe.
Localized Flooding		2008	Erosion around a storm drain pipe led to a sink hold on Rheem Boulevard.
Localized Flooding	DR-1628 and DR-1644	2006	Significant storm related damage in Town
Landslides	N/A	1986	Landslides in the hills on the north side of Town, including one on Rheem Blvd that closed the roadway

9.7 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for the jurisdiction.

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 0
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: 0

Other noted vulnerabilities include the following:

- A magnitude 7.05 earthquake on the Hayward Fault may damage 5.5 thousands buildings, produce 111,000 tons of structural debris, and result in nearly 406 million dollars in damage.
- Approximately 1.25 percent of the population is located in the 100 year flood hazard area. Approximately 3.2 percent of the population is located in the 500 year flood hazard zone.
- The aggregated landslide susceptibility risk exposure (moderate, high, and very high) is estimated to impact 76 percent of the population, 4,000 buildings, and expose 2.5 billion dollars in value.

9.8 HAZARD RISK RANKING

Table 9-11 presents a local ranking for the Town of Moraga of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 9-11. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake[b]	54	High
1	Landslide[e]	54	High
2	Severe weather	30	Medium
3	Flood[c]	18	Medium
4	Drought	9	Low
5	Dam and levee failure[a]	8	Low
6	Wildfire[e ,f]	6	Low
7	Sea level rise[d]	0	None
8	Tsunami	0	None

a. Based on the level of detail conducted in the risk assessment, the risk ranking for this hazard is focused solely on dam failure impacts. See Chapter 6.4 of Volume 1 for combined dam inundation list on which this assessment is based.
b. Haywired M7.05 event was used to assign probability and impacts
c. 1-percent annual chance event was used to assign probability and impacts
d. 2100 upper range estimates and extreme tide are used to assign probability and impacts
e. Very High and High severity zones were used to assign probability and impacts
f. There is no mapped risk within the jurisdiction; however, a score was given due to potential impacts to people and the economy from smoke

9.9 STATUS OF PREVIOUS PLAN ACTIONS

Table 9-12 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 9-12. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
Infra a-4, a-21: Seismic retrofit of Town offices and construction of an Emergency Operations Center	X			
Comment: The Town completed construction of a community meeting room/Town Council Chambers at 335 Rheem Boulevard in 2015 that will serve a dual purpose as an Emergency Operations Center (EOC) in the event of a disaster. Since the time of project completion the building has been brought up to "essential services" standards for emergency operations – a necessity for Police services. This includes installation of a system to allow remote video monitoring of the building from the Town Offices at 329 Rheem Boulevard. Wireless and internet connectivity was also upgraded at both buildings. The back-up EOC locations are Town Hall (329 Rheem) and Moraga-Orinda Fire District, Station 42.				
Infra a-8, a-11: 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		X	MG-13
Comment: An emergency generator was installed at 335 Rheem Boulevard and portable generators were acquired which are available for deployment in the event of an emergency. The Police Department and Public Works Department continue to seek funding for additional generator capacity at Town Hall.				
Infra 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.			X	MG-15
Comment: The Town completed a project in spring 2017 to underground power lines along Moraga Road between Draeger Dr. and St. Mary's Road. The Town continues to seek additional opportunities to underground utilities in the future in order to reduce hazard risk. All new large development projects are required to underground utilities.				
Infra 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.			X	MG-12
Comment: Town staff trains with Contra Costa County Office of Emergency Services (OES), conducts emergency drills with adjoining jurisdictions, and coordinates with Public Utilities and Cal OES on issues.				
Infra a-16: 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.		X		
Comment: In the event of an Emergency, the Town can use Nixle, Nextdoor, Moraga's About Town digital newsletter (approximately 1,000 subscribers) and the electronic message board sign installed on Moraga Road across from Commons Park in 2015. Note: the Town of Moraga is not a transit operator.				
Infra b-9, Govt 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.			X	MG-9
Comment: The Town conducts EOC drills involving setup orientation of roles and capabilities in emergency situations. The Police Department has added safety information to the Town website.				

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
Infra 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.)			X	MG-8
Comment: The Storm Drain Master Plan project was completed in 2015 which includes 1) System Mapping, 2) Condition Assessment, 3) Hydrology and Hydraulics, 4) Future Land Use Conditions, and 5) Creeks and Culverts Analysis. The project objective is to provide additional capacity to the Town's storm drain system based on anticipated needs when the Town is fully built-out. The Town developed a hydraulic analysis of Laguna Creek on the Hacienda property to determine appropriate actions to reduce flooding on the Hacienda grounds. In 2014 the Town Completed a project based on that study to restore a 96 inch culvert, including construction of a new headwall to increase flow.				
Infra e-2; Land d-5: 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	MG-5
Comment: Hazard mapping was conducted in 2015 as part of the Hillside and Ridgeline project. Once the project concludes, which is expected in late 2017, amendments will be adopted for the General Plan, Zoning Code, and Design Guidelines. In part these amendments are intended to reduce landslide and wildfire hazards in the Town.				
Infra g-1: Provide materials to the public related to planning for power outages.			X	MG-9
Comment: Town coordinates with the Moraga-Orinda Fire District for emergency planning and coordinates with Contra Costa County EOC. The Town maintains public information capabilities through use of Nixle, Nextdoor, About Town newsletter, Facebook, and press releases				
Hsng K-6, K-7; Infra g-6, g-7; Govt c-3, c-11; Educ c-3, c-4: Sponsor the formation and training of Community Emergency Response Teams (CERT) for residents in your community.			X	MG-12
Comment: The Police Department continued citizen engagement through reactivation of the Citizen Corps Council, Community Emergency Response Team (CERT), Moraga Neighborhood Emergency Preparedness (MNEP) group, Radio Amateur Civil Emergency Service (RACES) group. The Town continues to work with the Lamorinda Emergency Preparedness Coordinator to improve disaster preparedness and response capabilities.				
Govt c-7: Participate in developing and maintaining a system of interoperable communications for first responders from cities, counties, special districts, state, and federal agencies	X			
Comment: Alameda and Contra Costa Counties implemented a single radio technology that allows all agencies within the County to communicate (the East Bay Regional Communication System). Within Moraga, all safety personnel were outfitted with new radios for this improved communication. The system was fully operational in 2012.				
Govt d-5: Participate in FEMA's National Flood Insurance Program.			X	MG-4
Comment: The Town participates in the National Flood Insurance Program.				
Env a-6,a-7: Comply with applicable performance standards of any National Pollutant Discharge Elimination System municipal stormwater permit that seeks to manage increases in stormwater run-off flows from new development and redevelopment construction projects. AND 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.	X			
Comment: The Town works to ensure that erosion and stormwater control measures are in place prior to wet weather construction activities. The Town inspects and documents construction sites prior to the rainy season. Public Works conducts regular site visits during the rainy season.				

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
Land a-2, d-1, g-1: 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. AND 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. AND Use hazard abatement districts as a funding mechanism to ensure that mitigation strategies are implemented and enforced over time.	X			
Comment: The Moraga Geologic Hazard Abatement District was formed in 2015. A Plan of Control was adopted for the Rancho Laguna II Subdivision.				
HSNG a-1, ECON 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 7) Landslide Hazard Zones (designated under the Seismic Hazard Mapping Act).		X		
Comment: Limited staff and resources to pursue this action. Planning Department staff is available to answer questions from real estate agents related to hazards.				
HSNG 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 Guidelines for Rehabilitation.		X		
Comment: No historic buildings located in the town have been designated to date by Secretary of the Interior, National Register of Historic Places, or through local regulations. A Historic Preservation Ordinance (No. 251) was adopted in 2015 in order to create a mechanism for designating historic landmarks. The Town adopted the Saint Mary's College Campus Master Plan update in 2017 which includes guidelines for historic preservation of buildings and structures. The Town will revisit the action if historic or architecturally significant residential buildings are identified in the future.				
HSNG 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).			X	MG-18
Comment: The Town has not had adequate resources to pursue this action. The Town may proceed with this action in the future as funding sources become available.				
HSNG j-1: 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.			X	MG-18
Comment: The Town has not had adequate resources to pursue this action. The Town may proceed with this action in the future as funding sources become available				

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
HSNG k-4: Develop a public education campaign on the cost, risk, and benefits of earthquake, flood, and other hazard insurance as compared to mitigation.			X	MG-9
Comment: The Town has not had adequate resources to pursue this action. The Town may proceed with this action in the future as funding sources become available.				
Econ 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, for it has probably been retrofitted to a life-safety standard, not to a standard that will allow occupancy following major earthquakes.		X		
Comment: Limited staff and resources to pursue this action.				
Govt d-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.		X		
Comment: Limited staff and resources to pursue this action. Planning and Public Works staff inform applicants regarding construction in FEMA designated flood hazard zones.				
Govt 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.	X			
Comment: The Police Department currently in the process of installing surveillance cameras in key locations throughout the Town. These cameras can also be used for post-disaster damage assessment and feature local data storage, alleviating the need to rely upon the Internet for connectivity.				
Govt c-1: Develop a plan for short-term and intermediate-term sheltering of your employees.	X			
Comment: The Town has obtained a supply of cots and blankets for use by employees who require short-term sheltering during a disaster. The Town has identified deployment locations at the primary and secondary EOC locations for the cots. Both locations have restroom and shower facilities and are stocked with emergency food supplies.				
Govt c-9: Purchase command vehicles for use as mobile command/EOC vehicles if current vehicles are unsuitable or inadequate.	X			
Comment: The Town has a command post vehicle and trailer. All of the EOC and emergency supplies are stored in the trailer, enabling rapid deployment at the primary EOC, secondary EOC or other alternate location.				
Infra a-9: 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.	X			
Comment: All signals have battery back-ups designed to run for 5 hours. The Town has an agreement with vendors to deploy emergency generators for long-term power outages.				
Infra 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.			X	MG-7
Comment: The Town sought and attained funds in 2015 from the Caltrans Highway Bridge program to replace the Canyon Road bridge.				

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
Infra d-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	MG-4
Comment: The Town requires hydrologic analyses for major development projects. Additionally the Town has performed various watershed and storm drainage studies since the last update. In 2008, the Storm Drainage Needs Study was updated. This Study analyzed storm drainage system, the major creeks and their reaches to identify deficiencies and determine proposed future improvements. Additionally the Study provided guidance and recommendations for watershed procedures including report sections, "Storm Drainage Design Guidelines for New Development" and "Dual-Use Facility Design Guidelines". In 2015, the Moraga Storm Drain Master Plan was completed. This Plan analyzed capacity and needs of the existing Town-wide storm drain system including creek culverts. The Plan work continues as newly proposed development impacts are analyzed relative to our existing system.				
Infra d-3: Conduct a watershed analysis at least once every ten years unless there is a major development in the watershed or a change in the Land Use Element of the General Plan of the cities or county within the watershed.	X			
Comment: A watershed analysis was completed in 2006 as part of the Storm Drain Needs Study assessment. More watershed analysis was documented in the Moraga Storm Drain Master Plan completed in 2015.				
Infra 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.			X	MG-4
Comment: In 2015, the Moraga Storm Drain Master Plan was completed. This Plan analyzed capacity and needs of the existing Town-wide storm drain system including creek culverts a sets in place a list of priority improvement projects. Current funding levels do not allow for acquisition of right-of way for the purpose of storm drain projects.				
Infra 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.	X			
Comment: The Town has completed various storm drainage studies and other storm water analyses that have identified locations for the implementation of future watercourse bank protection strategies. Particularity, the Laguna Creek restoration project was identified from these studies where bank protection strategies will be implemented. The Town has obtained $400,000 in grant funding and continues to pursue additional grant funding for the project.				
Infra 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.			X	MG-7
Comment: All Town bridges along the state highway system are inspected bi-annually. Canyon Road bridge was identified as candidate for replacement and the Town sought and obtained Caltrans Highway Bridge Program grant funds to proceed with the design and construction of replacement bridge.				
Infra d-13: Ensure that utility systems in new developments are constructed in ways that reduce or eliminate flood damage.			X	MG-4
Comment: Regulated through Town design review process and California Building Code.				
Infra 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.		X		
Comment: Implemented county-wide by CCC Flood Control District. Data available to the Town.				

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
Infra 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.			X	MG-8
Comment: Only Town owned pipeline are storm drain pipes. No progress to date.				
Infra 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).			X	MG-9
Comment: No progress to date.				
Hsng k-13: 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.			X	MG-9
Comment: The Town annually informs the public regarding maintenance of privately owned creek and storm drain systems.				
Govt 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.	X			
Comment: The Town has identified the critical facilities and installed an emergency generator at the Towns EOC (335 Rheem Boulevard) and maintains offsite cloud based data storage.				
Govt 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.			X	MG-12
Comment: Town staff trains with Contra Costa County Office of Emergency Services (OES), conducts emergency drills with adjoining jurisdictions, and coordinates with Public Utilities and Cal OES on issues.				
Govt 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.		X		
Comment: The Town has not made progress on this action since the ABAG LHMP was adopted in 2011 due to a lack of feasibility. The Town may revisit this measure in the future based on feasibility and available funding source assessments.				
Govt d-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			X	MG-4
Comment: The Town participates in twice a year multi-agency capital improvement program meetings to discuss all impacts of proposed projects.				
Envi 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.		X		
Comment: The Town has not had adequate resources to pursue this action. The Town may proceed with this action in the future as funding sources become available.				

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
Envi 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, wildfire mitigation and maintains the viability of living rivers.		X		
Comment: The Town has not had adequate resources to pursue this action. The Town may proceed with this action in the future as funding sources become available.				
Envi a-9: 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.			X	MG-13
Comment: No progress to date.				
Infra a-10, b-8, d-7, d-8, g-2, g-3, g-5; Heal c-2, c-3; Hsng a-3, a-4, h-1-h-7, i-1, i-2, k-1-k-3, k-9, k-10, k-12, k-16; Econ f-1-f-8, g-1, g-2, j-1-j-5, j-7; Govt a-1, a-2, a-10, a-12, b-1, b-2, b-3, b-4, b-5, c-4, c-5, c-6, c-8, c-10, c-12-c-19, d-1, d-2, d-8-d-10; Educ d-2; Envi a-1-a-3, a-10, a-13, b-1-b-8, b-11, b-12, a-3, a-6-a-8, c-1-c-5, d-2-d-4, e-1, e-2, f-3, f-4		X		
Comment: The actions listed above were included in the Previous ABAG Plan, and are ongoing policies or objectives, rather than measurable actions.				
Infra a-1, a-6, a-13, a-15, a-17, a-18, a-20, b-2- b-7, b-10, c-1, c-2, c-3, d-4, d-10, d-12, d-14, d-18, f-1; Heal a-1- a-7, b-1- b-3, c-1, c-4- c-6; Hsng b-1-b-9, c-1-c-6, c-8, c-9, d-1-d-4, e-1-e-4, f-1, f-2, g-1- g-17, h-8-h-10, j-2, k-9, k-11, k-14, k-15; Econ b-2-b-9, c-1-c-3, d-1-d-3, e-1-e-13, f-9, h-1-h-3, i-1-i-6, j-6, j-8-j-10, j-12, j-13; Govt a-8, a-11, a-13, c-20-c-25, d-6, d-7, e-1, e-2; Educ a-1-a-6, b-1-b-3, c-1, c-2, c-5-c-7, d-1; Envi a-8, a-9, a-11, a-12, b-10, b-13, c-1-c-3; Land a-1, a-4, a-5, b-1, b-2, f-1, f-2, f-4		X		
Comment: The actions listed above were included in the Previous ABAG Plan, but were not applicable to hazards located within the Town of Moraga or are action which the Town does not have control over and/or are the responsibility of other agencies.				
Infra a-3, a-5, a-7, a-22, d-4, d-15, d-16; Hsng k-5, Econ j-11; Govt a-9, c-2; Land c-6		X		
Comment: The actions listed above were included in the Previous ABAG Plan, but lack objective criteria by which to evaluate status.				

9.10 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 9-13 lists the actions that make up the Town of Moraga hazard mitigation action plan. Table 9-14 identifies the priority for each action. Table 9-15 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 9-13. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
MG-1—Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	Planning/CCC Building	High	HMGP, PDM, FMA	Short-term
MG-2—Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including amending General Plan Safety Element for compliance with Assembly Bill 2140 (2006) regarding local hazard mitigation, Senate Bill 1241 (2012) regarding wildfire safety, and Senate Bill 379 (2015) regarding climate adaptation and resiliency strategies.						
New and Existing	All Hazards	1, 4, 5, 7, 11, 12, 14, 17	Planning	Low	Staff Time, General Funds	Ongoing
MG-3— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 16	Planning/Public Works	Low	Staff Time, General Funds	Short-term
MG-4—Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: • Enforce the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts. Continue to collaborate with other agencies such as utilities, the Contra Costa County Flood Control & Water Conservation District, and neighboring jurisdictions on flood control measures.						
New and Existing	Flood	3, 5, 6, 9, 10, 11, 15	Public Works	Low	Staff Time, General Funds	Ongoing
MG-5— Complete the Hillside and Ridgeline project which includes targeted amendments to the General Plan, Zoning Code, and Design Guidelines intended to reduce exposure to landslide and wildfire hazards in the Town and to other known hazards which could impact hillside areas in the community.						
New and Existing	Landslide	4, 5, 11, 12, 14, 17	Planning	Low	Staff Time, General Funds	Short-term
MG-6—Mitigate hazards by integrating restoration of natural processes and systems into infrastructure upgrades such as daylighting Laguna Creek at the Hacienda Pavilion, or streambank restoration projects.						
Existing	Flood	10, 15, 17	Public Works	Medium	Grand funding needed; HMGP, FMA	Ongoing
MG-7—Identify and replace critical infrastructure such as roads and bridges that have to potential to be impacted by future hazards such as landslides, earthquakes, and flooding. Replace the Canyon Road bridge with a permanent bridge.						
Existing	All Hazards	1, 6, 10, 15	Public Works	High	Grand funding needed, HMGP, PA, FMA, PDM	Short-term
MG-8—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. Pursue passage of a storm drain revenue measure to repair and replace the highest priority storm drain infrastructure based on the 2015 Storm Drain Master Plan.						
New and Existing	Flood	6, 13, 15	Public Works/ Administrative Services	High	Revenue measure/Grant funding, HMGP, FMA	Long-term
MG-9—Continue to make information publicly available to the community related to hazard mitigation, available funding resources for retrofits, energy efficiency upgrades, insurance, disaster preparedness, and disaster response. Continue to conduct public outreach through the About Town newsletter, Nextdoor, press releases, and Nixle. Add information to the Town of Moraga website (Police Department and Public Works) regarding the information listed above as well as: • Maintenance of privately owned creek and storm drain systems. • Coping with disrupted storm drains, sewage lines, and wastewater treatment (such as that developed by ABAG's Sewer Smart Program						
Existing	All Hazards	3, 4, 6, 9, 11, 16	All Departments	Low	Staff Time, General Funds	Ongoing

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
MG-10—Enter into on-call service agreements with vendors for emergency response purposes.						
New and Existing	All Hazards	1, 2, 6	Public Works/Administrative Services	Low	Staff Time, General Funds	Ongoing
MG-11—Implement measures included in the Town of Moraga Climate Action Plan (2014) to reduce Greenhouse Gas (GHG) emissions. Update GHG emission inventory, adopt an update of the 2014 Climate Action Plan which includes climate adaptation measures.						
New and Existing	All Hazards	3, 6, 18	Planning	Medium	Staff/Consultant Time/Grant funding needed/General Funds	Long-term
MG-12—Update key emergency response/preparedness policy documents and plans. Work collaboratively with agencies including FEMA, Contra Costa County Office of Emergency Services, Cal OES, and public utilities regarding emergency preparedness and emergency response. Continue citizen engagement through reactivation of the Citizen Corps Council, Community Emergency Response Team (CERT), Moraga Neighborhood Emergency Preparedness (MNEP) group, Radio Amateur Civil Emergency Service (RACES) group. Work with the Lamorinda Emergency Preparedness Coordinator to improve disaster preparedness and response capabilities.						
New and Existing	All Hazards	1, 2, 6, 13, 16	Police	Low	Staff/Consultant Time/Grant funding needed (EMGP, HMGP)/General Funds	Ongoing
MG-13—Improve the efficiency and sustainability of Town owned property such as buildings and vehicles through upgrades. Examples include siting solar on town buildings or property, energy efficiency upgrades to the Town Offices, Council Chambers, Library and Hacienda, increasing the average fuel efficiency of municipal fleet vehicles, increasing emergency power generation capacity.						
New and Existing	Greenhouse Gas Mitigation	1, 2, 13	Public Works	Medium	Grants needed, Staff Time	Ongoing
MG-14— Improve functionality of key intersections and critical evacuation routes through signage, wayfinding, signalization, roundabouts. Examples include the roundabout projects on St. Mary's Road at Rheem Boulevard and Bollinger Canyon Road, Corliss signalization project at Moraga Road, and Town-wide Wayfinding Signage Project.						
New and Existing	All Hazards	1, 2, 6	Planning/Public Works	High	Grants needed (HMGP, EMPG)/Staff Time	Ongoing
MG-15— Continue 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.						
New and Existing	Severe Weather /Earthquake/Landslide/Wildfire	6, 13, 15	Planning/Public	High	Grants needed (HMGP, PDM)/Staff Time	Ongoing
MG-16—Identify landslide hazards that may threaten key arterials and take corrective actions to stabilize hillsides to the extent feasible, including working with private property owners to require appropriate property maintenance. An example includes hillside stabilization above Bollinger Canyon Road.						
New and Existing	Landslide	1, 2, 6	Public Works	High	Grants needed (HMGP, PDM)/Staff Time	Long-term
MG-17—Continue to work with the Moraga-Orinda Fire District to reduce fire hazard by maintaining roadside vegetation in the public right-of-way, and by encouraging vegetation maintenance on private property.						
Existing	Wildfire	2, 3, 4, 6, 13, 16	Public Works/MOFD	Low	Staff Time	Ongoing
MG-18— Explore adoption of ordinances to increase seismic resiliency. Examples include an reconstruction ordinance to ensure that damaged buildings are repaired in an appropriate and timely manner and retrofitted concurrently; and an ordinance to modify parking standards to allow for parking waivers (or other incentives) related to seismic retrofits of soft-story buildings.						
New and Existing	All Hazards	4, 6, 7, 15	Planning/CCC Building	Low	Staff Time, General Funds	Short-term

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 9-14. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
MG-1	8	High	High	Yes	Yes	No	Medium	High
MG-2	8	Medium	Low	Yes	No	Yes	High	Low
MG-3	3	Low	Low	Yes	No	Yes	High	Low
MG-4	7	Medium	Low	Yes	No	Yes	High	Low
MG-5	6	Medium	Low	Yes	No	Yes	High	Low
MG-6	3	Medium	Medium	Yes	Yes	No	Medium	Medium
MG-7	4	High	High	Yes	Yes	No	High[b]	High
MG-8	3	High	High	Yes	Yes	No	Medium	High
MG-9	6	Low	Low	Yes	No	Yes	Medium	Low
MG-10	3	Low	Low	Yes	No	Yes	Low	Low
MG-11	3	Low	Low	Yes	Yes	No	Low	Low
MG-12	5	High	Low	Yes	Yes	Yes	High	Low
MG-13	3	Medium	Medium	Yes	Yes	No	Low	Low
MG-14	3	Medium	High	No	Yes	No	Medium	Medium
MG-15	3	High	High	Yes	Yes	No	Low	Medium
MG-16	3	High	High	Yes	Yes	No	Medium	High
MG-17	6	High	Low	Yes	Yes	Yes	High	High
MG-18	4	Medium	Low	Yes	No	Yes	Medium	Low

a. See the introduction to this volume for explanation of priorities.
b. Although funds are not currently available to support implementation, this has been identified as a high priority action.

Table 9-15. Analysis of Mitigation Actions

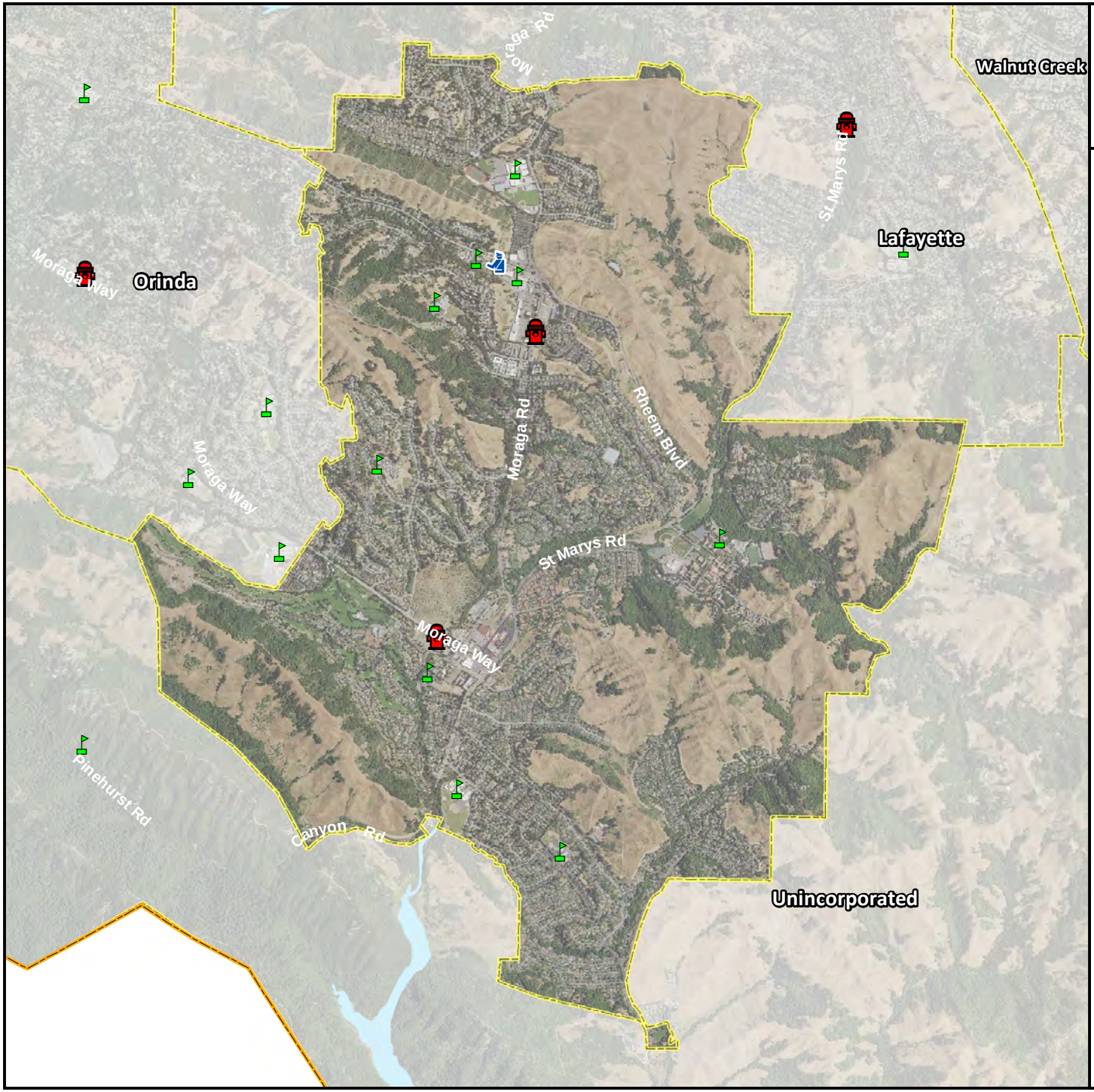
Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	MG-1, MG-2, MG-3, MG-9, MG-12	MG-1, MG-2, MG-3, MG-9, MG-14	MG-2, MG-3, MG-9, MG-12	MG-2 MG-3	MG-2, MG-3, MG-7, MG-10, MG-12, MG-14	MG-1, MG-3, MG-7, MG-10, MG-14, MG-18	MG-2, MG-3, MG-9, MG-11, MG-13	MG-2 MG-3, MG-9, MG-12
Dam and Levee failure			MG-12, MG-9		MG-12, MG-9, MG-10	MG-10		MG-12, MG-9
Drought	MG-11	MG-17	MG-11, MG-12, MG-9	MG-11	MG-11, MG-12, MG-9		MG-11	MG-11, MG-9
Earthquake	MG-5, MG-15	MG-5, MG-7, MG-8, MG-18	MG-9, MG-12		MG-7, MG-10, MG-14	MG-7, MG-8, MG-18		MG-9, MG-12
Flood	MG-1, MG-4, MG-6, MG-7 MG-8	MG-1, MG-4, MG-6, MG-7 MG-8	MG-9, MG-12	MG-6	MG-9, MG-12	MG-6, MG-7, MG-8	MG-11	MG-9, MG-12
Landslide	MG-5, MG-7, MG-15, MG-16	MG-5	MG-9, MG-12		MG-7, MG-10 MG-12, MG-16	MG-7, MG-8		MG-9, MG-12
Severe weather	MG-1, MG-4, MG-6, MG-7 MG-8, MG-15	MG-1, MG-4, MG-6, MG-7 MG-8	MG-9, MG-12	MG-6	MG-9, MG-12	MG-7, MG-8	MG-11	MG-9, MG-12
Wildfire	MG-15, MG-17	MG-17, MG-14	MG-9, MG-12		MG-14	MG-18	MG-11	MG-9, MG-12, MG-17

a. See the introduction to this volume for explanation of mitigation types.

9.11 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed for this annex.

- **Town of Moraga Municipal Code**—The Municipal Code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **Town of Moraga Flood Damage Prevention Ordinance**—The flood damage prevention ordinance was reviewed for compliance with the National Flood Insurance Program.
- **Town of Moraga General Plan**—The General Plan was reviewed in order to identify policies and programs related to natural hazards areas, hazard mitigation, resiliency, and disaster response.
- **Town of Moraga Design Guidelines**—The 2002 Town of Moraga Design guidelines were reviewed to identify guidelines and standards currently in place for development project, relating to hazard mitigation.
- **Technical Reports and Information—**The following **o**utside resources and references were reviewed:
    - **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.
    - **Town of Moraga Emergency Operations Plan (2012)**- The Emergency Operations Plan (EOP) was reviewed in order to evaluate the current emergency response procedures in place for the Town of Moraga.



The Town of Moraga

Critical Facilities

- Emergency Operations Centers (Government)
- Fire Stations (Protective Functions)
- Hazardous Materials
- Medical Facilities
- Police Stations (Protective Functions)
- Schools & Educational Facilities
- Contra Costa County Boundary
- City Boundaries

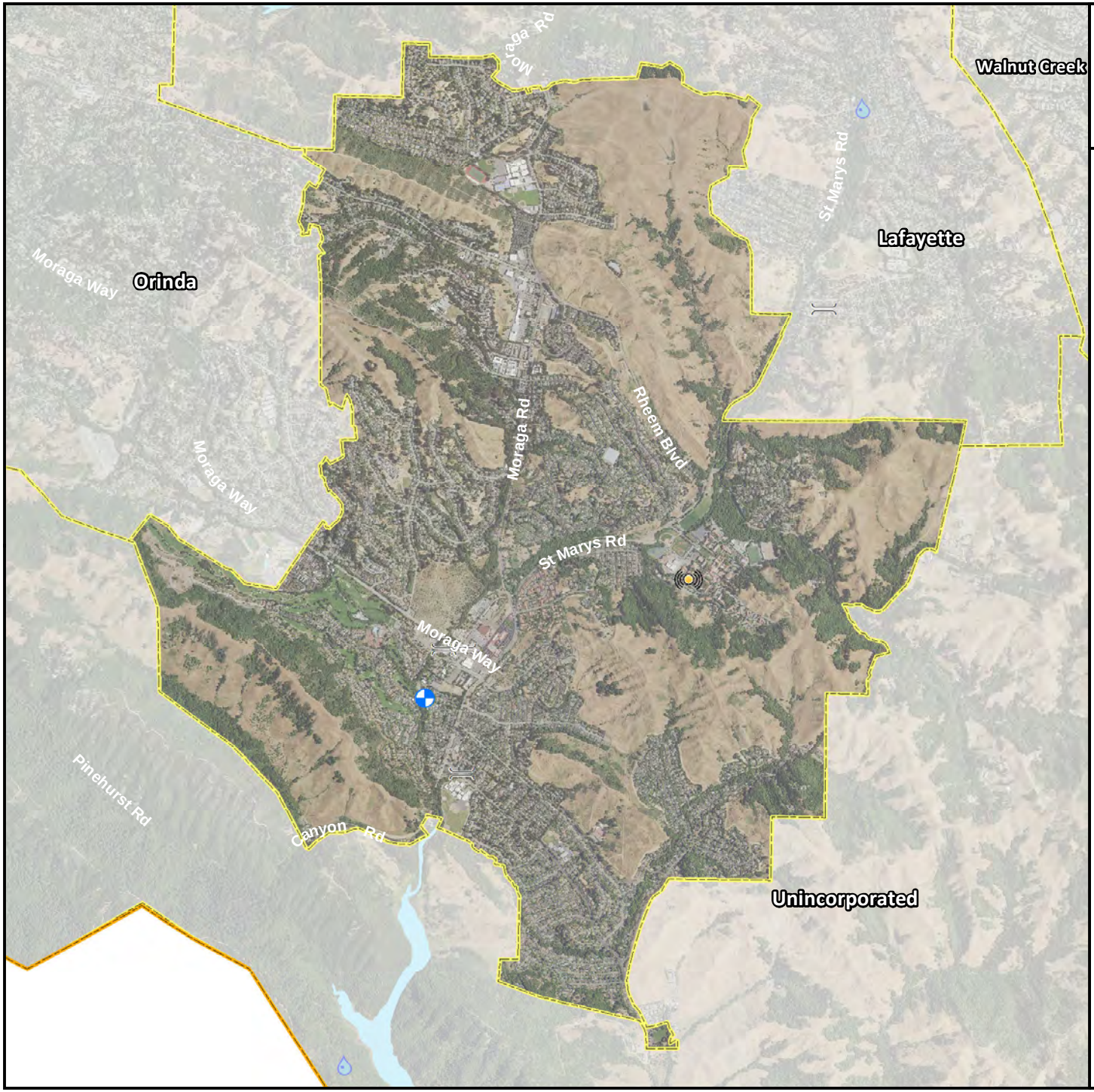
0 0.35 0.7 1.4

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The Town of Moraga

Critical Infrastructure

- Airports (Other Critical Functions)
- Bus Facilities (Other Infrastructure)
- Communication Facilities
- Electric Power Facilities
- Highway Bridges
- Highway Tunnels (Other Infrastructure)
- Light Rail (Other Infrastructure)
- Natural Gas (Other Infrastructure)
- Port Facilities (Other Critical Functions)
- Water Supply Facilities
- Rail Facilities (Other Infrastructure)
- Wastewater Facilities
- Contra Costa County Boundary
- City Boundaries

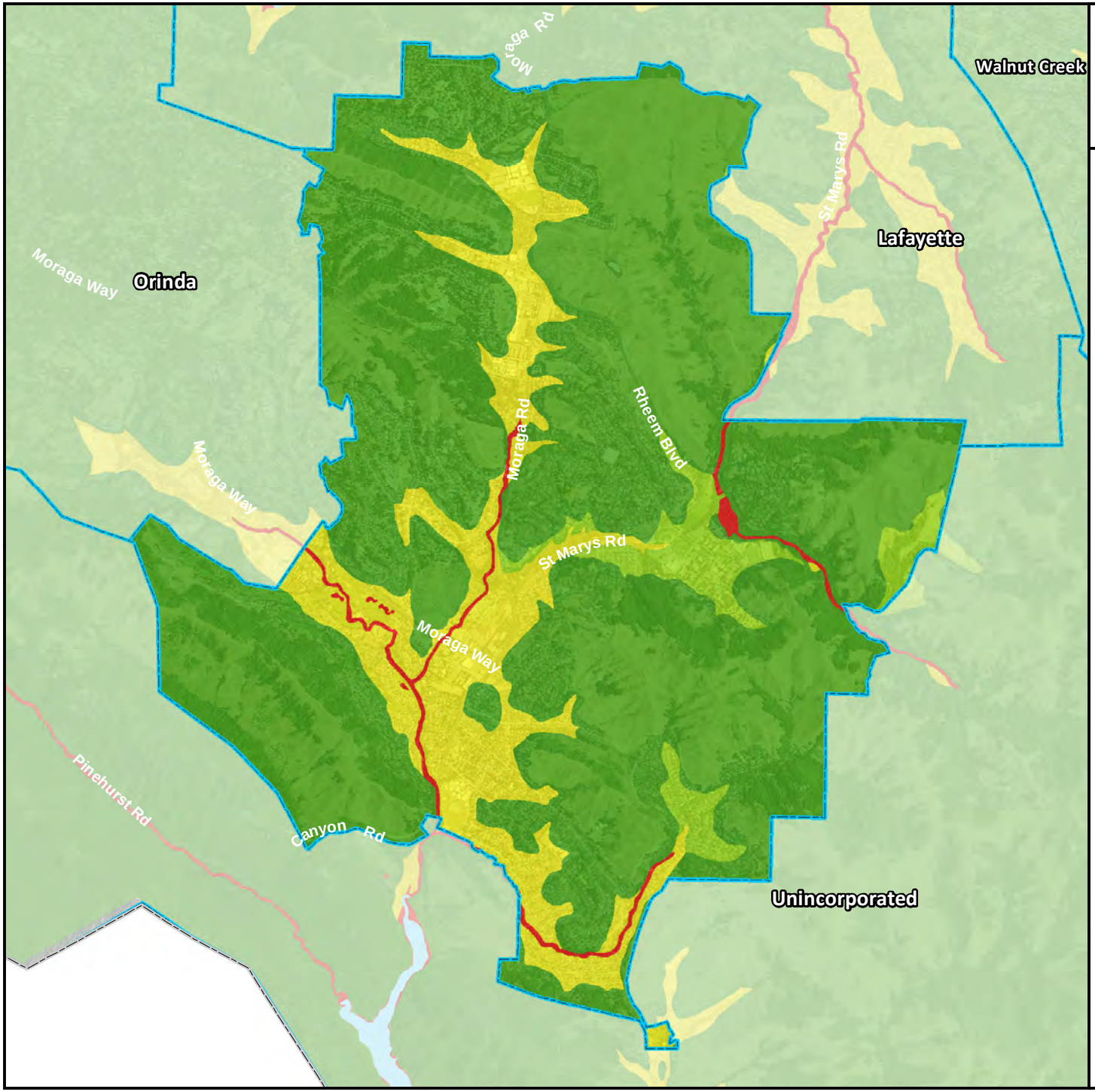
0 0.35 0.7 1.4

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The Town of Moraga

Liquefaction Susceptibility

Contra Costa County Boundary
City Boundaries
Water Bodies

Susceptibility to Liquefaction

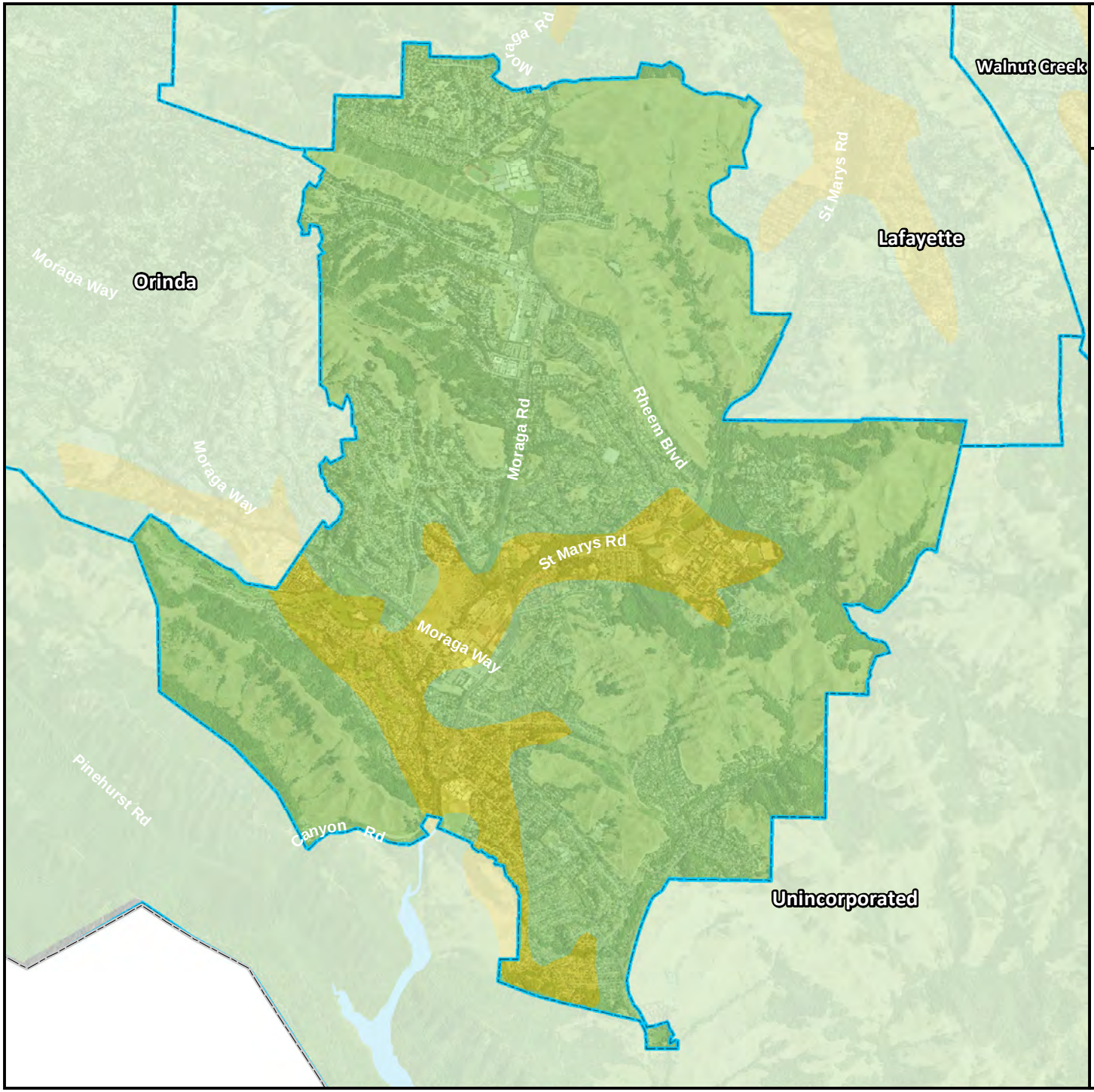
Very Low
Low
Medium
High
Very High
No Liquefaction Data Available

0 0.35 0.7 1.4
Miles

N
W E
S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The Town of Moraga

National Earthquake Hazard Reduction Program (NEHRP) Soil Class

Contra Costa County Boundary

City Boundaries

Water Bodies

NEHRP Site Class / Soil Profile

- B / Rock
- C / Very Dense Soil - Soft Rock
- D / Stiff Soil
- E / Soft Soil
- No Soil Data Available

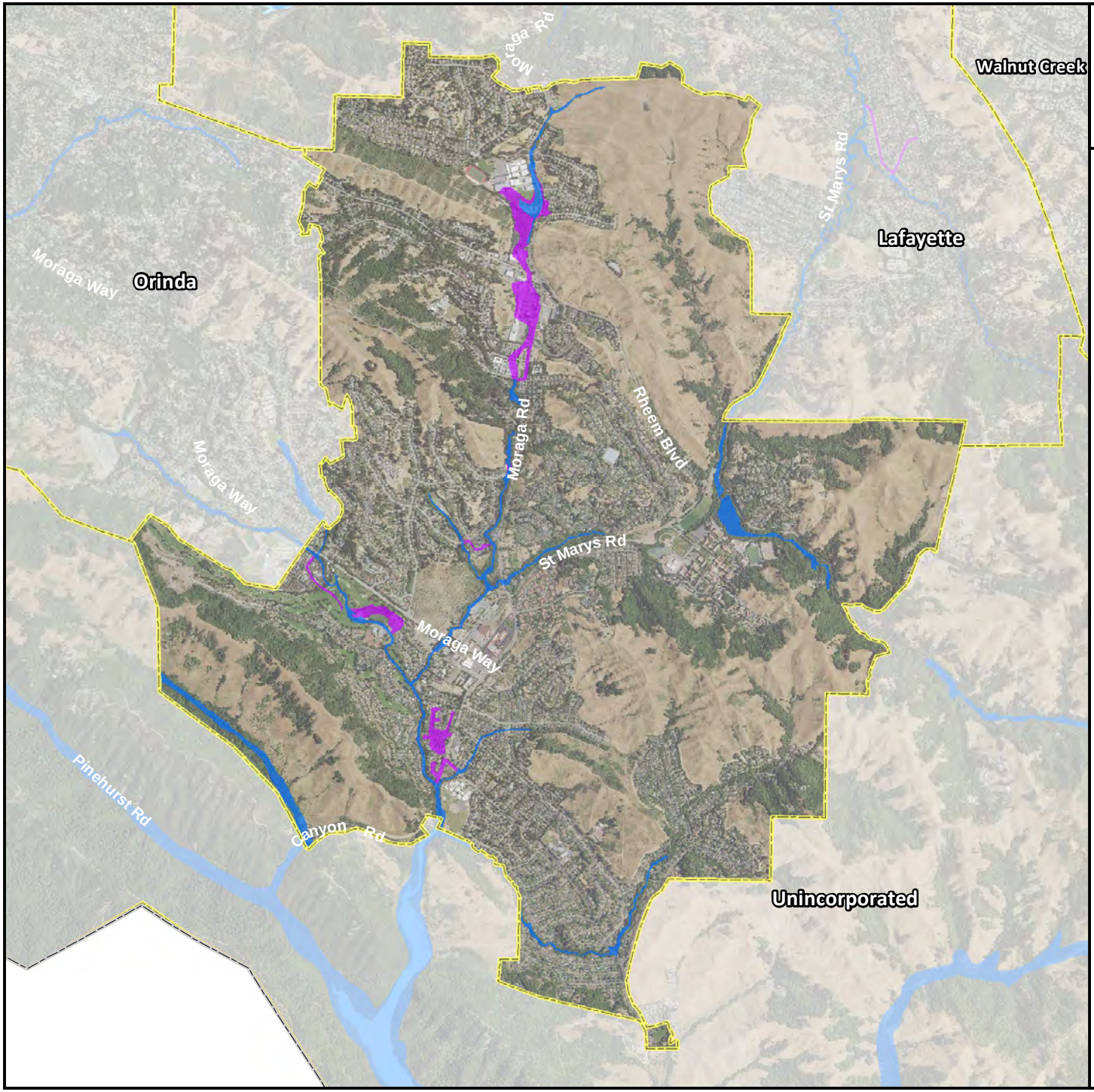
0 0.35 0.7 1.4

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Department of Conservation, USDA



The Town of Moraga

FEMA DFIRM Flood Hazard Areas

- 1% Annual Chance (100-Year) Flood Zone
- 0.2% Annual Chance (500-Year) Flood Zone
- Contra Costa County Boundary
- City Boundaries
- Water Bodies

Flood hazard areas as depicted on Effective FEMA Digital Flood Insurance Rate Maps (DFIRM)

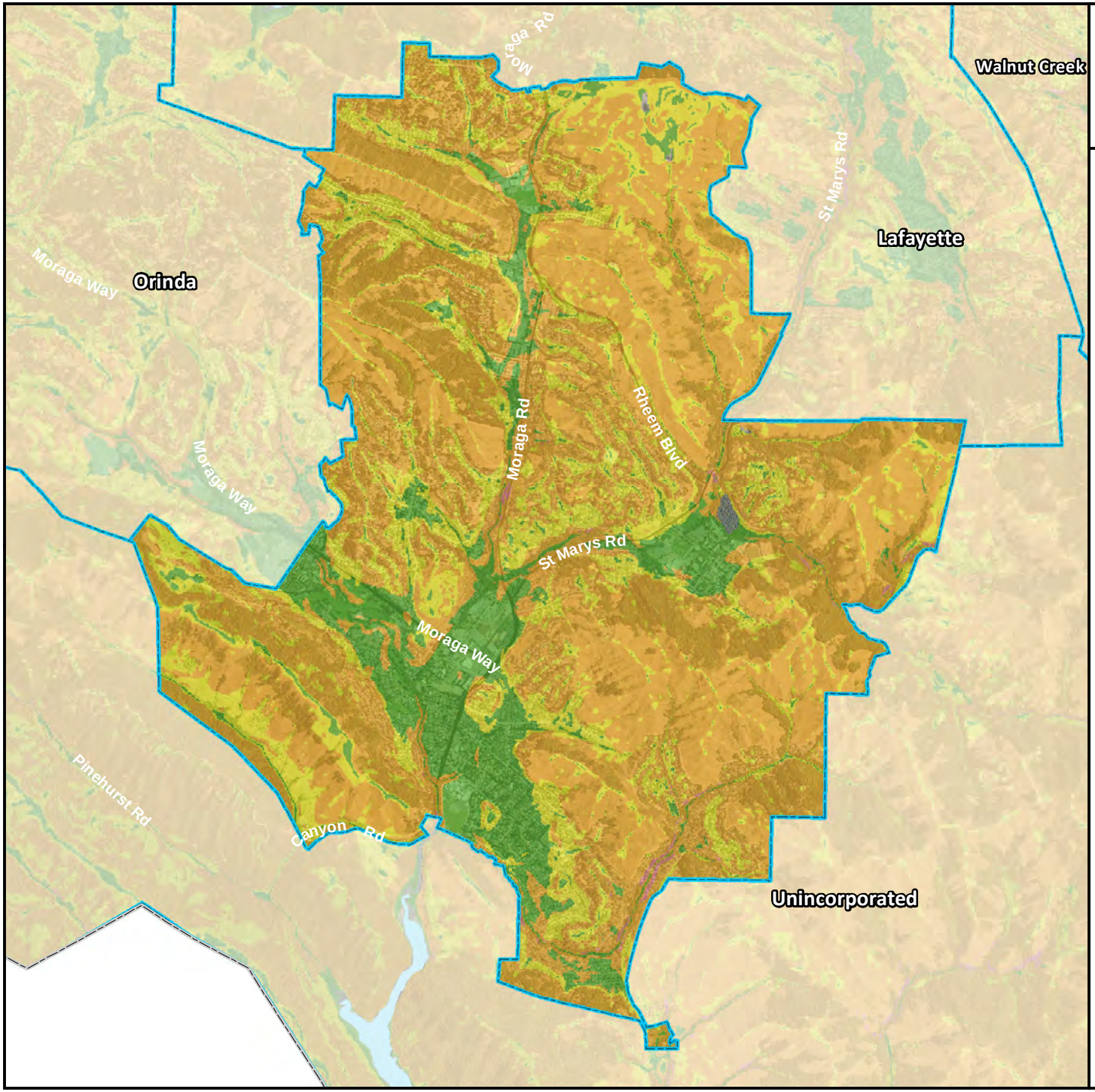
0 0.35 0.7 1.4

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, FEMA, USDA



The Town of Moraga

Landslide Susceptibility Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Type

Low

Moderate

High

Very High / Existing

Data Not Available

Source dataset created by Wills C.J., Perez, F., Gutierrez, C., 2011, Susceptibility to deep-seated landslides in California: California Geological Survey Map Sheet 58

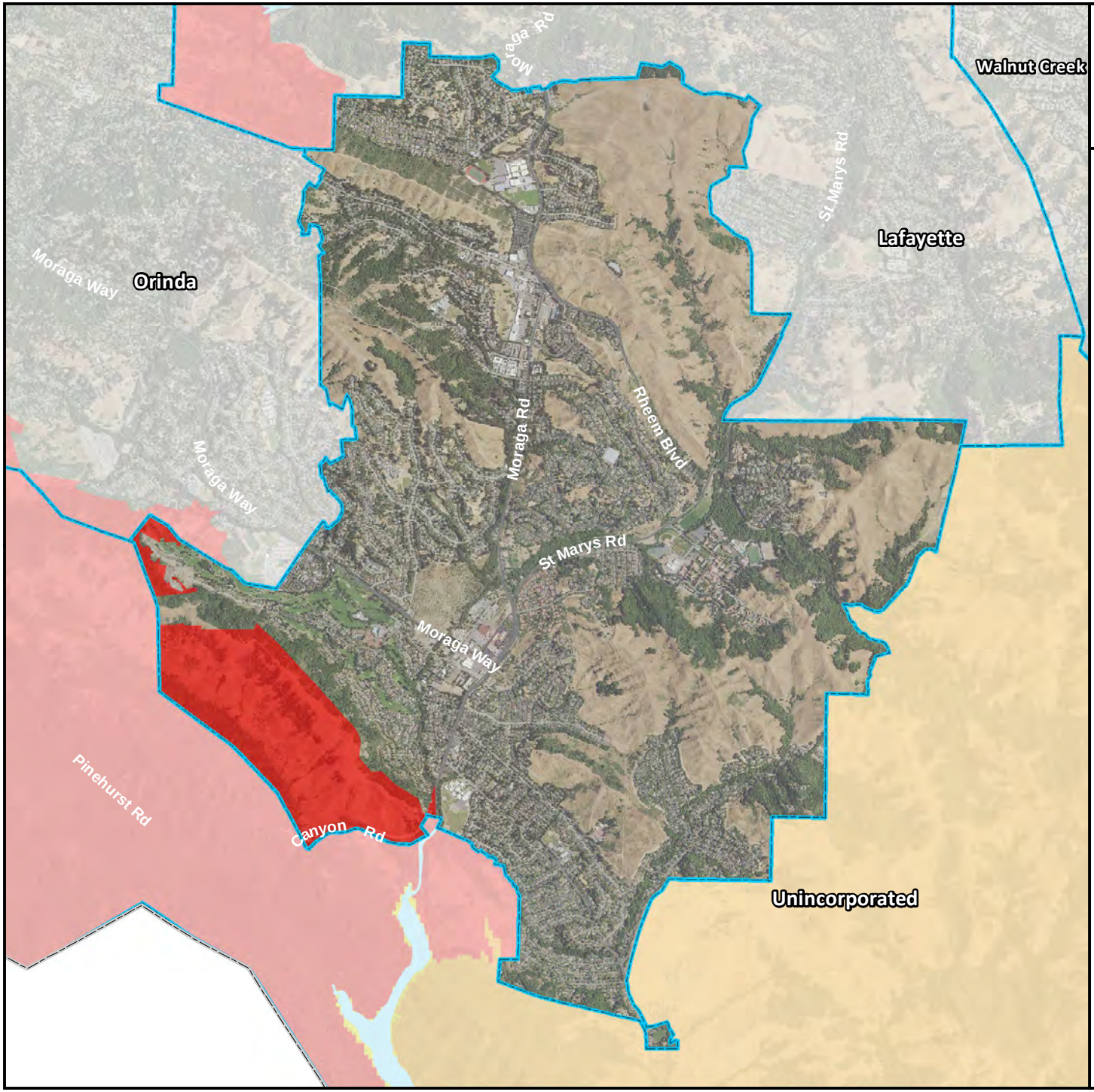
0 0.35 0.7 1.4

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The Town of Moraga

Wildfire Severity Zones

Contra Costa County Boundary
City Boundaries
Water Bodies

Wildfire Severity Zone

Moderate
High
Very High

0 0.35 0.7 1.4
Miles

N
W E
S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, CalFIRE, USDA

10. CITY OF ORINDA

10.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Daisy Allen, Associate Planner
22 Orinda Way
Orinda, CA 94563
Telephone: 925-253-4238
e-mail Address: dallen@cityoforinda.org

Alternate Point of Contact
Drummond Buckley, Planning Director
22 Orinda Way
Orinda, CA 94563
Telephone: 925-253-4240
e-mail Address: dbuckley@cityoforinda.org

10.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation**—1985
- **Current Population**—18,749 as of July 2016 (2016 Department of Finance Estimate)
- **Population Growth**—Based on the data tracked by the state Department of Finance, Orinda has experienced a nearly flat rate of growth in recent years. Population growth from 2015-2016 was 0.9 percent, and growth per year from 2011-2016 has averaged 1.0 percent.
- **Location and Description**—The City of Orinda is located in Contra Costa County, California. Situated in the San Francisco Bay Area, just east of the Oakland hills, Orinda is a 12.8 square mile, semi-rural community characterized by hilly oak woodlands and multiple creek tributaries which feed San Pablo Creek. The City is split in half by Highway 24 and BART, with the "Crossroads/Theatre District" commercial area and surrounding neighborhoods on the south and the "Village" commercial area and surrounding neighborhoods on the north.
- **Brief History**—Orinda was originally part of four large land grants, and the area was used primarily for ranching until Edward Ignacio de Laveaga established the Orinda town site in the 1920's. Drawing on new interest in the area spurred by the California and Nevada Railroad, De Laveaga began development of the Orinda Village commercial area and the surrounding residential neighborhoods with the Hacienda Homes real estate development company. The region blossomed when the Caldecott Tunnel opened in 1937. After the Orinda Theatre was constructed in 1941, Orinda soon enjoyed a reputation as a lively destination for dining, music, and film. With the post-war baby boom, the area expanded gently into a suburban environment. Orinda had great appeal to families ready to leave Oakland or San Francisco for a less intensely urban environment, more house for less money, and higher quality schools. With more families to serve, every sector continued to grow—the commercial district, the school districts, the housing market. BART opened in 1973, accelerating residential and business growth throughout Contra Costa County. Orinda incorporated as a City in 1985 following more than 100 years of gradual development.
- **Climate**— Orinda's weather is typical of the Northern California coast, with mild summers and cool, wet winters.

Due to its inland location on the east side of the East Bay Hills, Orinda's climate is somewhat less moderate than that of communities west of the hills along the San Francisco Bay. It occasionally freezes in the winter and there are occasional summer days with temperatures in the 90s. The July high is typically 82 degrees and the January low is typically 40 degrees. On average, there are 261 sunny days per year, and the City receives 28 inches of rain compared to the US average of 39 inches (Source: http://www.bestplaces.net).

- **Governing Body Format**—The City of Orinda is a general law city and functions as a Council-Manager form of government. Under the council-manager form, authority is concentrated in the elected council, which hires a professional administrator (City Manager) to implement its policies. The City Council is responsible for making policy, passing ordinances, voting appropriations, and having overall supervisory authority in the city government. In such a government, the Mayor acts as a member and presiding officer of the council. The Mayor serves a one-year term and performs various ceremonial duties on behalf of the City and Council. There are five elected officials who serve staggered 4-year terms. Their service is voluntary, with no monetary compensation. In addition to hiring the City Manager, the City Council also hires the City Attorney who serves as the City's primary legal advisor. The City has a wide variety of Commissions, Committees, and Subcommittees that are appointed by the City Council and are comprised of Orinda residents.

  The City employs 37 regular full-time and 3 regular part-time positions. Local police services are provided by contract with the Contra Costa County Sheriff's Department. Fire services are supplied by the Moraga Orinda Fire District. Building construction permits and inspections are provided by contract with the Contra Costa County Building Inspection division of the Department of Conservation and Development.

  The City Council assumes responsibility for adoption of this plan, and the City Manager and Planning, Public Works/Engineering and Police Departments will oversee its implementation.

10.3 DEVELOPMENT TRENDS

Orinda is nearly built out with single family homes on low density lots. The California Department of Finance indicated there were 6,829 housing units in Orinda in 2014. Approximately 94 percent of the City's housing stock is made up of single-unit, detached structures, and about 6 percent is multi-unit structures. There are a few active single-family subdivisions in progress in Orinda: Wilder (245 lots), J&J Ranch (13 lots), Lavenida Lane (8 lots), and 88 Sunnyside Lane (4 lots). In addition to these subdivisions, the City also receives applications for single lot custom home projects, although this is becoming less common as the City approaches build-out. In terms of commercial development, since the late 1980s when Theater Square was completed, the only new development has been an 18,500 sq. ft. retail/office project approved in 2016, not yet constructed. Table 10-1 summarizes development trends in the performance period since development of the previous hazard mitigation plan and expected future development trends.

Table 10-1. Recent and Expected Future Development Trends

Criterion	Response
Has your jurisdiction annexed any land since the development of the previous hazard mitigation plan? • If yes, give the estimated area annexed and estimated number of parcels or structures.	No N/A
Is your jurisdiction expected to annex any areas during the performance period of this plan?	No
Are any areas targeted for development or major redevelopment in the next five years? • If yes, please briefly describe	Yes The City is in the beginning phase of evaluating our downtown area for future development options. In 2017, we expect to develop our vision for downtown and then based on that vision, we may revise our General Plan, Downtown Design Guidelines and other planning document(s). Other than that, we will continue to develop Wilder Ranch and the other active subdivisions in the City. There are active landslides within the J&J Ranch and 88 Sunnyside Lane subdivisions that must be repaired in order to proceed with development on those properties. Much of downtown Orinda is within the floodplain of San Pablo Creek.
How many building permits were issued in your jurisdiction since the development of the previous hazard mitigation plan?	

	2012	2013	2014	2015	2016
Single Family	8	61	50	38	55
Multi-Family	0	1	0	0	0
Other (commercial, mixed use, etc.)	0	1	0	1	1

Data provided by Contra Costa County Department of Conservation & Development. This data reflects new construction only (including additions/renovations involving demolition of >50% existing structure).

Please provide the number of permits for each hazard area or provide a qualitative description of where development has occurred.	• Special Flood Hazard Areas: 0 San Pablo Creek runs south to north through Orinda, and is fed by Lauterwasser Creek in northern Orinda and other creeks on the south side of the City. There are some existing homes that were built within the floodplain and in some cases even within the floodway. New development is not allowed within the floodway. Much of downtown Orinda is within the floodplain. *Source: FEMA (http://gis.abag.ca.gov/website/Hazards).* • Landslide: 114 Orinda has always been subject to landslides; in fact, landslides are the primary physical process that shapes the topography in this area. Landslides occur on hillsides throughout the City and generally occur in winter during high precipitation years. The Association of Bay Area Governments (ABAG)'s Resilience Program includes an interactive online landslide map based on data from 1997 and 1998 for known past landslide locations and potential debris flow sources that could be induced by high rainfall. *Source: USGS (http://gis.abag.ca.gov/website/Hazards/). Note: the City also has hard-copy comprehensive landslide reconnaissance maps which were completed in 1994 and may be more precise than the USGS data on the ABAG website but it is easier to cross reference the USGS data with building permit addresses.* • High Liquefaction Areas: 0 There are not high liquefaction areas in Orinda. Source: USGS *(http://gis.abag.ca.gov/website/Hazards/).* • Dam Failure Inundation Area: Unknown. Three dams regulated by the State of California are located in the Orinda area: San Pablo Dam, a hydraulic fill dam owned by EBMUD; Briones Reservoir, an earthen dam, owned by EBMUD, and Lake Cascade Dam, an earthen dam owned by the Orinda Country Club. Inundation maps reproduced by Contra Costa County show that in the event of a dam

Criterion	Response
	failure at the Briones Reservoir, land south of Briones Dam to San Pablo Reservoir would flood, as would land immediately to the east of San Pablo Dam Road and Camino Pablo. If Lake Cascade Dam were also to fail, flooding would affect additional land, extending almost to downtown Orinda. Failure of the San Pablo Dam would not affect Orinda as flood waters would flow toward the San Pablo Bay. • Wildfire Risk Areas: 95 The entire community is considered "Wildland Urban Interface – Fire Threatened" according to CALFire. The northwestern and central northern portions of Orinda are considered Very High Hazard Severity Zones. Homes in the new Wilder subdivision on the southwestern portion of the City are also considered high fire risk per the development agreement for that subdivision. Homes in Very High Hazard Severity Zone areas must be built to 7A standards. *Source: Moraga-Orinda Fire District (http://www.mofd.org/fire-prevention).*

10.4 CAPABILITY ASSESSMENT

The City of Orinda performed an inventory and analysis of existing capabilities, plans, programs and policies that enhance its ability to implement mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of legal and regulatory capabilities is presented in Table 10-2.
- Development and permitting capabilities are presented in Table 10-3.
- An assessment of fiscal capabilities is presented in Table 10-4.
- An assessment of administrative and technical capabilities is presented in Table 10-5.
- An assessment of education and outreach capabilities is presented in Table 10-6.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 10-7.
- Classifications under various community mitigation programs are presented in Table 10-8.
- The community's adaptive capacity for the impacts of climate change is presented in Table 10-9.

Table 10-2. Legal and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code	Yes	Yes	Yes	Yes
Comment: The City adopted the 2016 California Building Code on January 24, 2017 (Ordinance 17-01). The building code is Section 15.04 of the City's municipal code. The Contra Costa County Building Inspection Department serves under contract to implement the building code. The City could amend Section 15.04 of the municipal code to incorporate elements of the LHMP as needed.				
Zoning Code	Yes	No	Yes	Yes
Comment: The City's zoning code is Section 17 of the municipal code. This code was last comprehensively updated in 1999 and was most recently amended in 2015. The City could amend Section 17 of the municipal code to incorporate elements of the LHMP as needed.				
Subdivisions	Yes	No	Yes	Yes
Comment: The City Council reviews and approves subdivisions, after prior review and approval by the Planning Commission. Subdivision rules are noted in Section 16 of the municipal code. The City could amend Section 16 of the municipal code to incorporate elements of the LHMP as needed.				
Stormwater Management	Yes	Yes	Yes	Yes
Comment: Section 18.02 of the Orinda Municipal Code pertains to stormwater management and discharge control. The intent of this section of the municipal code is to protect and enhance the water quality in the City's watercourses pursuant to, and consistent with the Porter-Cologne Water Quality Control Act (Water Code Section 13000 et seq) and the Federal Clean Water Act (33 USC Section 1251 et seq). This code also carries out the conditions in the City's National Pollutant Discharge Elimination System (NPDES) permit, which require implementation of appropriate source control and site design measures, as well as stormwater treatment measures for development projects. The City could amend Section 18.02 of the municipal code to incorporate elements of the LHMP as needed, as long as there is no conflict with the Federal and State-mandated portions of this chapter.				
Post-Disaster Recovery	Yes	No	Yes	Yes
Comment: Section 2.32 of the Orinda Municipal Code addresses Emergency Management. Section 2.32.110 directs the Orinda Emergency Management Group to develop the Orinda Emergency Plan. This plan, which was adopted in 2012 and has a draft update scheduled for adoption in 2017, details the post-disaster recovery process. Please see discussion under "Planning Documents" below.				
Real Estate Disclosure	Yes	No	Yes	Yes
Comment: Section 19.04.120 of the Orinda Municipal Code addresses real estate disclosure statements. Anyone selling an interest in real property must provide a written statement to the buyer before the sale is completed describing the effect of certain City regulations which restrict property use and construction in Orinda. The specific form for these disclosure statements is provided in Section 17.49.2 of the municipal code. Section 17.49.2 of the Orinda Municipal Code could potentially be modified to incorporate elements of the LHMP as needed, as long as the code still reflects state legal requirements.				
Growth Management	Yes	Yes	Yes	Yes
Comment: The Growth Management Element is chapter 5 of the City's General Plan. The purpose of this chapter is to establish policies and standards for traffic levels of service, and performance standards for parks, fire, police, sanitary facilities, water and flood control in order to ensure generally that public facilities are provided consistent with the standards adopted. This chapter was amended in 2009 via City Council Resolution 19-09 per Measure J requirements. Measure J created a new requirement for a voter-approved Urban Limit Line. The City adopted the portions of the proposed county-wide Urban Limit Line that apply to Orinda. The City could potentially amend the Growth Management Element to incorporate the LHMP as needed.				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Site Plan Review	Yes	Yes	Yes	Yes
Comment: The Planning Department staff is responsible for reviewing site plans for compliance with zoning requirements (Section 17 of the Orinda Municipal Code). The City's Engineering Department staff also reviews site plans when there is grading or drainage work proposed, or work proposed within a creek setback and/or floodplain. The City contracts out building services to Contra Costa County. The County's Department of Conservation and Development, Building Inspection Department reviews plans for compliance with the building code (Section 15 of the Orinda Municipal Code). The Moraga-Orinda Fire District and Contra Costa County Sanitary District also review plans for compliance with their agency standards. The City could potentially amend the site plan review process to incorporate the LHMP as needed.				
Environmental Protection	Yes	Yes	Yes	No
Comment: All projects in Orinda are required to comply with the California Environmental Quality Act. Single family homes and many other small projects are categorically or statutorily exempt from CEQA, but non-exempt projects must demonstrate compliance with CEQA via an Initial Study or an Environmental Impact Report. The City is generally the lead agency for environmental review but for some projects the city consults with other agencies such as the California Department of Fish and Game, the Army Corps of Engineers, and the Regional Water Quality Control Board.				
Flood Damage Prevention	Yes	Yes	Yes	Yes
Comment: Section 18.05, Article 4 of the Orinda Municipal Code addresses Flood Hazard Reduction. Specific flood damage prevention measures addressed in this code section are anchoring, construction materials and methods, and standards for material and equipment storage, utilities, subdivisions, manufactured homes, recreational vehicles, and construction in floodways. FEMA has jurisdiction regarding construction in floodplains and floodways. The City could potentially amend Section 18.05 of the municipal code to incorporate the LHMP as needed.				
Emergency Management	Yes	No	Yes	Yes
Comment: Section 2.32 of the Orinda Municipal Code addresses Emergency Management and provides for the preparation and utilization of emergency operations plans; direction of the emergency organization; and coordination of emergency functions of the city with all other public agencies, corporations, organizations and affected private persons. The Emergency Operations Plan (EOP) details how this municipal code section is implemented. The City could potentially amend Section 2.32 of the municipal code and/or the EOP to incorporate the LHMP as needed.				
Climate Change	Yes	Yes	Yes	No
Comment: Climate change is referenced in Section 15.10.010 of the Orinda Municipal Code, regarding the City's adoption of the California Green Building Standards Code (CalGreen). The purpose of this code is to cause a reduction in greenhouse gas emissions from buildings; promote environmentally responsible, cost-effective, healthier places to live and work; reduce energy and water consumption; and respond to the Governor's directives. The Contra Costa County Department of Conservation and Development, Building Inspection Division, is responsible for implementation of Section 15 of the Orinda Municipal Code. The City does not currently have a Climate Action Plan so it is unlikely that Climate Change would be integrated into other sections of the municipal code. Per California Senate Bill 379, climate adaptation strategies will be included in Orinda's General Plan Safety Element upon the next revision of the Housing Element.				
Planning Documents				
General Plan	Yes	No	Yes	Yes
Is the plan compliant with Assembly Bill 2140? Yes. The Safety Element incorporates the City's Local Hazard Mitigation Plan.				
Comment: The City adopted its general plan in 1987. The Housing Element has been modified periodically as required by state law; the current Housing Element is Cycle 5 (2015-2023). The Growth Element was amended in 2002 to incorporate Measure J and the Urban Limit Line; and the Safety Element was amended in 2011 to incorporate the City's Local Hazard Mitigation Plan. The Safety Element should be further amended to incorporate the new Local Hazard Mitigation Plan. Per SB 379, the Safety Element must be updated to incorporate climate adaptation and resiliency strategies at the time of the next Housing Element update, and incorporating the new Local Hazard Mitigation Plan into the Safety Element would meet this requirement.				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Capital Improvement Plan	Yes	No	Yes	Yes

How often is the plan updated? There is an overall five-year plan which is updated annually.

Comment: The Capital Improvement Plan is updated annually by the City Manager and Public Works/Engineering Department with assistance from the Finance Director, Parks & Recreation Director and Planning Director, and is adopted by the City Council. The current plan was adopted May 16, 2017 and is for fiscal years 2017-2021. Projects are distributed into three main categories: infrastructure management (roads, drainage, bridges, bikeways/walkways and traffic signals), general community improvements, and park improvements, with infrastructure making up about 95% of the CIP budget. The next iteration of the CIP could potentially incorporate priorities from the LHMP as necessary.

Floodplain or Watershed Plan	Yes	Yes	Yes	Yes

Comment: The City does not have a Floodplain or Watershed Plan. However, Chapter 4.1 of the General Plan is the Conservation Element. This element considers flood hazard and control in addition to other natural resources. Chapter 4.2 of the General Plan is the Safety Element, which also addresses flood hazard. The Division of Safety of Dams within the CA Department of Water Resources has broad responsibilities over the three dams in Orinda (Briones and San Pablo dams, owned by EBMUD, and Lake Cascade dam, owned by the Orinda Country Club). The Department of Water Resources carries out periodic inspections to ensure that these dams meet adequate standards for public safety consistent with potential earthquake motions. Dam inundation maps indicate that failures of both the Briones or Lake Cascade Dams would impact property in Orinda.

Regarding flooding from creeks, there is some Zone A (100-year flood potential) land adjacent to San Pablo Creek, Lauterwasser Creek and Lake Cascade. FEMA has jurisdiction within Zone A areas. The California Department of Fish and Wildlife has jurisdiction within creek banks. General Plan implementing policies 4.1.2E and 4.2.2M pertain to flood hazard mitigation. The Conservation Element of the General Plan could potentially be updated to incorporate policies or actions from the LHMP as necessary.

Stormwater Plan	Yes	Yes	Yes	Yes

Comment: The City is in a Program Agreement with the Contra Costa County Flood Control and Water Conservation District, along with other county jurisdictions, as a holder of a Joint Municipal National Pollutant Discharge Elimination System ("NPDES") Permits issued by the San Francisco Bay and/or Central Valley Regional Water Quality Control Board. The current agreement extends to June 30, 2025. The Contra Costa Clean Water Program administers the NPDES permits and implements activities carried out pursuant to the Program Agreement. It is possible that the Program Agreement could be updated to incorporate policies or actions from the LHMP, but this integration would likely occur at the County level.

The City will be preparing a Green Infrastructure Plan from 2017-2019. The Plan is required as part of the NPDES permit and must be submitted to the California Regional Water Quality Control Board for the San Francisco Bay Region by September 2019. A Green Infrastructure Plan Framework was adopted on June 20, 2017 (Resolution 53-17) and outlines staff coordination and public outreach; mapped and prioritized areas for potential and planned projects; impervious surface retrofit targets, a project tracking system, guidelines for project design, standard designs and specifications, requirements for sizing green infrastructure projects, integration with existing planning documents, methods for estimating the load reductions to be achieved, and evaluation of funding options.

Also, the Friends of Orinda Creeks, a local non-profit organization, is interested in updating and further refining the preliminary San Pablo Creek Restoration Plan which was completed in 2001 for restoration of the creek through downtown Orinda. The creek is daylit through much of downtown but is channelized and separated from downtown activities. The idea behind this restoration plan is to restore some or all of the original curvature of the creek and create a walking path along the creek tying into existing walkways to businesses and hiking trails. The proposed restoration would reduce the risk of creek flooding during storm events.

Urban Water Management Plan	Yes	Yes	No	Yes

Comment: The City does not have an Urban Water Management Plan. However, Chapter 4.1 of the General Plan is the Conservation Element. This element considers water quality in addition to other natural resources. The San Pablo and Briones EBMUD reservoirs are just north of the City. In order to minimize the risk of reservoir pollution from urban development, EBMUD has acquired much of the surrounding watershed. General Plan policies support the concept of keeping much of the land on the north and west of the city which drains into these reservoirs designated as parks, very low-density residential and watershed land. The Conservation Element of the General Plan could potentially be updated to incorporate policies or actions from the LHMP as necessary.

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Habitat Conservation Plan	No	No	No	Yes
Comment: The City does not have a habitat conservation plan. However, Chapter 4.1 of the General Plan is the state-mandated Conservation Element. This element considers wildlife in addition to other natural resources. Regarding wildlife, there are several rare or endangered species in or near the Orinda Planning Area, and the General Plan policies seek to maintain the wide variety of wildlife in the Planning Area by preserving habitats. This is achieved through the CEQA review process and by the General Plan designation of some parcels as open space and parks. Implementing policies 4.1.2C and 4.1.2D pertain to habitat conservation. The Conservation Element of the General Plan could potentially be updated to incorporate policies or actions from the LHMP as necessary.				
Economic Development Plan	No	No	No	No
Comment: The City does not have an economic development plan.				
Shoreline Management Plan	No	No	No	No
Comment: The City does not have a shoreline.				
Community Wildfire Protection Plan	No	Yes	Yes	Yes
Comment: The City's fire code is the 2016 California Fire Code and by extension the 2015 International Fire Code, with certain local amendments, as detailed in City Council Resolution 54-16. The Moraga-Orinda Fire District enforces this code in Orinda. The Community Wildfire Protection Plan for this area was prepared by the Diablo Fire Safe Council and covers all of Contra Costa County. The CWPP is required by the Healthy Forest Restoration Act, as well as National and State Fire Plans, the Federal Emergency Management Agency Disaster Mitigation Act of 2000. The current CWPP dates from 2009. A revised CWPP is currently in development and there is potential for coordination with the LHMP at the County level.				
Forest Management Plan	Yes	Yes	No	Yes
Comment: The City does not have a Forest Management Plan. However, Section 17.21 of the Orinda Municipal Code addresses protected trees and requires that property owners obtain a tree removal permit from the Planning Department prior to removal of any protected tree. The Moraga-Orinda Fire District does not have a Forest Management Plan but does require that vegetation be cut back at urban wildland/interface areas for fire safety. Appendix G of the CWPP is a Best Management Practices Handbook for fuel reduction. Section 17.21 of the municipal code and/or Moraga-Orinda Fire District policies could potentially be modified to incorporate LHMP policies and actions as necessary.				
Climate Action Plan	No	No	No	Yes
Comment: The City does not have a Climate Action Plan, although a greenhouse gas inventory was conducted by ICLEI in 2009 based on 2005 data. If a CAP is prepared in the future, there is opportunity to integrate this plan with the LHMP.				
Comprehensive Emergency Management Plan	Yes	No	Yes	Yes
Comment: The City's EOP is prepared by the City's Police Department in cooperation with the Moraga-Orinda Fire District and is periodically updated as required to keep abreast of the most current procedures, protocols and standards. The current EOP was approved in 2012; a new draft EOP is in progress and is expected to be approved by City Council in August 2017. The EOP meets the requirements of the County's policies on Emergency Response and Planning, the Standardized Emergency management System (SEMS) Operational Area Response, the National Incident Management System (NIMS) and defines the primary and support roles of City agencies and departments in after-incident damage assessment and reporting requirements. The 2017 draft EOP incorporates LHMP's HAZUS risk assessment and focuses on better integrating Orinda's emergency policies and procedures with the neighboring communities of Moraga and Lafayette. Future versions of the EOP could be updated to further incorporate elements of the LHMP as needed.				
Threat & Hazard Identification & Risk Assessment (THIRA)	Yes	No	No	Yes
Comment: The City has not conducted a formal THIRA using FEMA's four-step process. However, the City's draft 2017 EOP notes that THIRA is one of the resources used to identify, assess and track hazards in the City, along with Digital Sandbox and HAZUS.				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Post-Disaster Recovery Plan	Yes	No	Yes	Yes
Comment: Post-disaster recovery is detailed in Section IV of the City's draft 2017 EOP. Short-term recovery includes stabilizing the situation and restoring services; long term recovery focuses on community restoration and includes reconstruction of facilities and infrastructure, housing plans, implementation of waivers, zoning changes and other land use laws and assistance to displaced families. During recovery, local assistance centers will provide a centralized location for services and resource referrals. The Finance Department will coordinate and support cost analysis surrounding an emergency. The City will implement plans for continuity of operations and will document damages and repair work. After recovery, an After Action Report will be prepared to document the City's successes and areas needing improvement. Future iterations of the recovery portion of the EOP could be updated to incorporate elements of the LHMP as needed.				
Continuity of Operations Plan	Yes	No	No	Yes
Comment: The City has not conducted a formal COOP using FEMA's four-phase process. However, the City's Emergency Operations Plan includes a description of the Emergency Operations Center location, organization and activation, which ensures continuity of operations in the event of a disaster. The draft 2017 EOP Section 2.5 is dedicated to Continuity of Government and specifically identifies ranked successors to members of the City Council. Information regarding continuity of operations could be updated in the next version of the EOP to incorporate elements of the LHMP as needed.				
Public Health Plan	No	No	No	No
Comment: The City does not have a public health plan.				

Table 10-3. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? • If no, who does? If yes, which department?	No Contra Costa County Building Inspection Department
Does your jurisdiction have the ability to track permits by hazard area?	No We are not currently tracking permits in this way in our permit database but we are generally able to manually verify this information.
Does your jurisdiction have a buildable lands inventory? • If yes, please briefly describe. • If no, please quantitatively describe the level of buildout in the jurisdiction.	No We do not have a "buildable lands inventory" but we do have a listing of vacant parcels in the city. According to this listing, which is based on both city and county data, there are 565 vacant lots in Orinda. The City is nearly built-out. Many of the vacant lots are located in the Wilder subdivision in southwest Orinda which is being actively developed. Another cluster of vacant lots is located in western Orinda in the El Toyonal neighborhood, where Contra Costa County Sanitary District has a moratorium on new septic tanks and there has consequently been little new development in recent years.

Table 10-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	N/A

Table 10-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Drummond Buckley, Planning Director Larry Theis, Public Works/Engineering Director Planning Department and Public Works/Engineering Staff
Engineers or professionals trained in building or infrastructure construction practices	Yes	Drummond Buckley, Planning Director Larry Theis, Public Works/Engineering Director Planning Department and Public Works/Engineering Staff
Planners or engineers with an understanding of natural hazards	Yes	Drummond Buckley, Planning Director Larry Theis, Public Works/Engineering Director Planning Department and Public Works/Engineering Staff
Staff with training in benefit/cost analysis	Yes	Larry Theis, Public Works/Engineering Director
Surveyors	Yes	Contract for Service
Personnel skilled or trained in GIS applications	Yes	Mayank Patel, Associate Planner Daisy Allen, Associate Planner
Scientist familiar with natural hazards in local area	Yes	Contract for Service
Emergency Manager	Yes	The City Manager is the Emergency Manager per the City's EOP
Grant writers	Yes	Drummond Buckley, Planning Director Larry Theis, Public Works/Engineering Director Planning Department and Public Works/Engineering Staff

Table 10-6. Education and Outreach Capability

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes Tonya Gilmore, Senior Management Analyst
Do you have personnel skilled or trained in website development?	Yes Tonya Gilmore, Senior Management Analyst Mayank Patel, Associate Planner
Do you have hazard mitigation information available on your website? • If yes, please briefly describe.	Yes The City posts information on current hazards and disasters on the City's home webpage. Additionally, there is information on storm water management and creek protection and maintenance on the Public Works/Engineering Department webpage. The Moraga-Orinda Fire District website has information about fire prevention best practices.
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe.	Yes The City circulates the Orinda Outlook letter to citizens every week. Citizens can sign up to receive this letter on the City's website.
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly describe.	Yes The Citizen's Infrastructure Oversight Commission is an advisory body to the City Council on matters relating to the City's streets, storm drains and bridges. The Traffic Safety Advisory Council reviews traffic safety incidents and concerns and recommends safety mitigation measures. The Orinda Geologic Hazard Abatement District Board of Directors consists of the City Council and reviews any requested changes to the Wilder subdivision GHAD. NextDoor and Nixle are active online community boards that the City uses to disseminate information regarding public safety and other important announcements.
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe.	No N/A
Do you have any established warning systems for hazard events? • If yes, please briefly describe.	Yes County Community Warning System

Table 10-7. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Engineering/Public Works
Who is your floodplain administrator? (department/position)	Larry Theis (Engineering/Public Works Director)
Are any certified floodplain managers on staff in your jurisdiction?	No
What is the date that your flood damage prevention ordinance was last amended?	1/4/2005
Does your floodplain management program meet or exceed minimum requirements? • If exceeds, in what ways?	Meets N/A
When was the most recent Community Assistance Visit or Community Assistance Contact?	Prior to 2013 (date unknown)
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? • If so, please state what they are.	No N/A
Do your flood hazard maps adequately address the flood risk within your jurisdiction? • If no, please state why.	Yes N/A
Does your floodplain management staff need any assistance or training to support its floodplain management program? • If so, what type of assistance/training is needed?	Yes Certification, Training
Does your jurisdiction participate in the Community Rating System (CRS)? • If yes, is your jurisdiction interested in improving CRS Classification? • Is your jurisdiction interested in joining the CRS program?	No N/A Yes
How many Flood Insurance policies are in force in your jurisdiction?[a] • What is the insurance in force? • What is the premium in force?	129 $39,615,400 $ 119,895
How many total loss claims have been filed in your jurisdiction?[a] • How many claims were closed without payment/are still open? • What were the total payments for losses?	47 23/0 $245,178

a. According to FEMA statistics as of December 31, 2016

Table 10-8. Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	Yes	2	May 2016
Public Protection	Yes	2	4/1/17
Storm Ready	No	N/A	N/A
Firewise	Yes	Sleepy Hollow Project	N/A

Table 10-9. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts	Medium
Comments/Additional Information: *A greenhouse gas inventory was conducted by ICLEI in 2009 using 2005 data. There has not been additional inventory or development of a Climate Action Plan since that time.*	
Jurisdiction-level monitoring of climate change impacts	Medium
Comments/Additional Information: *The City does not have a Climate Action Plan in place and as such, is not monitoring climate change impacts. However, hazards are being monitored via this Local Hazard Mitigation Plan.*	
Technical resources to assess proposed strategies for feasibility and externalities	Low
Comments/Additional Information: *Any additional inventory or assessment of climate change impacts would need to be conducted by an outside consultant due to staff time and expertise limitations.*	
Jurisdiction-level capacity for development of greenhouse gas emissions inventory	Medium
Comments/Additional Information: *There is an existing greenhouse gas emissions inventory developed based on 2005 data.*	
Capital planning and land use decisions informed by potential climate impacts	Medium
Comments/Additional Information: *Capital planning and land use decisions are not explicitly guided by potential climate impacts, but the City does have a creek setback ordinance (Orinda Municipal Code Section 17.4.6) which restricts development within certain setback distances from Type I, II and III creeks. Also, development of this Local Hazard Mitigation Plan addresses risk related to climate change.*	
Participation in regional groups addressing climate risks	Medium
Comments/Additional Information: *Planning Department staff participates in EnergyWatch and Contra Costa County Climate Leaders (4CL).*	
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes	Low
Comments/Additional Information: *There is no clear authority or mandate to consider climate change impacts during public decision-making.*	
Identified strategies for greenhouse gas mitigation efforts	Medium
Comments/Additional Information: *The greenhouse gas inventory completed by ICLEI in 2009 identified sectors with the greatest reduction potential and established a baseline to measure ongoing environmental programs. Specifically, the inventory revealed that energy use in vehicular travel presented the greatest challenge and required the most urgent action in order for Orinda to reduce emissions. However, no specific greenhouse gas reduction strategies were identified.*	
Identified strategies for adaptation to impacts	Medium
Comments/Additional Information: *Development of this Local Hazard Mitigation Plan provides a first step in identifying actions to adapt to climate change impacts.*	
Champions for climate action in local government departments	Low
Comments/Additional Information: *There is staff with some experience in environmental planning and climate action planning (Derek Farmer, Senior Planner, and Daisy Allen, Associate Planner) but without direction from City Council, staff is not addressing climate action planning at this time.*	
Political support for implementing climate change adaptation strategies	Medium
Comments/Additional Information: *City Council is generally supportive of resilient infrastructure projects, especially in light of the current 2017 local disaster (sink hole on Miner Road). However, the Council is financially constrained.*	
Financial resources devoted to climate change adaptation	Low
Comments/Additional Information: *None provided*	
Local authority over sectors likely to be negative impacted	Medium
Comments/Additional Information: *The City has authority over the City's public roads and infrastructure and coordinates with EBMUD, CCCSD, CalTrans, MOFD, CDFW, USACE, and the Regional Water Board regarding disaster mitigation.*	

Criterion	Jurisdiction Rating[a]
Public Capacity	
Local residents knowledge of and understanding of climate risk	High
Comments/Additional Information: Orinda's citizens are highly educated, many with higher education degrees in various sciences related to climate change.	
Local residents support of adaptation efforts	Medium
Comments/Additional Information: None provided	
Local residents' capacity to adapt to climate impacts	Medium
Comments/Additional Information: Orinda's citizens are generally able to afford to install measures on their properties as necessary to mitigate hazards related to climate impacts.	
Local economy current capacity to adapt to climate impacts	Medium
Comments/Additional Information: None provided	
Local ecosystems capacity to adapt to climate impacts	Medium
Comments/Additional Information: None provided	

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

10.5 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

10.5.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the City of Orinda made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **Orinda Emergency Operations Plan**—The EOP identifies the City's emergency planning, organization and response policies and procedures. Hazard Identification, Continuity of Operations and Post-Disaster Recovery plans are included within the EOP. The hazard analysis summary (section 1.3 of the draft 2017 EOP) specifically indicates the top seven hazards that were identified in the LHMP process and uses this hazard analysis as a framework for the EOP. The EOP will be reviewed and updated annually, so action items from the LHMP can be integrated into annual updates of the EOP as necessary.
- **Orinda General Plan, Safety Element**—The 2011 LHMP is included as an appendix to the Safety Element. Per SB 379, the Safety Element must be updated to incorporate climate adaptation and resiliency strategies at the time of the next Housing Element update, and the City can incorporate the new LHMP into the Safety Element to meet this requirement.
- **Orinda Capital Improvement Plan**—Identifies, prioritizes and budgets capital improvement projects. The CIP includes projects that can help mitigate potential hazards. The City acts to ensure consistency between the LHMP and the current and future CIP. Fiscal Year 2018 CIP Projects include some projects directly related to high risk hazards, including slope stabilization on Camino Sobrante and City Hall, storm drainage facilities improvement, and Miner Road culvert replacement (to repair a sinkhole caused by storm events). The LHMP can identify new possible funding sources for capital improvement projects and may result in modifications to proposed projects based on results of the risk assessment.

- **Building Code and Fire Code**—The City's adoption of the 2016 California Building and Fire codes incorporated local modifications to account for the climatic, topographic and geographic conditions that exist in the City. Specifically, the adopted code reflects risks related to seismicity and soils, as well as Orinda's hilly terrain and risk of drought and wildfire. As a result of these spe0cific conditions, the approved code modified state code by adding more restrictions for concrete foundations and gypsum wallboard to better withstand earthquakes; requiring fire treatment for wood shakes or shingles; requiring installation of a smoke detector when flat roofs are pitched, and requiring electric vehicle charging stations for multifamily and non-residential buildings.

Resources listed in Section 10.12 were used to provide information for this annex on hazard events and local capabilities within the jurisdiction.

10.5.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the City of Orinda will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan in actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Orinda General Plan – Conservation and Growth Management Elements—**The LHMP will be reviewed and incorporated as appropriate at the next update of these General Plan elements, especially as related to flood control, urban watershed management, habitat conservation and growth control. Also, the City is considering updates to the downtown section of the Land Use element, and there is an opportunity to incorporate flood hazard mitigation concepts into this section.
- **Orinda Municipal Code**—Sections 2 (administration), 15 (building code), 16 (subdivisions), 17 (zoning), 18 (drainage), 19 (code compliance). The LHMP will be reviewed and incorporated as appropriate in future Orinda Municipal Code updates, especially Section 2.32 (Emergency Management).
- **Site Plan Review**—Upon adoption of the LHMP, Staff will evaluate site plan review processes for compliance with this plan. For instance, Staff does not currently track the number of permit applications that come in with projects located on high risk sites for hazards such as earthquakes, wildfire, landslides, or flooding. The Contra Costa County Department of Conservation and Development reviews plans for compliance with California Building and Fire Code in terms of earthquake and fire safety. In addition, the Moraga-Orinda Fire District reviews plans for larger projects at both the design review and building permit stage for fire safe building, access and landscape design. The City's Public Works and Engineering Department as well as the County's Grading Department assist the City's Planning Department in reviewing plans and give feedback on project design as related to landslide and flooding risk. This process could be better documented and standardized.
- **Environmental Protection**—Non-exempt projects must demonstrate compliance with CEQA via an Initial Study or Environmental Impact Report. These environmental documents explore potential impacts along a variety of issue areas, including the following issues directly related to the LHMP: Geology/Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology/Water Quality, Land Use/Planning, Public Services and Utilities/Service Systems. Staff will ensure that future environmental documents prepared for Orinda projects will consult the LHMP and EOP while analyzing potential significant impacts from proposed projects.
- **Stormwater Management—**The LHMP will be reviewed and incorporated as appropriate at the next update of Orinda Municipal Code Sections 18.02 (stormwater management and NPDES permit

requirements) and 18.05 (flood hazard reduction). As noted in Table 1.2, modifications to the NPDES Program Agreement would likely occur at the County rather than the City level. The Green Infrastructure Plan to be prepared from 2017 – 2019 and the proposed update to the San Pablo Creek Restoration Plan will meet flood mitigation objectives of the LHMP.

- **Community Wildfire Protection Plan—**As noted in Table 1.2, the LHMP should be reviewed and incorporated as appropriate in the current draft and future updates of the Community Wildfire Protection Plan, but the opportunity for integration exists at the County rather than the City level. At the local level, Moraga-Orinda Fire District policies could potentially be modified to incorporate LHMP policies and actions as necessary.
- **Climate Action Plan—**The City does not currently have a Climate Action Plan, but a greenhouse gas inventory was conducted by ICLEI in 2009. As the City moves forward with a CAP in the future, LHMP policies and actions will be integrated with that document.
- **Economic Development Plan—**The City does not currently have an Economic Development Plan, but the City is currently exploring various options related to planning for the future of downtown. One option being considered is economic strategy for downtown; if an economic strategy document or economic development plan is created for downtown Orinda, LHMP policies and actions will be integrated with that document as appropriate.

10.6 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 10-10 lists past occurrences of natural hazards dating from 1985 (City incorporation) for which specific damage was recorded in the City of Orinda. Other hazard events that broadly affected the entire planning area, including the City of Orinda, are listed in the risk assessments in Volume 1 of this hazard mitigation plan. The 2017 winter storm events caused major damage in Orinda, including a sinkhole on Miner Road and multiple landslides and tree damage throughout the City. Note that although the City has not experienced a major wildfire, the City is located directly east of the Oakland Hills, which in 1991 suffered one of the worst wildland-urban firestorm disasters to ever strike the United States with 25 deaths, 150 injuries and losses in excess of $1.5 billion.

Table 10-10. Past Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Storms, Flooding, Landslides	4308-DR-CA 4301-DR-CA Local Emergency (Resolution 10-17)	2/1/2017 – 2/23/2017 1/3/2017 – 1/12/2017 1/7/2017 – (ongoing)	$3 million Sinkhole at Miner Road causing San Pablo Creek culvert failure, damage to utility lines and flooding of adjacent private properties. Additional storm damage throughout Orinda, including downed trees, flooding and landslides.
Storms and Flooding	Local Emergency (Resolution 71-12)	12/2/2012	$125,000 (temporary repairs) $160,000 (permanent repairs) Storm drain failure at Tarabrook and Evergreen Drives leading to sinkhole, sewer and road collapse and private property flooding; compromised storm drain at Lavenida Lane. Additionally, downed trees and landslides reported to City's Public Works Department at 69 properties from December 2-5 (damages not recorded).
Flooding		3/13/2012	$50,000 Data provided by Contra Costa County NOAA Storm Events records.
Storms and Flooding		3/24/2011	Flooding, landslides, culvert and storm drain damage reported to Public Works Department at 10 properties. Monetary damages not available.

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Flooding		1/10/2010	Data provided by Contra Costa County NOAA Storm Events records. Damages not available.
Storms		5/10/2006	Roadway damage. Damages not available.
Landslide		2008	$2 million The Zander Drive landslide reactivated 10 years after residential development encroached onto lands underlain by the landslide. The landslide measured 200 feet across, extended 1,000 feet from Zander Drive down to San Pablo Creek and had a maximum depth of 115 feet. Three properties were impacted; two homes were demolished, and the City purchased and remediated one of the properties.
Storms, Flooding and Landslides	1628-DR-CA Local Emergency (Resolution 03-06)	12/17/2005 – 1/12/2006 12/31/2005 - 1/1/2006	$1.053 million Clogged storm drain under North Lane; landslides at Canon Drive, Diablo View Road, Camino Don Miguel and Wagner Ranch School; mudslides onto public roadways; potholes on Moraga Way. Additionally, reports of tree, landslide, flooding, sewer break damages at 22 private properties.
Flooding		2/13/2000	$100,000 Data provided by Contra Costa County NOAA Storm Events records indicates a flash flood in Orinda on 2/13/2000. Some of the damages may have been in adjoining municipalities
Flooding and Landslides	1203-DR-CA	2/2/1998	Severe flooding and landslides throughout the Bay Area totaling $550 million in damages. Local damages not available.
Storms, Flooding and Landslides	Local Emergency (Resolution 01-97)	1/1/1997 – 1/5/1997	$63,900 Slide damage repair on Mansanita Drive. Severe flooding and associated evacuations throughout Northern California totaling $1.8 billion in damages. Local damages not available beyond the Manzanita slide repair.
Storms and Flooding		12/22/1996	Data provided by Contra Costa County NOAA Storm Events records indicates a flash flood in Orinda on 12/22/1996. Damages not available.
Storms, Flooding, Landslides	1046-DR-CA 1044-DR-CA	1/10/1995	Severe storms, flooding, landslides, mudflows throughout Northern California. Over 100 stations recorded their greatest 1-day rainfall in history. Overall $741.4 million in damages. Local damages not available.
Rain and High Winds	979-DR-CA	1/25/1993	Severe weather throughout Northern California caused $600 million in overall damages. Local damages information is not available.
Earthquake	845-DR-CA	10/17/1989	Magnitude 7.1 earthquake. Overall impact in Northern California was $5.9 billion in damages, including $25 million in Contra Costa County. Local damages not available.
Storms	758-DR-CA	3/4/1986	Rains, winds, flooding and mud slides totaling $407.5 million in damages throughout California. Local damages not available.

10.7 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for the jurisdiction.

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 2
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 1
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: Unknown

Other noted vulnerabilities include the following:

- **Landslides**. Orinda has always been subject to landslides; in fact, landslides are the primary physical process that shapes the topography in this area. Landslides occur on hillsides throughout the City and generally occur in winter during high precipitation years. Multiple critical communication, power, water, wastewater, bridges, fire district and school facilities are at moderate to high risk for landslide. During the 2016-2017 winter season, at least six new landslides occurred on public and private property and a large sinkhole developed under the Miner Road bridge across San Pablo Creek, leading to road closure for six months while the bridge, culvert and utility lines were repaired.
- **Wildfire**. The entire community is considered "Wildland Urban Interface – Fire Threatened" according to CALFire. The northwestern and central northern portions of Orinda are considered Very High Hazard Severity Zones. Many of these high risk areas are also the most difficult to access, as they are at the end of winding roads bordering undeveloped hillsides. Also, there is not sufficient water pressure to support the fire hydrants in some parts of the city, so the Moraga-Orinda Fire District must be prepared to bring 2,500-gallon water trucks when responding to fires in those parts of the city. The hydrants with insufficient water pressure have all been identified and color-coded red. Voters rejected bond measures in 2002 and 2007 that would have paid for water pipe upgrades to fix this problem.
- **FEMA Floodway and Floodplain**. San Pablo Creek runs through downtown Orinda, and much of downtown is within the FEMA floodplain. Also, many older homes in Orinda were built along San Pablo, Lauterwasser and Moraga Creeks in what is now considered the FEMA floodway or floodplain and are vulnerable to flooding.
- **Limited Neighborhood Access Options**. Due to the hilly topography and suburban cul-de-sac design throughout the City, some neighborhoods have only one or two access points. As a result, access can easily be compromised during an emergency. In particular, the Sleepy Hollow and El Toyonal neighborhoods are particularly isolated. This is not a robust or resilient design.
- **Localized Flooding**. The City's stormwater infrastructure is aging and some culverts and pipes are undersized, which can lead to localized flooding during major rain events.
- **Dam Failure**. Dam inundation maps indicate that failure of both the Lake Cascade and Briones Dams would cause damage in Orinda. The Department of Water Resources carries out periodic inspections to ensure that these dams meet adequate standards for public safety consistent with potential earthquake motions, but the City does not review these inspection reports.
- **Earthquakes**. The City lies in close proximity to many faults and, along with other Contra Costa communities, is at risk for major damage in the event of an earthquake.

10.8 HAZARD RISK RANKING

Table 10-11 presents a local ranking for the City of Orinda of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 10-11. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake[b]	54	High
1	Landslide[e]	54	High
2	Wildfire[e]	39	High
3	Severe weather	30	Medium
4	Flood[c]	18	Medium
5	Drought	9	Low
6	Dam and levee failure[a]	6	Low
7	Sea level rise[d]	0	None
7	Tsunami	0	None

a. Based on the level of detail conducted in the risk assessment, the risk ranking for this hazard is focused solely on dam failure impacts. See Chapter 6.4 of Volume 1 for combined dam inundation list on which this assessment is based.
b. Haywired M7.05 event was used to assign probability and impacts
c. 1-percent annual chance event was used to assign probability and impacts
d. 2100 upper range estimates and extreme tide are used to assign probability and impacts
e. Very High and High severity zones were used to assign probability and impacts

10.9 STATUS OF PREVIOUS PLAN ACTIONS

Table 10-12 summarizes the actions that were recommended in the previous (2011) hazard mitigation plan and their implementation status at the time this update was prepared.

10.10 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 10-13 lists the actions that make up the City of Orinda hazard mitigation action plan. Table 10-14 identifies the priority for each action. Table 10-15 summarizes the mitigation actions by hazard of concern and mitigation type.

10.11 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

10.11.1 Critical Facilities and Infrastructure

During the course of the plan update process, it was determined that a number of critical facilities and infrastructure located in the City of Orinda were not included in the Contra Costa County Critical Infrastructure Key Resource data set. City staff will work with County Office of Emergency Services staff to ensure that these missing assets are added.

10.11.2 Additional Landslide Hazard Information

A number of landslides in the City became active while the risk assessment was being conducted. The City has developed a list of the location of these slides, which will be incorporated into the risk assessment during the next update of the hazard mitigation plan.

Table 10-12. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
Radio Communication Upgrades – A P25 compliant communications system with region wide interoperability with the San Francisco Bay Area Super Urban Area Security Initiative (UASI).	Completed			
Comment: Per the draft 2017 EOP, the East Bay Regional Communications System is a P25 compliant digital radio communication system and provides fully interoperable communications to all public agencies within Alameda and contra Costa Counties.				
North Lane Storm Water Improvement Project – Installation of a new 60 inch drainage facility within City of Orinda right-of-way and through EastBay Municipal Utility District (EBMUD) Water Treatment Facility property.	Completed			
Comment: The North Lane Storm Water Improvement Project was completed in April 2017.				
Manzanita Drive Bridge Replacement Project - The Manzanita Drive Bridge Replacement project replaces a bridge that will be compliant with current seismic standards and raises the bridge deck above the flood elevation.	Completed			
Comment: The Manzanita Drive Bridge Replacement Project was completed in November 2014.				
El Toyonal Slope Stabilization – Slope stabilization of a road in a residential area in Orinda, which is also a designated emergency evacuation route. Geotechnical study and design by licensed geotechnical engineer.	Completed			
Comment: The El Toyonal Slope Stabilization Project was completed in January 2012.				
(Housing Mitigation Strategies) Wildfire and Structural Fires - Participate with the Moraga Orinda Fire Department (MOFD) in the "Ready Set Go" program to improve coordination and communication between emergency response agencies and the community.	Completed			
Comment: The MOFD Emergency Preparedness Coordinator has set up Ready Set Go for Orinda, Lafayette and Moraga based on a grant received from Cal Fire in July 2014. Ready Set Go is an educational component of a larger wildland fire management program called "Ready for Wildfire." Orinda is engaged in the Ready Set Go program. The City's Police Department will be working with a consultant, through MOFD, to develop evacuation routes in the City as a program element. The Sleepy Hollow neighborhood went through the process of becoming a "FireWise Community" but the designation was dropped a few years ago when the required designation maintenance activities were not carried out. Other actions taken include: • *Community volunteers from the Lamorinda Radio Interest Group (LARIG) assist the Fire District with fire watch in Orinda on high fire danger days (principally July 4th- during the fireworks displays)* • *LARIG volunteers are being trained to staff radio operator positions in the Orinda Emergency Operations Center. A select group will have access to the Radio Operator and Communications Unit Leader boards in the Orinda version of WebEOC.* • *LARIG volunteers purchased, built and maintain a General Mobile Radio System (GMRS) radio repeater for Orinda as part of the CERT program. The radio system can communicate directly into the City's Emergency Operations Center during a disaster. CERT basic training includes operation of the system by neighborhood leaders.* *In addition to these specific actions, the following are ongoing programs listed in Orinda's 2011 LHMP that incorporate mitigation goals and objectives. Most of these programs will be continued, but most are not associated with specific actions targeting FEMA funding.*				
Assess the vulnerability of critical facilities owned by infrastructure operators subject to damage in natural disasters or security threats.	Ongoing			
Comment: Bridges are assessed by Caltrans at yearly or multi-year intervals based on bridge type. East Bay Municipal Utility District conducts assessments of water lines; PG&E assesses electric and gas infrastructure; Contra Costa Central Sanitary District assesses sewer lines, and the Orinda Unified School District Facilities Department assesses school facilities. The City's Public Works/Engineering Department assesses drainage facilities, and the Parks and Recreation Department assesses City owned buildings and parks to determine maintenance needs.				
Retrofit or replace critical lifeline infrastructure facilities and/or their backup facilities that are shown to be vulnerable to damage in natural disasters.	Ongoing		✓	1
Comment: The City participates in the Highway Bridge Program (HBP).				

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update: Check if Yes	Carried Over to Plan Update: Enter Action #
Coordinate with the State Division of Safety of Dams to ensure that the City is aware of the timeline for the maintenance and inspection of dams whose failure would impact their jurisdiction.			✓	16
Comment: The City does not own any dams. Dam property owners coordinate directly with the State Division of Dams for annual inspections. If the Division deems a dam unsafe, they may direct the dam owner to implement their emergency action plan in coordination with the City. However, the City has not yet proactively coordinated with the State Division of Dams to obtain dam inspection reports.				
Develop interoperable communications for first responders from cities, counties, special districts, state, and federal agencies.	Ongoing			
Comment: Per the draft 2017 EOP, the East Bay Regional Communications System is a P25 compliant digital radio communication system and provides fully interoperable communications to all public agencies within Alameda and contra Costa Counties.				
Coordinate services through the Contra Costa County's Standardized Emergency Management System Plan.	Complete			
Comment: The draft 2017 EOP establishes an Emergency Management Organization and assigns functions and tasks consistent with California's Standardized Emergency Management System (SEMS). It provides for integration and coordination of planning efforts of multiple jurisdictions.				
Participate in general mutual-aid agreements and agreements with adjoining jurisdictions for cooperative response to fires, floods, earthquakes, and other disasters.	Ongoing			
Comment: The California Disaster and Civil Defense Master Mutual Aid Agreement (MMAA) was developed in 1950. The agreement obligates each signatory entity to provide aid to the others during an emergency without expectation of reimbursement. Orinda is located within the Coastal Region (Mutual Aid Region II). MMAA covers fire, police, medical, communication and transportation services and facilities. Alameda County is the Regional Mutual Air Coordinator for Law and Emergency Medical Services, and Contra Costa county is the Regional Mutual Aid Coordinator for Fire. Orinda also participates in state and local mutual aid agreements for the following services: emergency management, coroner, petrochemical mutual aid, Red Cross, California Resiliency Alliance, Volunteer Center of the East Bay, and Contra Costa Crisis Center.				
Participate in FEMA's National Flood Insurance Program.	Ongoing		✓	4
Comment: The City continues to participate in this program, but there are no certified floodplain managers on staff. Staff will investigate training options for this certification, and will also investigate joining the Community Rating System.				
Develop printed materials, utilize existing materials (such as developed by FEMA and the American Red Cross), conduct workshops, and/or provide outreach encouraging employees of critical health care facilities to have family disaster plans and conduct mitigation activities in their own homes.		✓		18
Comment: The following printed materials have been developed and are available to customers at the Administration and Planning Department front counters: Disaster Assistance (CalOES and FEMA); Hazardous Materials and Earthquakes (CalOES); Lamorinda Ready, Set, Go! 4th Edition; Firescape – Landscaping to Reduce Fire Hazard (EBMUD); The Homeowner's Guide to Wildfire Prevention (Robert Sieben, provided courtesy of MOFD); EBMUD watering and drought safety handouts; and "Caring for Our Creeks" (a Creekside property owner's manual developed by City of Orinda and revised in 2009). Most of these materials are not yet available on the City's website. There are additional educational materials available from the Moraga-Orinda Fire District both electronically and in hard copy. More of these materials could be provided at City Hall.				
Sponsor the formation and training of Community Emergency Response Teams (CERT) through partnerships with local businesses	N/A	✓		
Comment: CERT is identified in the draft 2017 EOP as a partnership organization that educates people about disaster preparedness and trains them in basic disaster response skills such as fire safety, light search and rescue, team organization and disaster medical operations. Lamorinda CERT serves Lafayette, Moraga, Orinda and surrounding unincorporated communities and offers basic CERT classes three times each year. The Lamorinda CERT Foundation was formed in 2014 and pays the day to day operating expenses of the CERT. The Foundation is sponsored by MOFD.				

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
Incorporate FEMA guidelines and suggested activities into local government plans and procedures for managing flood hazards.	Ongoing		✓	21
Comment: Planning and Public Works/Engineering staff consult FEMA floodplain and floodway maps during project review.				
Increase efforts to reduce landslides and erosion in existing and future development through continuing education of design professionals on mitigation strategies.	Ongoing		✓	22
Comment: The City's Engineering staff provides feedback on draft grading, drainage and landscape repair plans.				
Conduct an inventory of existing or suspected soft-story residential, commercial and industrial structures.	Ongoing		✓	
Comment: The City has not yet conducted this inventory.				
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.	Ongoing		✓	7
Comment: The current five-year Capital Improvement Plan allocates $850,000 to develop and implement minor repairs and replacement of City-maintained drainage facilities as problems are identified during the storm season or through ongoing inspections. Project locations are coordinated with the annual paving project and reviewed by the Citizens Infrastructure Oversight Commission.				

Table 10-13. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
OR #1—Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	Flood, Landslide	1, 4, 7, 9, 12, 14, 15, 17	City of Orinda	High	HMGP, PDM, FMA	Short-term
OR #2—Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including the General Plan, Orinda Municipal Code, Capital Improvement Plan, Emergency Operations Plan and Wildfire. Per SB 379, at the time of the next General Plan Housing Element update (2023), update the General Plan Safety Element to incorporate the LHMP.						
New and Existing	Dam & Levee Failure, Drought, Earthquake, Flood, Landslide, Severe Weather, Wildfire	1, 4, 5, 7, 11, 12, 14, 17	City of Orinda	Low	Staff Time, General Funds	Ongoing
OR #3— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	Dam & Levee Failure, Drought, Earthquake, Flood, Landslide, Severe Weather, Wildfire	3, 8, 16	City of Orinda	Low	Staff Time, General Funds	Short-term
OR #4—Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: • Enforce the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts.						
New and Existing	Flood	3, 5, 6, 9, 10, 11, 15	City of Orinda	Low	Staff Time, General Funds	Ongoing
OR #5—Camino Sobrante Slope Stabilization to repair a landslide next to Camino Sobrante at the vicinity of 252 Camino Sobrante.						
Existing	Landslide	1, 2, 7, 15	City of Orinda	Medium	Capital Fund (General Fund), FEMA Emergency Grant	Short-Term
OR #6—Santa Maria Park & Ride and City Hall Parking Lots. These parking lots are experiencing slope stability issues evidenced in large transverse cracks in the parking spaces.						
Existing	Landslide	1, 2, 7, 15	City of Orinda	Medium	Road/Drainage Stabilization Fund, Transportation Impact Fees, CCTA	Short-Term
OR #7—Annual Drainage Facilities Improvement Program. Develop and implement minor repairs and replacement of City-maintained drainage facilities as problems are identified through the storm drain plan and inventory completed in 2016, during the storm season or through ongoing inspections.						
Existing	Flood, Severe Weather	1, 2, 6, 7, 10, 15	City of Orinda	Medium	Drainage Impact Fees, Capital Fund (General Fund)	Ongoing
OR #8—Oak Springs/Candlestick Road Storm Water Improvements. Reduce potential future erosion from the flow that currently discharges from a culvert outfall conveying stormwater from an inlet at the end of Candlestick Road. Connect a new pipe at the outfall of the existing drop inlet and terminate the pipe at an existing inlet within Highway 24 ROW.						
Existing	Severe Weather, Landslide	1, 2, 6, 7, 10, 15	City of Orinda	High	Road/Drainage Stabilization Fund, MPA/CARMA	Short-Term

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
OR #9—Miner Road Bridge over San Pablo Creek: Bridge Replacement with Sidewalk. Classify bridge as obsolete, complete design, environmental review and agency consultation processes which were previously started but were halted in 2014, and construct replacement bridge. This project concerns a different portion of Miner Road than the 2017 sinkhole location.						
Existing	Earthquake, Severe Weather	1, 2, 6, 7, 10, 15	City of Orinda*, Caltrans	High	Federal Grants (HBP), Transportation Impact Fees	Short-Term
OR #10—Consider hazard mitigation in the annual update to the Capital Improvement Plan. Identify specific unfunded capital improvement projects as high priority based on hazard risk reduction potential and identify grant funding opportunities to fund these projects. Current CIP unfunded projects include but are not limited to: Bear Creek Bridge Seismic Retrofit, Camino Sobrante Slope Stabilization, Happy Valley Road Embankment Repair & Guardrail, and Miner Road at Camino Lenada Slope Stabilization.						
New and Existing	Flood, Wildfire, Landslide, Severe Weather	1, 2, 7, 15	City of Orinda	Low (CIP) High (project funding)	HMGP, PDM, FMA	Ongoing
OR #11—Continue to allocate time and funding to Public Works staff to trim and remove trees along city right of ways where trees are overhanging roadway or power lines and in danger of falling during storms.						
Existing	Severe Weather	1, 2	City of Orinda	Low	Public Works & Engineering Staff Time	Ongoing
OR #12—Prepare a Green Infrastructure Plan per the approved Green Infrastructure Plan Framework (City Council Resolution 53-17).						
New and Existing	Flood, Severe Weather, Drought	1, 2, 6, 9, 10, 12, 14, 17	City of Orinda	Medium	General Fund or other City budget allocation; possibly HMGP and CDBG-DR	Short-Term; 2017 - 2019
OR #13—Update the San Pablo Creek Restoration Plan. A preliminary plan was prepared in 2001 and needs to be updated and expanded to be an actionable plan. Required steps to complete in updating the plan include: hydraulic modeling; installing gauges to monitor water flows; confirming proposed natural creek design; developing accurate topographical map; and, most challenging, gaining consensus of property owners and regulatory agencies to obtain right-of-way along the creek. As preliminary steps in this right-of-way acquisition process, the City may identify and evaluate opportunities and constraints to repurpose creekside property; formulate and test incentives to stimulate reinvestment; and demonstrate the City's commitment to creek restoration in order to obtain external funding.						
New and Existing	Flood, Severe Weather, Drought	1, 2, 6, 9, 10, 12, 14, 17	City of Orinda	Medium	Possibly FSR, HMGP, CDBG-DR as well as local grants such as EBMUD Measure WW Urban Creeks Grant Program and CDFW Ecosystem & Watershed Restoration Grant Program.	Short-Term
OR #14—Investigate certification and training cost and class timing options for Floodplain Manager certification for Public Works/Engineering Department staff. If it is determined that class cost and timing is feasible, enroll at least one Public Works/Engineering staff person in this certification program using current fiscal year training budget or allocate budget for training for next fiscal year.						
New and Existing	Flood	6, 9, 10, 12, 17	City of Orinda	Low	Staff Time, General Funds (Staff Training Budget)	Short Term
OR #15—Investigate what is required to join the Community Rating System, which is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Flood insurance premium rates are discounted to reflect flood risk resulting from the community actions meeting flood risk reduction goals. The City will join this program if the City can reasonably meet CRS program requirements.						
New and Existing	Flood	1, 4, 5, 6, 9, 10, 12, 17	City of Orinda	Low	Staff Time, General Funds	Short-Term
OR #16—Coordinate with the State Division of Safety of Dams to ensure that the City is aware of the timeline for the maintenance and inspection of dams whose failure would impact their jurisdiction.						
Existing	Dam & Levee Failure	1, 3, 6, 7, 12	City of Orinda	Low	Staff Time, General Funds	Ongoing

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
OR#17—Conduct an inventory of soft-story structures in downtown Orinda. Identify potential sources of grant funding for retrofitting these structures. Inventory would be conducted in partnership with Contra Costa County Building Inspection Department and/or consultant(s).						
Existing	Earthquake	1, 3, 6, 15	City of Orinda*, Contra Costa County Building Inspection Department	Medium	Staff Time, General Funds	Ongoing
OR#18 – Review the Municipal Code regarding seismic requirements and review the seismic safety ordinances of nearby cities and report the findings to Council.						
Existing	Earthquake	6, 11, 12	City of Orinda	Low	Staff Time, General Funds	Short-Term
OR#19 – Coordinate with MOFD to understand all available options and costs associated with upgrading water pipes to increase water pressure at certain fire hydrants in Orinda.						
Existing	Wildfire	1, 2	City of Orinda	Low	Staff Time, General Funds	Short-Term
OR #20—Develop and update worksheets and resources for the public regarding building in high hazard areas, and train permit counter staff to direct the public to these materials.						
New and Existing	Dam & Levee Failure, Drought, Earthquake, Flood, Landslide, Severe Weather, Wildfire	3, 5, 6, 7, 12	City of Orinda	Low	Staff Time, General Funds	Ongoing
OR #21—Prepare a Climate Action Plan. Investigate the cost of preparing a Climate Action Plan and identify grant funding opportunities to supplement General Funds. Retain a consultant to update the existing greenhouse gas inventory which was conducted in 2009 based on 2005 data, and use the inventory to prepare a Climate Action Plan.						
New and Existing	All Hazards	1, 3, 6, 17, 18	City of Orinda	High	Staff time for investigation of cost and funding options. Grant funding for plan preparation may include HMGP, CDBG-DR.	Short-Term
OR #22—Downtown Development coordination – As guidelines, plans and codes are developed and updated regarding development in downtown Orinda, incorporate hazard mitigation concepts into these Planning documents, especially regarding flood mitigation along San Pablo Creek.						
New and Existing	Dam & Levee Failure, Drought, Earthquake, Flood, Landslide, Severe Weather, Wildfire	1, 3, 6, 11, 17, 18	City of Orinda	Medium	General Plan Funds	Short-Term
OR #23—Evaluate site plan review processes, train staff on content of LHMP and investigate ways to better train staff to consistently give feedback on project design as related to landslide and flooding risk during plan review and environmental review.						
New and Existing	Landslide, Flood	3, 5, 6, 7, 12	City of Orinda	Low	Staff Time, General Funds	Short-Term
OR #24—Coordinate with Orinda Union School District regarding next update of Local Hazard Mitigation Plan to ensure that agency efforts are synced or complimentary.						
New and Existing	Dam & Levee Failure, Drought, Earthquake, Flood, Landslide, Severe Weather, Wildfire	1, 2, 6, 12, 16	City of Orinda*, Orinda Union School District	Low	Staff Time, General Funds	Short-Term

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 10-14. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
OR-1	8	High	High	Yes	Yes	No	Medium	High
OR-2	8	Medium	Low	Yes	No	Yes	High	Low
OR-3	3	Low	Low	Yes	No	Yes	High	Low
OR-4	7	Medium	Low	Yes	No	Yes	High	Low
OR-5	4	High	Medium	Yes	Yes	Yes	High	High
OR-6	4	Medium	Medium	Yes	Yes	Yes	High	Medium
OR-7	6	Medium	Medium	Yes	Yes	Yes	High	Medium
OR-8	6	Medium	High	No	Yes	Yes	High	Low
OR-9	6	High	High	Yes	Yes	No	High[b]	Medium
OR-10	4	High	High	Yes	Yes	No	Medium	Medium
OR-11	2	Medium	Low	Yes	No	Yes	High	Low
OR-12	8	Medium	Medium	Yes	Yes	No	Medium	High
OR-13	8	Medium	Medium	Yes	Yes	No	Medium	High
OR-14	5	Low	Low	Yes	No	Yes	High	Low
OR-15	8	Medium	Low	Yes	No	Yes	Medium	Low
OR-16	5	Low	Low	Yes	No	Yes	Medium	Low
OR-17	4	Medium	Low	Yes	No	Yes	Medium	Low
OR-18	3	Low	Low	Yes	No	Yes	Medium	Low
OR-19	2	Low	Low	Yes	No	Yes	Medium	Low
OR-20	5	Low	Low	Yes	No	Yes	High	Low
OR-21	5	Medium	Medium	Yes	Yes	No	Medium	High
OR-22	6	Low	Medium	No	No	Yes	Medium	Low
OR-23	5	Low	Low	Yes	No	Yes	Medium	Low
OR-24	5	Low	Low	Yes	No	Yes	Medium	Low

a. See the introduction to this volume for explanation of priorities.
b. Although funding is not currently available, this has been identified as a high priority action for the City

Table 10-15. Analysis of Mitigation Actions

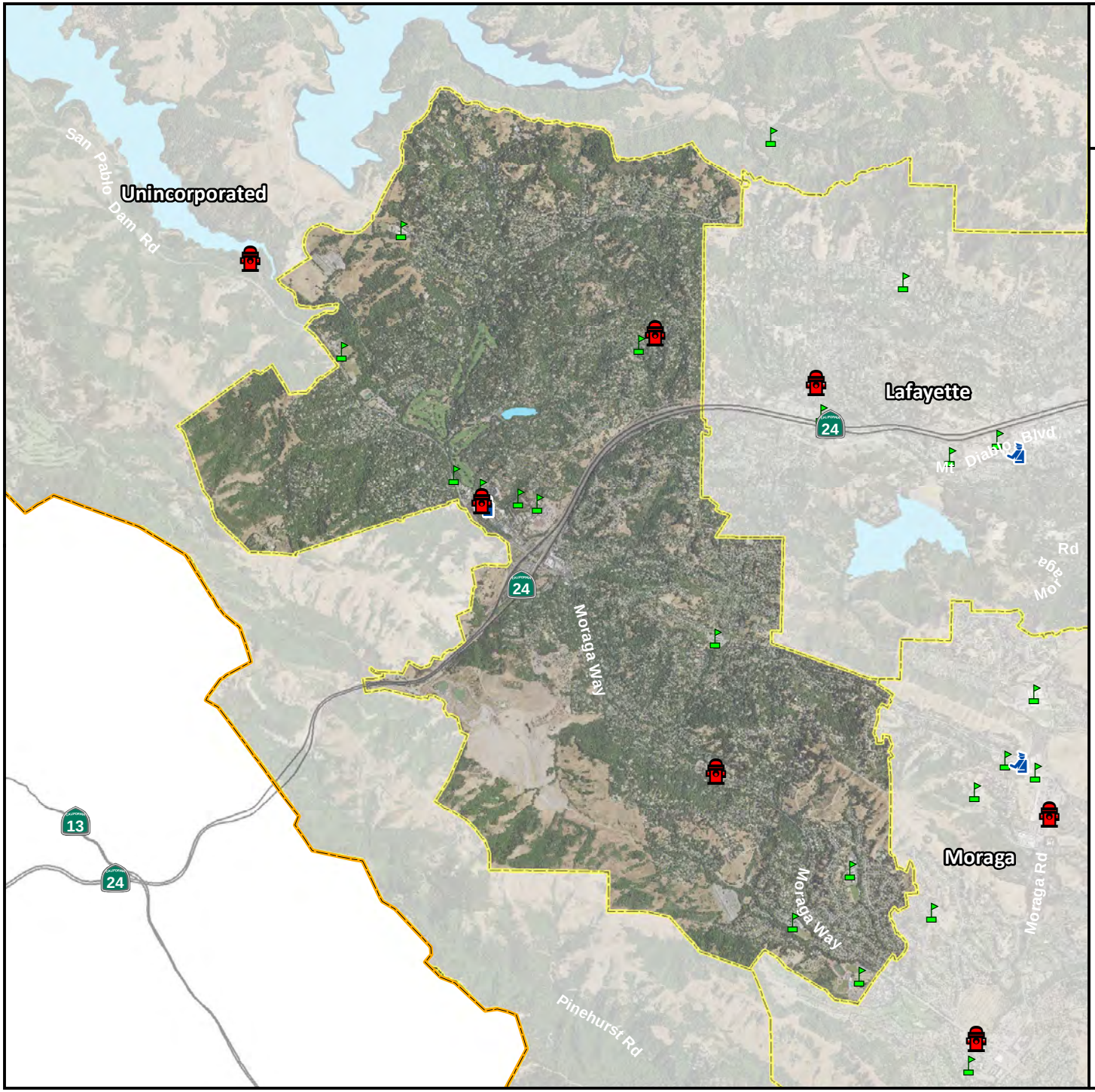
Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	OR-21						OR-21	OR-21
Dam and Levee failure	OR-2, 3, 16, 22, 24		OR-20				OR-22	OR-3, 16, 20, 22, 24
Drought	OR-3, 12, 13, 22, 24		OR-20	OR-12, 13			OR-12, 13, 22	OR-3, 12, 13, 20, 22, 24
Earthquake	OR-2, 3, 17, 22, 24	OR-9	OR-17, 20	OR-9	OR-9	OR-9		OR-3, 17, 18, 20, 22, 24
Flood	OR-2, 3, 4, 7, 10, 12, 13, 15, 22, 23, 24	OR-1,7	OR-4, 20, 23	OR-12, 13		OR-1, 7	OR-12, 13, 22, 23	OR-3, 4, 7, 10, 12, 13, 14, 15, 20, 22, 23, 24
Landslide	OR-1, 2, 3, 10,22, 23, 24	OR-1, 5, 6, 8	OR-20, 23	OR-8		OR-1, 5, 6, 8	OR-1, 22, 23	OR-3, 10, 20, 22, 23, 24
Severe weather	OR-2, 3, 7, 10,12, 13, 22, 24	OR-7, 8, 9, 11	OR-20	OR-8, 9, 12, 13	OR-9	OR-7. 8, 9	OR-12, 13, 22	OR-3, 7, 10, 12, 13, 20 , 22, 24
Tsunami								
Wildfire	OR-2, 3, 10, 22, 24		OR-20				OR-22	OR-3, 10, 19, 20, 22, 24

a. See the introduction to this volume for explanation of mitigation types.

10.12 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **ABAG Resilience Project**—The hazard mapping tool was utilized to cross-reference building permit projects with known hazard areas in Orinda. *http://gis.abag.ca.gov/website/Hazards*
- **City of Orinda Capital Improvement Plan**—This plan was evaluated for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Orinda Emergency Operations Plan**—This plan was evaluated for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Orinda General Plan**—The Conservation, Safety, and Growth Elements were evaluated for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Orinda Greenhouse Gas Emissions Analysis: 2005 Community Emissions Inventory**—This inventory was reviewed to understand potential greenhouse gas reduction strategies for the City.
- **City of Orinda Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **Contra Costa County Community Wildfire Protection Plan**—This plan was evaluated for the full capability assessment and for identifying opportunities for action plan integration.
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.



The City of Orinda

Critical Facilities

- Emergency Operations Centers (Government)
- Fire Stations (Protective Functions)
- Hazardous Materials
- Medical Facilities
- Police Stations (Protective Functions)
- Schools & Educational Facilities
- Contra Costa County Boundary
- City Boundaries

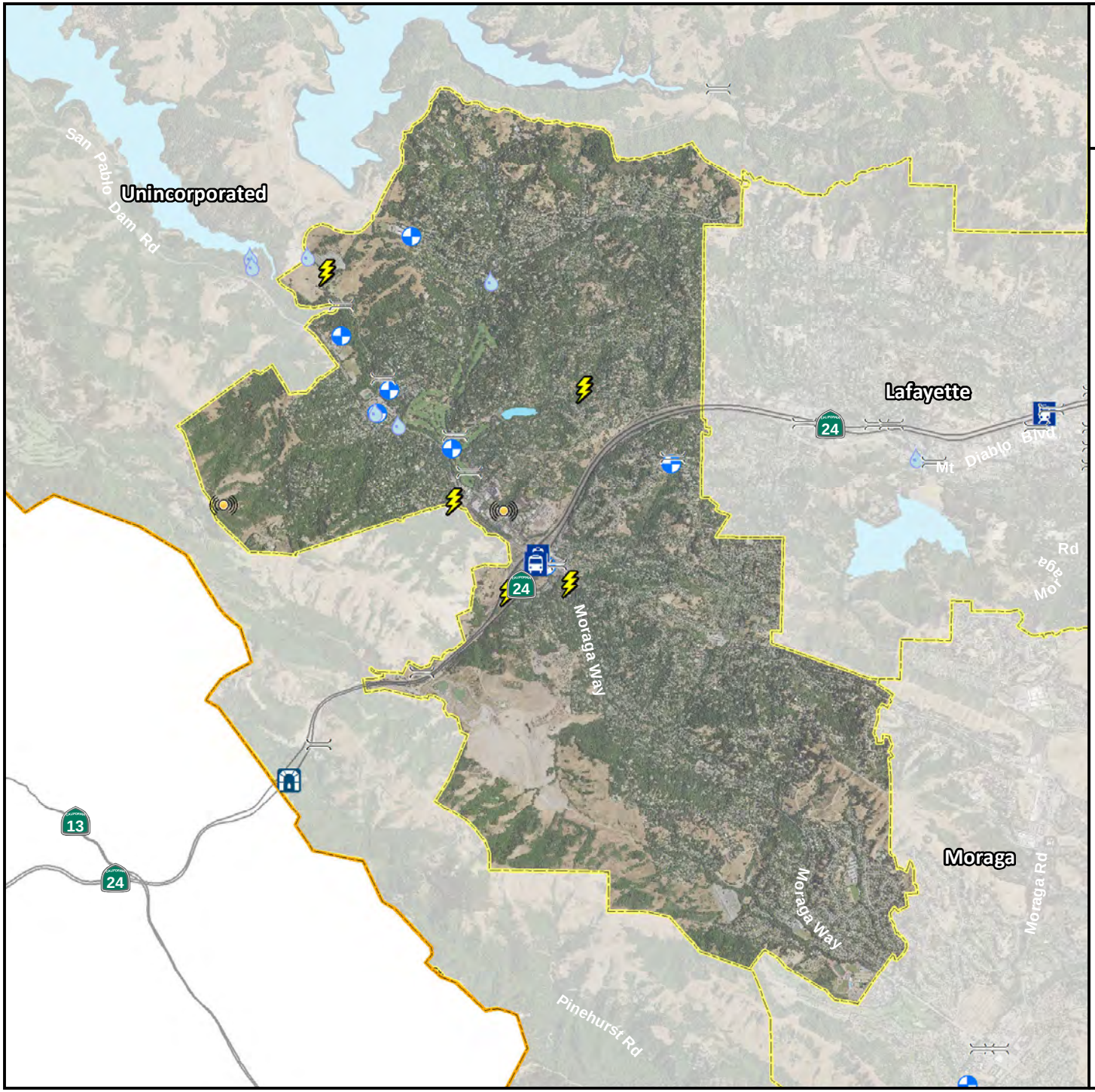
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of Orinda

Critical Infrastructure

- Airports (Other Critical Functions)
- Bus Facilities (Other Infrastructure)
- Communication Facilities
- Electric Power Facilities
- Highway Bridges
- Highway Tunnels (Other Infrastructure)
- Light Rail (Other Infrastructure)
- Natural Gas (Other Infrastructure)
- Port Facilities (Other Critical Functions)
- Water Supply Facilities
- Rail Facilities (Other Infrastructure)
- Wastewater Facilities
- Contra Costa County Boundary
- City Boundaries

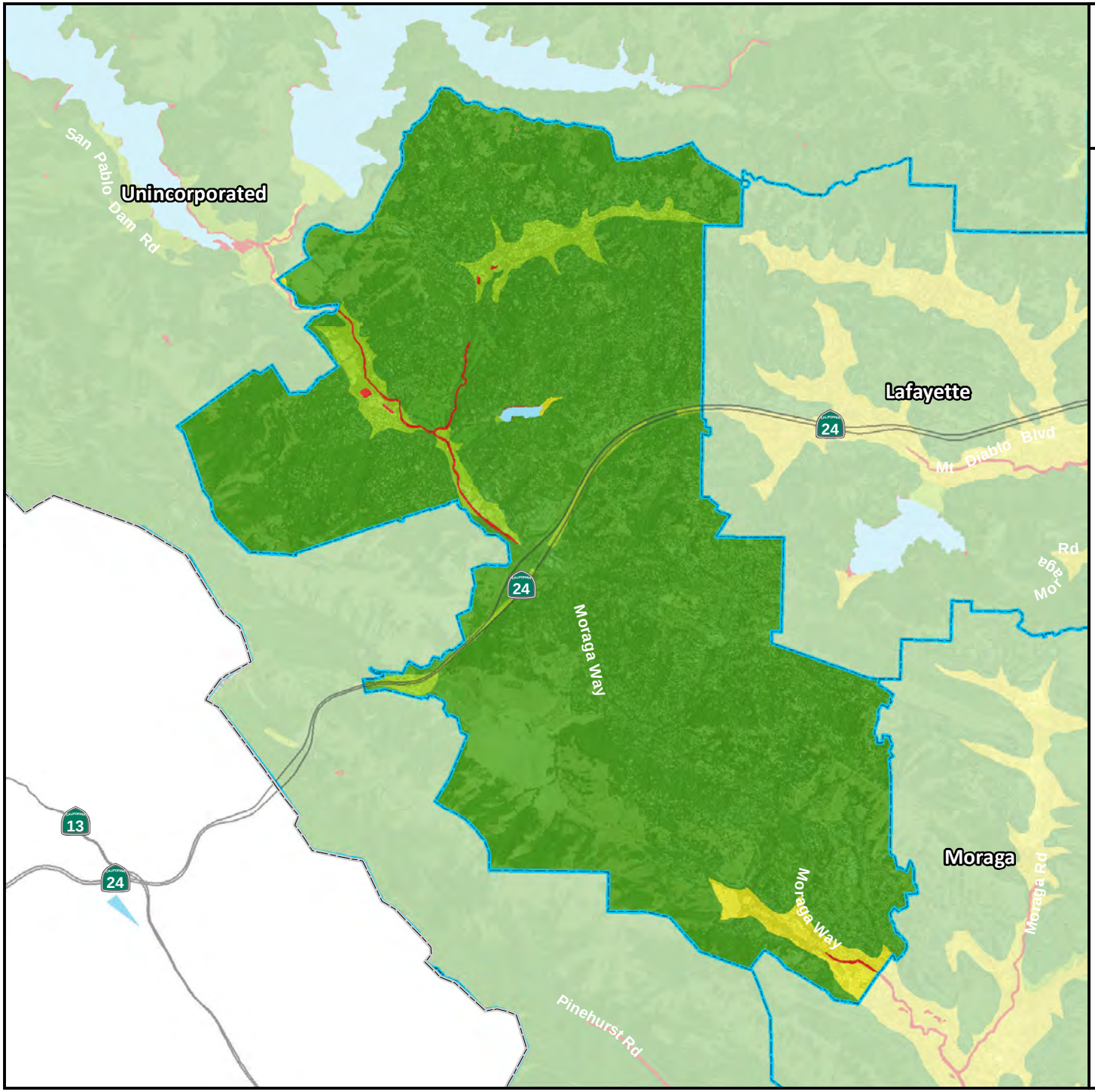
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of Orinda

Liquefaction Susceptibility

Contra Costa County Boundary
City Boundaries
Water Bodies

Susceptibility to Liquefaction

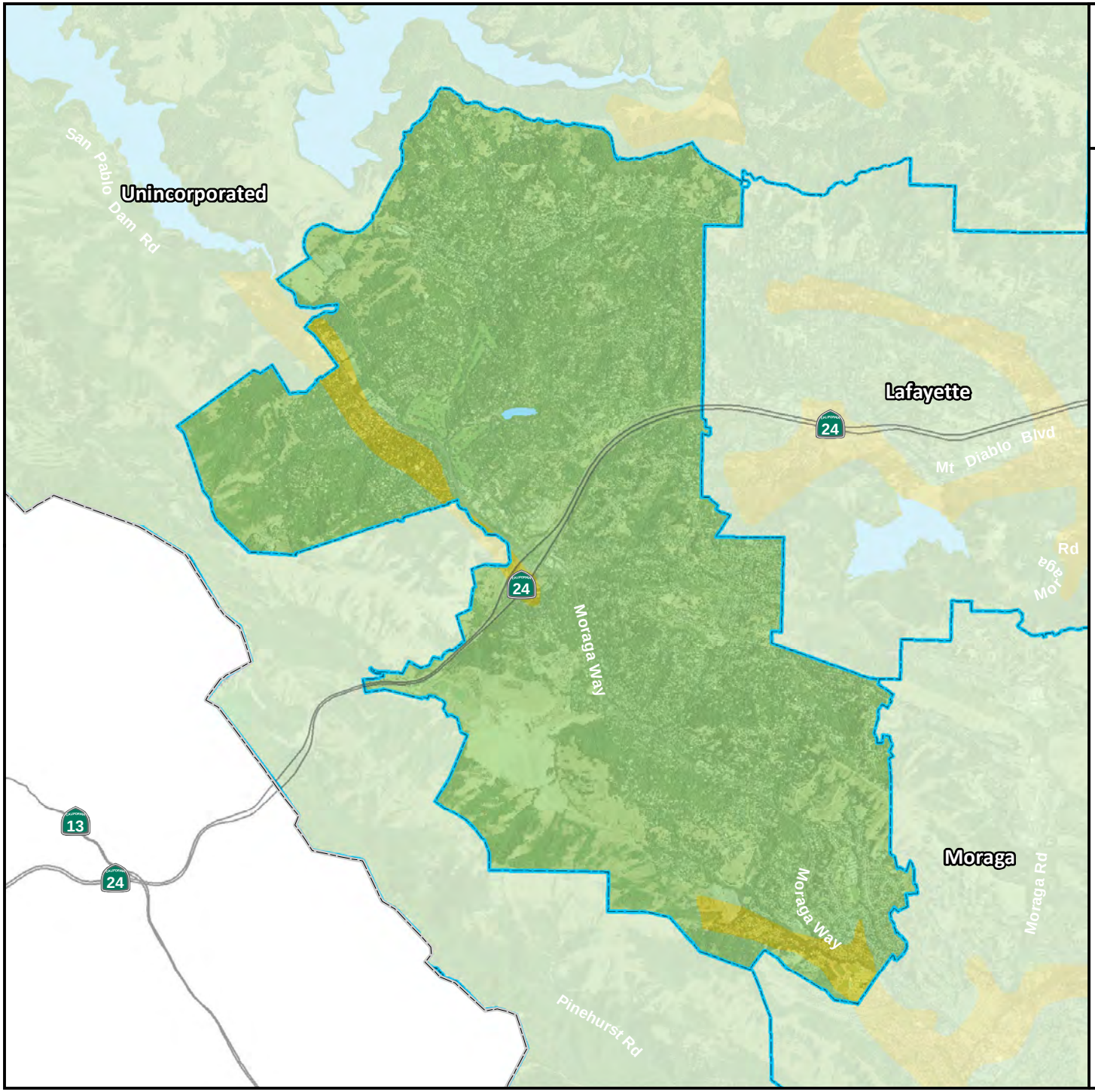
Very Low
Low
Medium
High
Very High
No Liquefaction Data Available

0 0.5 1 2
Miles

N
W E
S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The City of Orinda

National Earthquake Hazard Reduction Program (NEHRP) Soil Class

Contra Costa County Boundary

City Boundaries

Water Bodies

NEHRP Site Class / Soil Profile

B / Rock

C / Very Dense Soil - Soft Rock

D / Stiff Soil

E / Soft Soil

No Soil Data Available

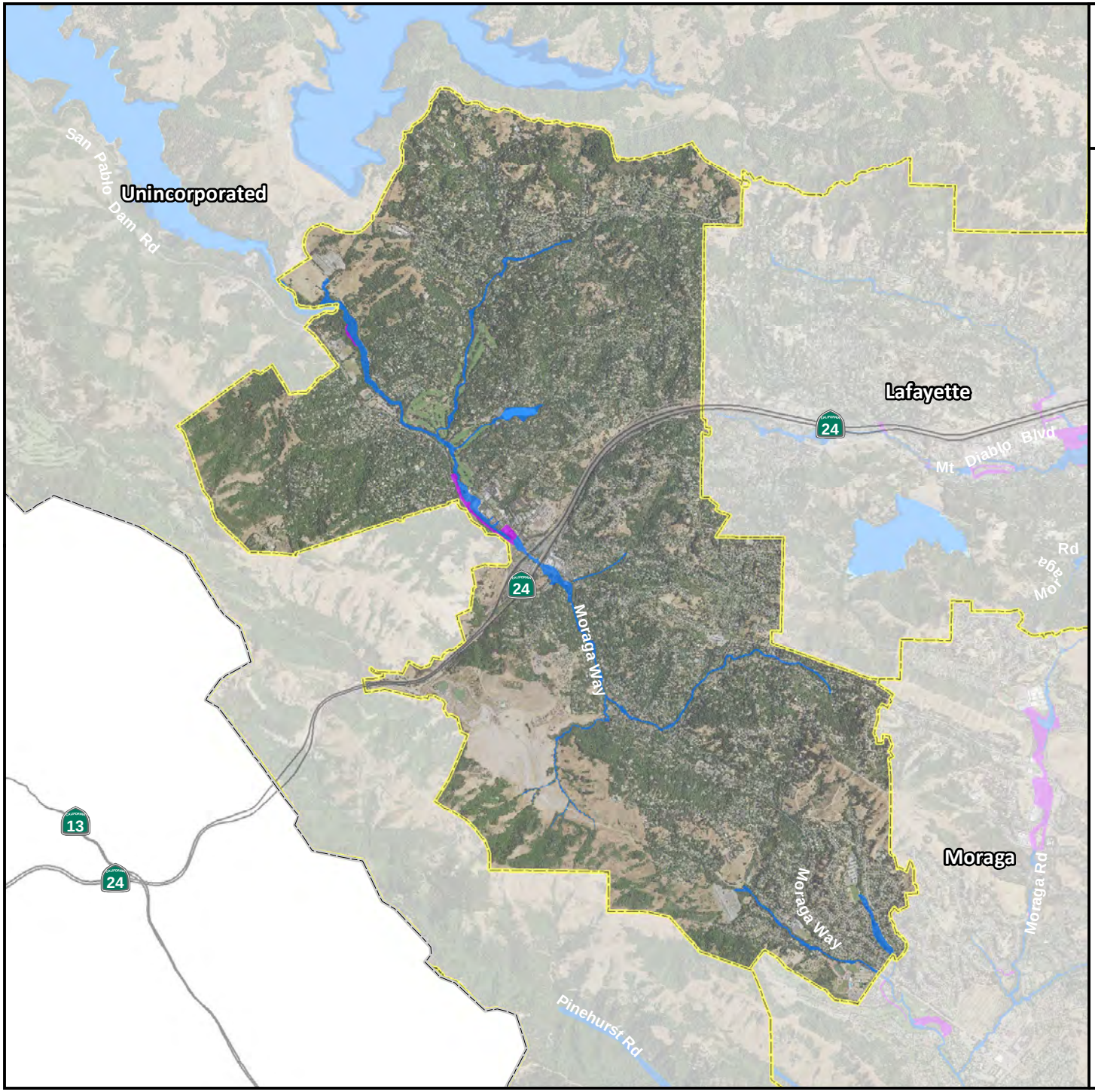
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Department of Conservation, USDA



The City of Orinda

FEMA DFIRM Flood Hazard Areas

- 1% Annual Chance (100-Year) Flood Zone
- 0.2% Annual Chance (500-Year) Flood Zone
- Contra Costa County Boundary
- City Boundaries
- Water Bodies

Flood hazard areas as depicted on Effective FEMA Digital Flood Insurance Rate Maps (DFIRM)

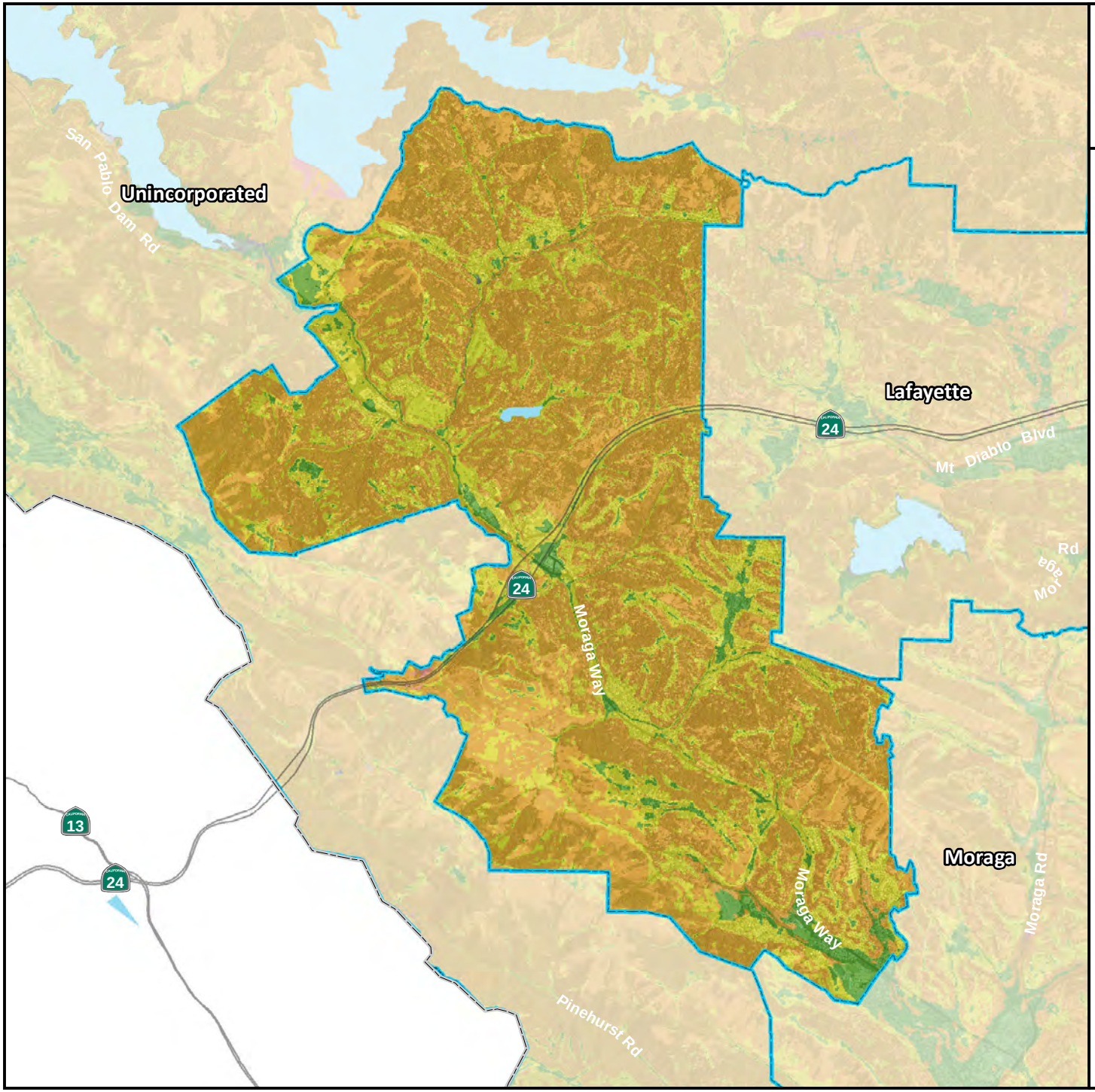
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, FEMA, USDA



The City of Orinda

Landslide Susceptibility Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Type

Low

Moderate

High

Very High / Existing

Data Not Available

Source dataset created by Wills C.J., Perez, F., Gutierrez, C., 2011, Susceptibility to deep-seated landslides in California: California Geological Survey Map Sheet 58

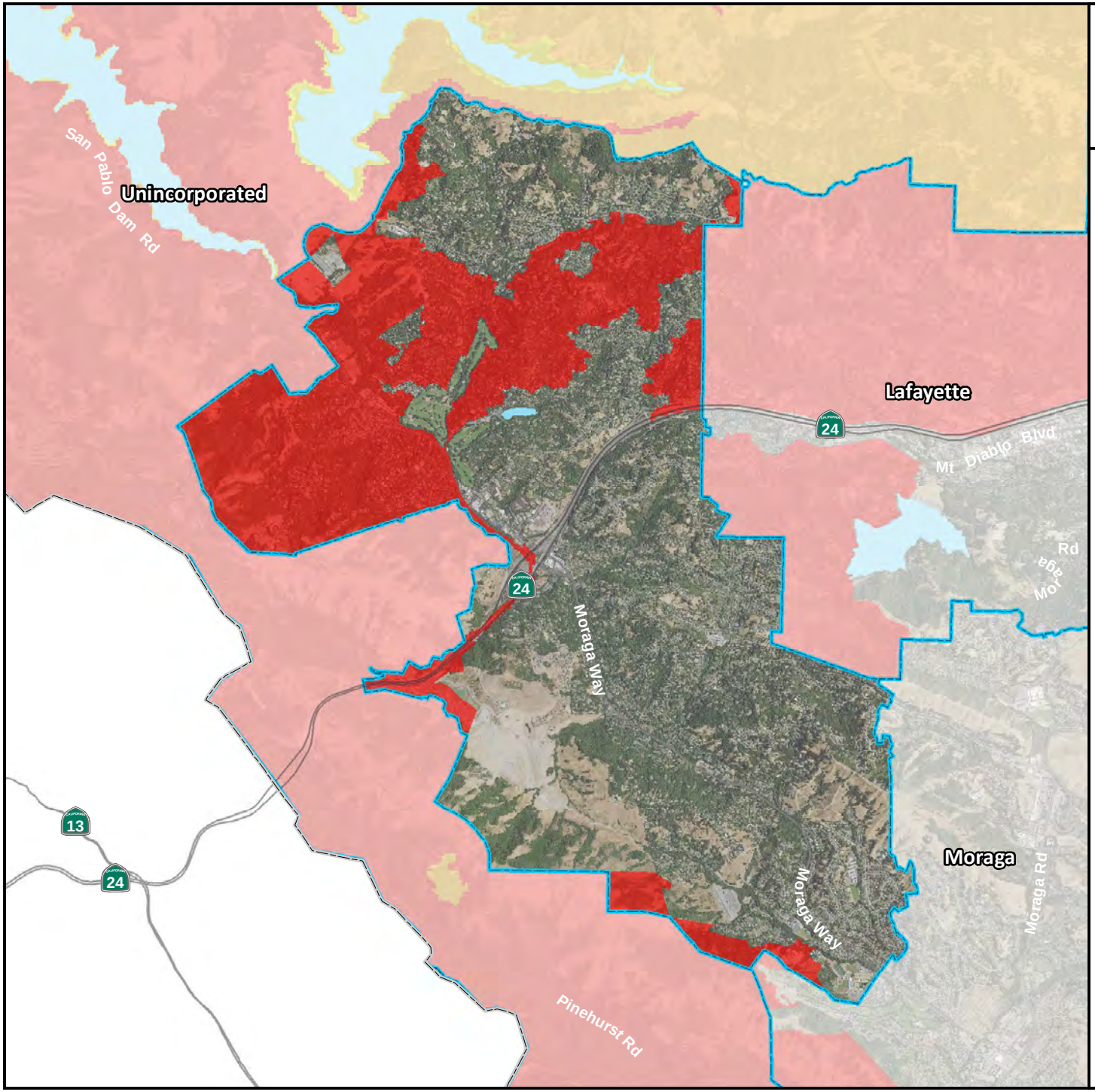
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The City of Orinda

Wildfire Severity Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Wildfire Severity Zone

Moderate

High

Very High

0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, CalFIRE, USDA

11. CITY OF PLEASANT HILL

11.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Deirdre Castillo, Senior Engineer
100 Gregory Lane
Pleasant Hill, CA 94523
Telephone: 925-671-5251
e-mail: dcastillo@pleasanthillca.org

Alternate Point of Contact

Mario Moreno, City Engineer
100 Gregory Lane
Pleasant Hill, CA 94523
Telephone: 925-671-5252
e-mail: mmoreno@pleasanthillca.org

11.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation**—1961
- **Current Population**—33,152 (per Suburbanstatus.org)
- **Population Growth—**Based on data from the U.S. Census Bureau, the City of Pleasant Hill has experienced a relatively flat rate of growth. The overall population has increased 5.1 percent since 2010.
- **Location and Description—**The City of Pleasant Hill is in the central part of Contra Costa County alongside Interstate 680. Pleasant Hill has a nearby Bay Area Rapid Transit (BART) station and extensive Contra Costa County Connection bus lines. Primarily a bedroom community, the City has a mix of new small developments and older, larger neighborhoods. Pleasant Hill is the home of the county's main central library as well as to John F. Kennedy University and Diablo Valley College.
- **Brief History—**In the 1890s, Pleasant Hill was the hub of a growing farming community with good cropland. Approximately 19 small and large farms around the area helped provide a strong agricultural economy that sparked steady growth. Rail travel came to Pleasant Hill in 1891 when the Central Pacific Railroad started a line through the Diablo Valley. In 1911, an electric railroad passed through Pleasant Hill on its way to Sacramento Valley. Rural mail service began around 1912. The area that is now Pleasant Hill grew from that farmland into a bedroom community during World War II. Pleasant Hill incorporated in 1961. Since 2000, when it opened its new downtown area, Pleasant Hill has developed a sense of identity and a strong financial base. It has developed into a community that incorporates mixed uses: a pedestrian-oriented downtown shopping area featuring traditional architecture that mixes retail uses with entertainment and residential and civic uses, anchored by the new City Hall.
- **Climate—**Pleasant Hill's climate is typical of Northern California, with mild summers and cool, wet winters. It rarely freezes in the winter and it is rarely hot in the summer. Pleasant Hill receives 20 inches of rain per year, with 80 percent of that falling from November through April. Average snowfall is 0 inches. The average number of days with measurable precipitation is 48. On average, there are 264 sunny days per year. The July high is around 87ºF. The January low is 39ºF. The comfort index, which is based on humidity during the hot months, is a 55 out of 100, where higher is more comfortable.
- **Governing Body Format**—The City of Pleasant Hill is governed by a five-member City Council. The City consists of seven departments: Public Works and Community Development, Police, Redevelopment, Finance, Human Resources, City Attorney's Office, and the City Manager's Office. The City has nine

commissions and one committee, which report to the City Council. The City Council assumes responsibility for adoption of this plan, the City Engineer will oversee its implementation.

11.3 DEVELOPMENT TRENDS

Development trends for Pleasant Hill are anticipated to be low to moderate, consisting of residential infill development and the redevelopment of many commercial areas. California law requires counties and cities to prepare and adopt a comprehensive long-range plan to guide community development. The plan must consist of an integrated and internally consistent set of goals, policies, and implementation measures. In addition, the plan must focus on issues of the greatest concern for the community and be written in a clear and concise manner. City actions, such as those relating to land use allocations, annexations, zoning, subdivision and design review, redevelopment, and capital improvements, must be consistent with the plan. The City of Pleasant Hill adopted its 2013 General Plan under this state mandate in 2013. Future growth and development in the City of Pleasant Hill will be managed as identified in the General Plan and approved revisions.

Table 11-1 summarizes development trends in the performance period since development of the previous hazard mitigation plan and expected future development trends.

Table 11-1. Recent and Expected Future Development Trends

Criterion	Response					
Has your jurisdiction annexed any land since the development of the previous hazard mitigation plan?	No					
• If yes, give the estimated area annexed and estimated number of parcels or structures.	N/A					
Is your jurisdiction expected to annex any areas during the performance period of this plan?	No					
Are any areas targeted for development or major redevelopment in the next five years?	No					
• If yes, please briefly describe	N/A					
How many building permits were issued in your jurisdiction since the development of the previous hazard mitigation plan? (All Permits)		2012	2013	2014	2015	2016
	Single Family	3	3	2	4	6
	Multi-Family	0	0	0	0	0
	Other (commercial, mixed use, etc.)	1,972	2,304	2,200	2,403	2,274
Please provide the number of permits for each hazard area or provide a qualitative description of where development has occurred.	Special Flood Hazard Areas: 2012-4, 2013-4, 2014-4, 2015-7, 2016-10 Development has occurred throughout the city during the performance period for this plan. For those hazards other than flood with a clearly defined extent and location, the City cannot estimate specific development impacts. For those hazards with impacts city-wide, it is safe to assume that this new development could be subject to impacts from those hazards. However, it is important to note that all new development was consistent with General Plan policies and municipal code standards and as a result most development has occurred outside of identified hazard zones					

11.4 CAPABILITY ASSESSMENT

The City of Pleasant Hill performed an inventory and analysis of existing capabilities, plans, programs and policies that enhance its ability to implement mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of legal and regulatory capabilities is presented in Table 11-2.
- Development and permitting capabilities are presented in Table 11-3.
- An assessment of fiscal capabilities is presented in Table 11-4.
- An assessment of administrative and technical capabilities is presented in Table 11-5.
- An assessment of education and outreach capabilities is presented in Table 11-6.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 11-7.
- Classifications under various community mitigation programs are presented in Table 11-8.
- The community's adaptive capacity for the impacts of climate change is presented in Table 11-9.

Table 11-2. Legal and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code	Yes	No	Yes	No
Comment: California Building Code (2016)				
Zoning Code	Yes	No	Yes	No
Comment: PHMC Title 18 (2017)				
Subdivisions	Yes	No	No	Yes
Comment: PHMC Title 17 (2017), Subdivision Map Act				
Stormwater Management	Yes	No	Yes	Yes
Comment: PHMC Title 15.05				
Post-Disaster Recovery	No	No	No	No
Comment: N/A				
Real Estate Disclosure	No	No	Yes	Yes
Comment: Cal. Civ. Code §1102 et seq.				
Growth Management	Yes	No	Yes	Yes
Comment: PH General Plan 2003; Cal. Gov. Code §65300 et seq.				
Site Plan Review	Yes	No	No	Yes
Comment: PHMC Title 18 (1996)				
Environmental Protection	Yes	No	Yes	Yes
Comment: California Environmental Quality Act				
Flood Damage Prevention	Yes	No	Yes	Yes
Comment: PHMC Title 15.15				
Emergency Management	Yes	No	Yes	Yes
Comment: PHMC Title 15.15				
Climate Change	No	No	Yes	Yes
Comment: California SB-379: Land Use: General Plan: Safety Element				
Other:	Yes	No	Yes	Yes
Comment: PHMC Section 15.15 (1997), FEMA regulations, Clean Water Act				
Planning Documents				
General Plan	Yes	No	No	Yes
Is the plan compliant with Assembly Bill 2140? Yes				
Comment: PH General Plan 2013				
Capital Improvement Plan	Yes	No	No	Yes
How often is the plan updated? Every 2 years				
Comment: PH CIP 6-year Plan (2016-2021)				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Floodplain or Watershed Plan *Comment: FEMA Map & Storm Drain Map, No plan identified*	Yes	No	Yes	Yes
Stormwater Plan *Comment: Storm Drain Map, No plan identified*	Yes	No	Yes	Yes
Urban Water Management Plan *Comment: N/A*	No	No	No	No
Habitat Conservation Plan *Comment: N/A*	No	No	No	No
Economic Development Plan *Comment: PH Economic Development Strategic Plan 2016*	Yes	No	No	No
Shoreline Management Plan *Comment: N/A*	No	No	No	No
Community Wildfire Protection Plan *Comment: N/A*	No	No	No	No
Forest Management Plan *Comment: N/A*	No	No	No	No
Climate Action Plan *Comment: N/A*	No	No	No	No
Comprehensive Emergency Management Plan *Comment: PH EOP 2005*	Yes	No	Yes	No
Threat & Hazard Identification & Risk Assessment (THIRA) *Comment: PHMC Title 15.15*	Yes	No	Yes	No
Post-Disaster Recovery Plan *Comment: N/A*	No	No	No	No
Continuity of Operations Plan *Comment: PH EOP 2005*	Yes	No	Yes	No
Public Health Plan *Comment: PH EOP 2005*	Yes	No	Yes	No
Other: *Comment: None Identified*	No	No	No	No

Table 11-3. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? • If no, who does? If yes, which department?	Yes Planning Department
Does your jurisdiction have the ability to track permits by hazard area?	No
Does your jurisdiction have a buildable lands inventory? • If yes, please briefly describe. • If no, please quantitatively describe the level of buildout in the jurisdiction.	Yes General Plan, 98% Built Out and Potential Housing and Commercial Land available N/A

Table 11-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	No

Table 11-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Engineering Division staff, Planning Division staff
Engineers or professionals trained in building or infrastructure construction practices	Yes	Building Division staff, Engineering Division staff
Planners or engineers with an understanding of natural hazards	Yes	Engineering Division staff, Planning Division staff
Staff with training in benefit/cost analysis	No	
Surveyors	No	
Personnel skilled or trained in GIS applications	Yes	Engineering Division staff
Scientist familiar with natural hazards in local area	No	
Emergency Manager	Yes	City Manager
Grant writers	Yes	Engineering Division staff
Other	No	

Table 11-6. Education and Outreach Capability

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe.	Yes Link to Contra Costa County Website
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe.	Yes Website
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly describe.	Yes City Council
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe.	Yes Website
Do you have any established warning systems for hazard events? • If yes, please briefly describe.	Yes Website/Media

Table 11-7. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Engineering
Who is your floodplain administrator? (department/position)	Associate Engineer (CFM)
Are any certified floodplain managers on staff in your jurisdiction?	Yes
What is the date that your flood damage prevention ordinance was last amended?	March 17, 2017
Does your floodplain management program meet or exceed minimum requirements? • If exceeds, in what ways?	Meets N/A
When was the most recent Community Assistance Visit or Community Assistance Contact?	On-going (March 17)
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? • If so, please state what they are.	No N/A
Do your flood hazard maps adequately address the flood risk within your jurisdiction? • If no, please state why.	Yes N/A
Does your floodplain management staff need any assistance or training to support its floodplain management program? • If so, what type of assistance/training is needed?	Yes On-going training on updates
Does your jurisdiction participate in the Community Rating System (CRS)? • If yes, is your jurisdiction interested in improving CRS Classification? • Is your jurisdiction interested in joining the CRS program?	Yes Yes N/A
How many Flood Insurance policies are in force in your jurisdiction?[a] • What is the insurance in force? • What is the premium in force?	449 $ 128,388,400 $ 547,055
How many total loss claims have been filed in your jurisdiction?[a] • How many claims were closed without payment/are still open? • What were the total payments for losses?	43 17/0 $ 426,765

a. According to FEMA statistics as of December 31, 2016

Table 11-8. Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	Yes	8	05/01/2008
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	No	N/A	N/A
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A

Table 11-9. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: None provided*	Medium
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: None provided*	Medium
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: None provided*	Medium
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: None provided*	Medium
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: None provided*	Medium
Participation in regional groups addressing climate risks *Comments/Additional Information: None provided*	Medium
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: None provided*	Medium
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: None provided*	Medium
Identified strategies for adaptation to impacts *Comments/Additional Information: None provided*	Medium
Champions for climate action in local government departments *Comments/Additional Information: None provided*	Medium
Political support for implementing climate change adaptation strategies *Comments/Additional Information: None provided*	Medium
Financial resources devoted to climate change adaptation *Comments/Additional Information: None provided*	Medium
Local authority over sectors likely to be negative impacted *Comments/Additional Information: None provided*	Medium
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: None provided*	Medium
Local residents support of adaptation efforts *Comments/Additional Information: None provided*	Medium
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Medium
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Medium
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Medium

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

11.5 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

11.5.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the City of Pleasant Hill made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- Updated Design Guide Lines in 2017 (Residential & Commercial) to include consideration of risk from natural hazards.
- Pleasant Hill requires all applicant who intend to build within the flood plane to submit final flood elevation certificate to demonstrate that the proposed structure gets built above the base flood elevation

Resources listed in Section 11.11 were used to provide information for this annex on hazard events and local capabilities within the jurisdiction.

11.5.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the City of Pleasant Hill will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan in actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Future Update to the General Plan (possibly 2020)—**Information from the risk assessment and hazard mitigation goals and policies will be incorporated pursuant with AB 2140 and SB 379.

11.6 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for the jurisdiction.

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 3
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: Unknown

Other notes vulnerabilities:

- An estimated 7 percent of the total replacement value of the planning area would be damaged following a M6.8 event on the Concord-Green Valley fault.

- Approximately 6 percent of the population resides in the special flood hazard area and 16 percent reside in the 0.2 percent annual chance flood hazard area.
- Utility connections are vulnerable to damage from an earthquake event.

11.7 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 11-10 lists past occurrences of natural hazards for which specific damage was recorded in the City of Pleasant Hill. Other hazard events that broadly affected the entire planning area, including the City of Pleasant Hill, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 11-10. Past Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Severe storms	DR-4301	1/2017	Not available
Flooding, Landslide – Reliz Valley	NA	1/4/2008	No estimates available
Flooding	FEMA-1628-DR	1/1/2006	No estimates available
Flooding, Landslides – 419 Saddlebrook & Heritage Hills	FEMA-1628-DR	12/31/2005	No estimates available
Wind	NA	12/21/2002	No estimates available
Severe Weather	NA	7/10/2002	No estimates available
Wind	NA	11/24/2001	No estimates available
Wind	NA	2/14/2000	No estimates available
Severe Weather - El Nino	FEMA-1203-DR	2/2/1998	No estimates available
Winter Weather, Flooding	NA	12/9/1995	No estimates available
Flooding	FEMA-758	2/17/1986	No estimates available
Severe Storm, Flooding	NA	1/3/1982	No estimates available
Wind	NA	12/22/1982	No estimates available
Wind, Flooding	NA	3/1980	No estimates available
Wind, Flooding	NA	1/1980	No estimates available

11.8 HAZARD RISK RANKING

Table 11-11 presents a local ranking for the City of Pleasant Hill of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

11.9 STATUS OF PREVIOUS PLAN ACTIONS

Table 11-12 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

11.10 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 11-13 lists the actions that make up the City of Pleasant Hill hazard mitigation action plan. Table 11-14 identifies the priority for each action. Table 11-15 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 11-11. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake[b]	48	High
2	Severe weather	30	Medium
3	Flood[c]	18	Medium
3	Landslide[e]	18	Medium
4	Drought	9	Low
5	Dam and levee failure[a]	6	Low
5	Wildfire[e ,f]	6	Low
6	Sea level rise[d]	0	None
6	Tsunami	0	None

a. Based on the level of detail conducted in the risk assessment, the risk ranking for this hazard is focused solely on dam failure impacts. See Chapter 6.4 of Volume 1 for combined dam inundation list on which this assessment is based.
b. Haywired M7.05 event was used to assign probability and impacts
c. 1-percent annual chance event was used to assign probability and impacts
d. 2100 upper range estimates and extreme tide are used to assign probability and impacts
e. Very High and High severity zones were used to assign probability and impacts
f. There is no mapped risk within the jurisdiction; however, a score was given due to potential impacts to people and the economy from smoke

Table 11-12. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter
PH-1—Install engineered pipelines in areas subject to faulting, liquefaction, landsliding, or other earthquake hazard. *Comment: Ongoing*			X	PH-6
PH-2—Replace or retrofit water-retention structures that are determined to be structurally deficient. *Comment: Ongoing activity conducted routinely*		X		
PH-3—Install portable facilities (hoses, pumps, emergency generators) to allow pipelines to bypass failure zones *Comment: Completed in the performance period of the 2011 plan*	X			
PH-4—Install earthquake-resistant connections when pipes enter and exit bridges. *Comment: Ongoing*			X	PH-7
PH-5—Comply with all applicable building and fire codes, as well as other regulations when constructing or significantly remodeling infrastructure facilities. *Comment: Ongoing activity conducted routinely*	X			
PH-6—Relocate or locate critical facilities outside of hazard areas *Comment:*			X	PH-1
PH-7—Ensure a reliable source of water for fire suppression *Comment: Ongoing*			X	PH-8
PH-8—Develop a defensible space vegetation program. *Comment: Ongoing*			X	PH-9

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter
PH-9—Retrofit access roads to ensure fire equipment have adequate access to sites *Comment: Ongoing*			X	PH-10
PH-10—Develop and distribute public outreach materials *Comment: Ongoing*			X	PH-11
PH-11—Conduct a watershed analysis of runoff and drainage systems to predict areas of insufficient capacity in the storm drain and natural creek system. *Comment: Ongoing*			X	PH-12
PH-12—Continue to repair and make structural improvements to storm drains, pipelines, and/or channels. *Comment: Ongoing*			X	PH-13
PH-13—Continue maintenance efforts to keep storm drains and creeks free of obstructions. *Comment: Ongoing*			X	PH-14
PH-14—Enforce provisions under creek protection, stormwater management, and discharge control ordinances. *Comment: Ongoing*			X	PH-15
PH-15—Elevate critical bridges affected by flooding to increase stream flow and maintain critical access and egress routes. *Comment: Ongoing*			X	PH-16
PH-16—Provide a mechanism to expedite the repair or replacement of facilities protecting critical infrastructure. *Comment: Ongoing*			X	PH-17
PH-17—Ensure that utility systems in new developments are constructed in ways that reduce or eliminate flood damage. *Comment: Ongoing*			X	PH-18
PH-18—Develop hazard maps with GIS and provide to public on hard copy and internet *Comment: Ongoing*			X	PH-19
PH-19—Provide emergency power generation in critical buildings to maintain continuity of government and services. *Comment: Ongoing*	X			
PH-20—Have back-up emergency power available for critical intersection traffic lights. *Comment: Ongoing*			X	PH-20
PH-21—Warehouse critical infrastructure components, and repair items *Comment: Ongoing*			X	PH-21
PH-22—Promote information sharing and coordination of mitigation efforts among local jurisdictions *Comment: Ongoing*			X	PH-22
PH-23—Continue participation in the CRS Program *Comment: Ongoing*			X	PH-23
PH-24—Repair and retrofit City bridges *Comment: Ongoing*			X	PH-24

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update: Check if Yes	Carried Over to Plan Update: Enter
PH-25—Construct drainage basin to alleviate flooding throughout the City		X		
Comment: This action is being removed because it is too vague. Such projects will be considered on a case-by-case basis.				
PH-26—Repair slides on City-maintained open space and slopes (i.e. Taylor Boulevard)	X			
Comment: Completed in 2010.				
PH-27—Conduct study and construct improvements at Ellinwood Creek			X	PH-25
Comment: Ongoing				
PH-28—Purchase new permit tracking software to assist staff with documentation			X	PH-26
Comment: Ongoing				
PH-29—Support County-wide initiatives identified in Volume 1.	X			
Comment: Initiatives were supported during the performance period of the prior plan and will continue to be supported during the performance period of the updated plan.				
PH-30—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Volume 1.			X	PH-3
Comment: Ongoing				
PH-31—Continue to maintain compliance and good standing under the National Flood Insurance Program			X	PH-4
Comment: Ongoing				
PH-32—Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan			X	PH-2
Comment: Ongoing				
PH-33—Where appropriate, support retrofitting, purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority.			X	PH-1
Comment: Ongoing				
PH-34—Sponsor the formation and training of Community Emergency Response Teams (CERT) training through partnerships with local businesses. [Note - these programs go by a variety of names in various cities and areas.]			X	PH-27
Comment: Ongoing				

Table 11-13. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
PH-1— Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	City of Pleasant Hill	High	HMGP, PDM, FMA	Short-term
PH-2— Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including the General Plan.						
New and Existing	All Hazards	1, 4, 5, 7, 11, 12, 14, 17	City of Pleasant Hill	Low	Staff Time, General Funds	Ongoing
PH-3— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 16	City of Pleasant Hill	Low	Staff Time, General Funds	Short-term
PH-4—Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: • Enforce the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts.						
New and Existing	Flood	3, 5, 6, 9, 10, 11, 15	City of Pleasant Hill	Low	Staff Time, General Funds	Ongoing
PH-5—Continue City requirements that all permittee to submit flood certification survey before obtaining building permit						
New	Flood	5, 6, 11	City of Pleasant Hill	Low	General Funds	Ongoing
PH-6—Install engineered pipelines in areas subject to faulting, liquefaction, landsliding, or other earthquake hazard.						
New and Existing	Earthquake, Landslide	1, 2, 6	City of Pleasant Hill	High	General Fund	Long-term
PH-7—Install earthquake-resistant connections when pipes enter and exit bridges.						
Existing	Earthquake	1, 2, 6	City of Pleasant Hill	Medium	General Fund	Long-term
PH-8—Ensure a reliable source of water for fire suppression						
Existing	Wildfire	2, 16	Water District	Medium	General Fund	Short-term
PH-9—Develop a defensible space vegetation program.						
New and Existing	Wildfire	3, 5	Fire District	Low	General Fund	Short-term
PH-10—Retrofit access roads to ensure fire equipment have adequate access to sites						
New and Existing	Wildfire	1, 2, 16	Fire District	Low	General Fund	Short-term
PH-11—Develop and distribute public outreach materials						
New and Existing	Drought, Earthquake, Flood, Wildfire, Landslide, Severe Weather	3, 6	City of Pleasant Hill	Low	General Funds, NPDES tax	Short-term
PH-12—Conduct a watershed analysis of runoff and drainage systems to predict areas of insufficient capacity in the storm drain and natural creek system.						
New and Existing	Flood	6, 16, 17	City of Pleasant Hill	High	USACE, General Fund, FMA, HMGP	Short-term
PH-13—Continue to repair and make structural improvements to storm drains, pipelines, and/or channels.						
New and Existing	Flood, Dam and levee failure	1, 10	City of Pleasant Hill	Medium	NPDES tax	Short-term

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
PH-14—Continue maintenance efforts to keep storm drains and creeks free of obstructions.						
Existing	Flood, Dam and levee failure	1, 10	City of Pleasant Hill	Low	NPDES tax	Short-term
PH-15—Enforce provisions under creek protection, stormwater management, and discharge control ordinances.						
New and Existing	Flood	5, 9	City of Pleasant Hill	Low	NPDES tax	Short-term
PH-16—Elevate critical bridges affected by flooding to increase stream flow and maintain critical access and egress routes.						
Existing	Flood, Dam and levee failure	1, 15	City of Pleasant Hill	High	FMA, HMGP	Long-term
PH-17—Provide a mechanism to expedite the repair or replacement of facilities protecting critical infrastructure.						
Existing	Earthquake, Flood, Landslide, Wildfire, Severe weather	1, 15	City of Pleasant Hill	Low	General Fund	Short-term
PH-18—Ensure that utility systems in new developments are constructed in ways that reduce or eliminate flood damage.						
New	Flood	1, 5, 16	City of Pleasant Hill	Low	General Fund	Short-term
PH-19—Develop hazard maps with GIS and provide to public on hard copy and internet						
Existing	Drought, Earthquake, Flood, Landslide, Wildfire, Severe weather	3, 6	County	Low	General Fund	Short-term
PH-20—Have back-up emergency power available for critical intersection traffic lights.						
Existing	Earthquake, Flood, Severe weather, Dam and levee failure	1, 13	County	Medium	General Fund	Long-term
PH-21—Warehouse critical infrastructure components, and repair items						
Existing	Earthquake, Flood, Severe weather, Dam and levee failure, Landslide	13, 16	City of Pleasant Hill	High	General Fund, NPDES tax	Short-term
PH-22—Promote information sharing and coordination of mitigation efforts among local jurisdictions						
Existing	Earthquake, Flood, Dam and levee failure	6, 16	County	Low	General Fund	Short-term
PH-23—Continue participation in the CRS Program						
Existing	Flood, Dam and levee failure	3, 4, 9	City of Pleasant Hill	Low	General Fund	Ongoing
PH-24—Repair and retrofit City bridges						
Existing	Earthquake, Flood, Severe weather	1, 15	City of Pleasant Hill	High	General Fund	Short-term
PH-25—Conduct study and construct improvements at Ellinwood Creek						
Existing	Flood	6, 10	City of Pleasant Hill	Low	NPDES tax, FMA, HMGP	Short-term

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
PH-26—Purchase new permit tracking software to assist staff with documentation						
New	Earthquake, Flood, Landslide, Severe weather	4, 11	City of Pleasant Hill	Low	General Fund	Short-term
PH-27—Sponsor the formation and training of Community Emergency Response Teams (CERT) training through partnerships with local businesses.						
New and Existing	All hazards	2, 3, 16	Police, Fire, County OES*	Low	General Fund	Ongoing

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 11-14. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
PH-1	8	High	High	Yes	Yes	No	Medium	High
PH-2	8	Medium	Low	Yes	No	Yes	High	Low
PH-3	3	Low	Low	Yes	No	Yes	High	Low
PH-4	7	Medium	Low	Yes	No	Yes	High	Low
PH-5	3	Medium	Low	Yes	No	Yes	Medium	Low
PH-6	3	Medium	High	No	No	No	Low	Low
PH-7	3	Medium	Medium	Yes	No	Yes	Medium	Low
PH-8	2	High	Medium	Yes	No	Yes	High	Low
PH-9	2	High	Low	Yes	No	Yes	High	Low
PH-10	3	Medium	Low	Yes	No	Yes	Medium	Low
PH-11	2	Low	Low	Yes	No	Yes	Medium	Low
PH-12	3	Low	High	No	Yes	No	Low	Medium
PH-13	2	Medium	Medium	Yes	No	Yes	Medium	Low
PH-14	2	Medium	Low	Yes	No	Yes	Medium	Low
PH-15	2	Medium	Low	Yes	No	Yes	Medium	Low
PH-16	2	High	High	Yes	Yes	No	Low	High
PH-17	2	High	Low	Yes	No	Yes	High	Low
PH-18	3	Medium	Low	Yes	No	Yes	Medium	Low
PH-19	2	Low	Low	Yes	No	Yes	Medium	Low
PH-20	2	Medium	Medium	Yes	No	Yes	Medium	Low
PH-21	2	Medium	High	No	No	No	Low	Low
PH-22	2	Low	Low	Yes	No	Yes	Medium	Low
PH-23	3	Medium	Low	Yes	No	Yes	Medium	Low
PH-24	2	High	High	Yes	No	No	Low	Low
PH-25	2	Medium	Low	Yes	Yes	Yes	Medium	Medium
PH-26	2	Low	Low	Yes	No	Yes	Medium	Low
PH-27	3	Low	Low	Yes	No	Yes	Medium	Low

a. See the introduction to this volume for explanation of priorities.

Table 11-15. Analysis of Mitigation Actions

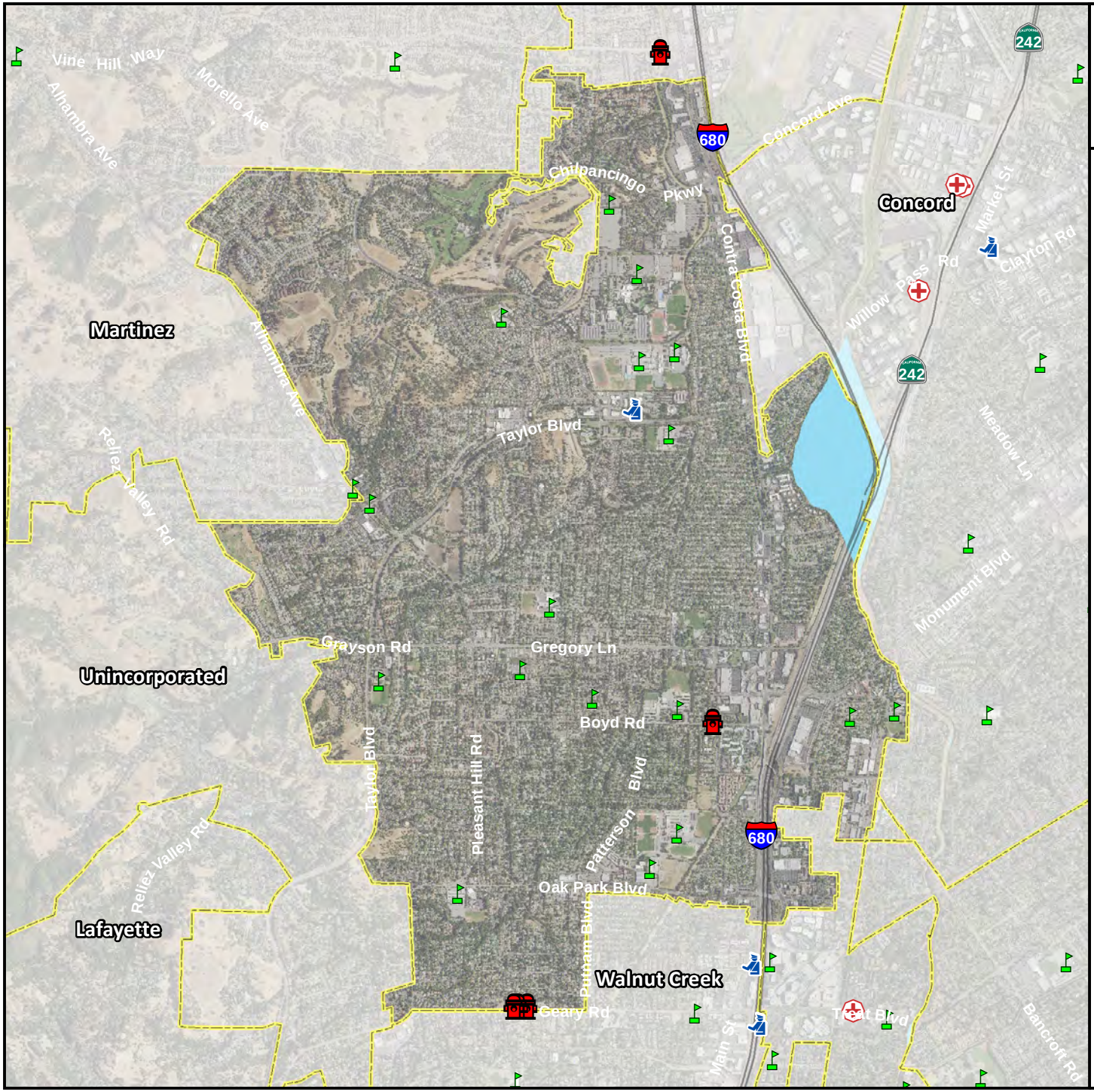
Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	PH-2, 4	PH-1, 4	PH-4, 27		PH-27	PH-4		PH-3, 4
Dam and Levee failure	PH-23	PH-16, 23	PH-23	PH-23	PH-20, 23	PH-23	PH-23	PH-22, 23
Drought			PH-11, 19					
Earthquake		PH-6, 7, 17, 24	PH-11, 19		PH-20, 21			PH-22, 26
Flood	PH-5, 15, 18, 23	PH-13. 14, 16, 17, 23, 24	PH-11, 19, 23	PH-23	PH-20, 21, 23	PH-23	PH-23	PH-12, 22, 25, 26
Landslide		PH-6, 17	PH-11, 19		PH-21			PH-26
Severe weather		PH-17, 24	PH-11, 19		PH-20, 21			
Tsunami								
Wildfire		PH-8, 17	PH-8, 19	PH-8	PH-8, 10, 21			

a. See the introduction to this volume for explanation of mitigation types.

11.11 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **City of Pleasant Hill Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Pleasant Hill Flood Damage Prevention Ordinance**—The flood damage prevention ordinance was reviewed for compliance with the National Flood Insurance Program.
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.



The City of Pleasant Hill

Critical Facilities

- Emergency Operations Centers (Government)
- Fire Stations (Protective Functions)
- Hazardous Materials
- Medical Facilities
- Police Stations (Protective Functions)
- Schools & Educational Facilities
- Contra Costa County Boundary
- City Boundaries

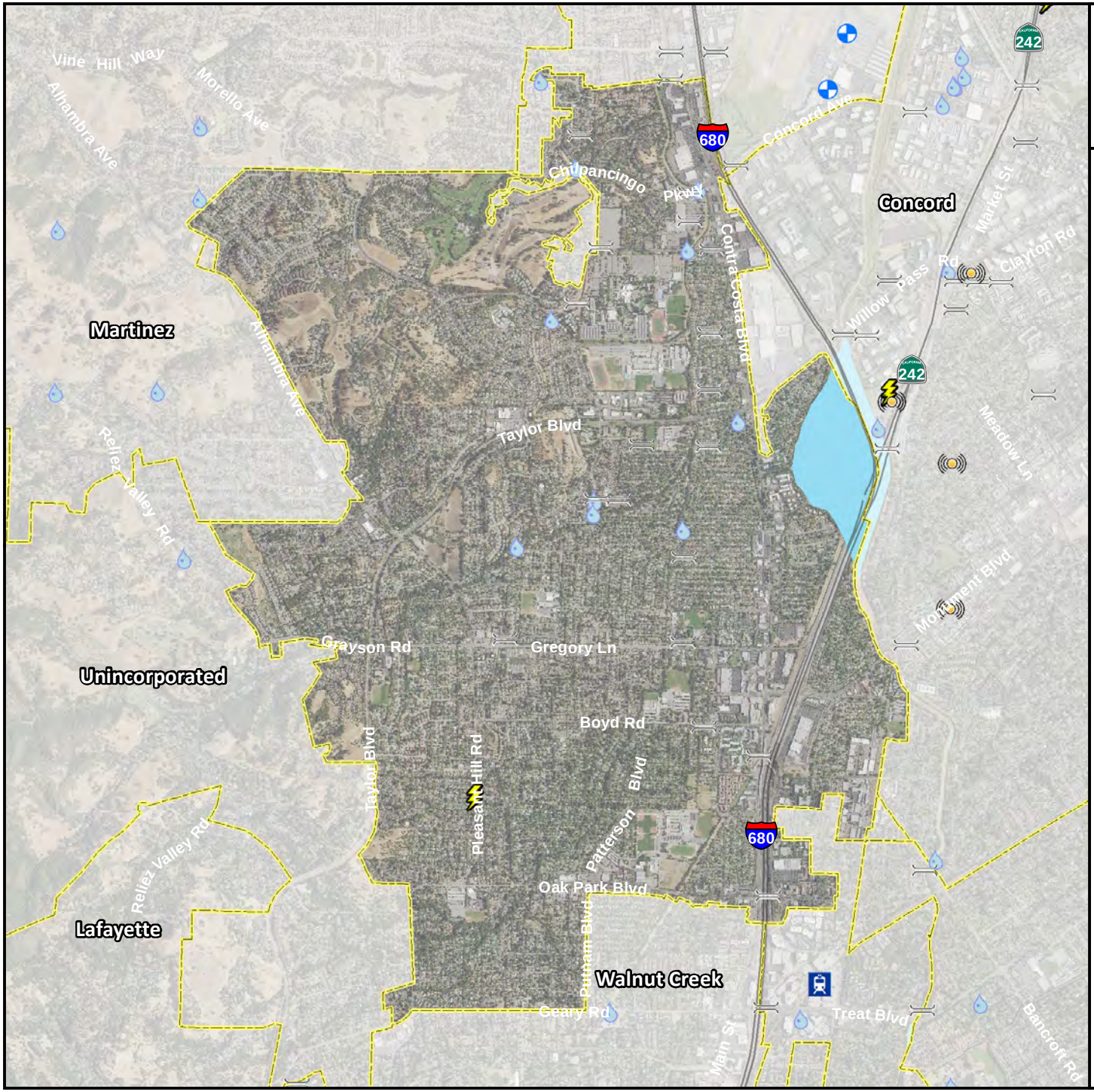
0 0.3 0.6 1.2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of Pleasant Hill

Critical Infrastructure

- Airports (Other Critical Functions)
- Bus Facilities (Other Infrastructure)
- Communication Facilities
- Electric Power Facilities
- Highway Bridges
- Highway Tunnels (Other Infrastructure)
- Light Rail (Other Infrastructure)
- Natural Gas (Other Infrastructure)
- Port Facilities (Other Critical Functions)
- Water Supply Facilities
- Rail Facilities (Other Infrastructure)
- Wastewater Facilities
- Contra Costa County Boundary
- City Boundaries

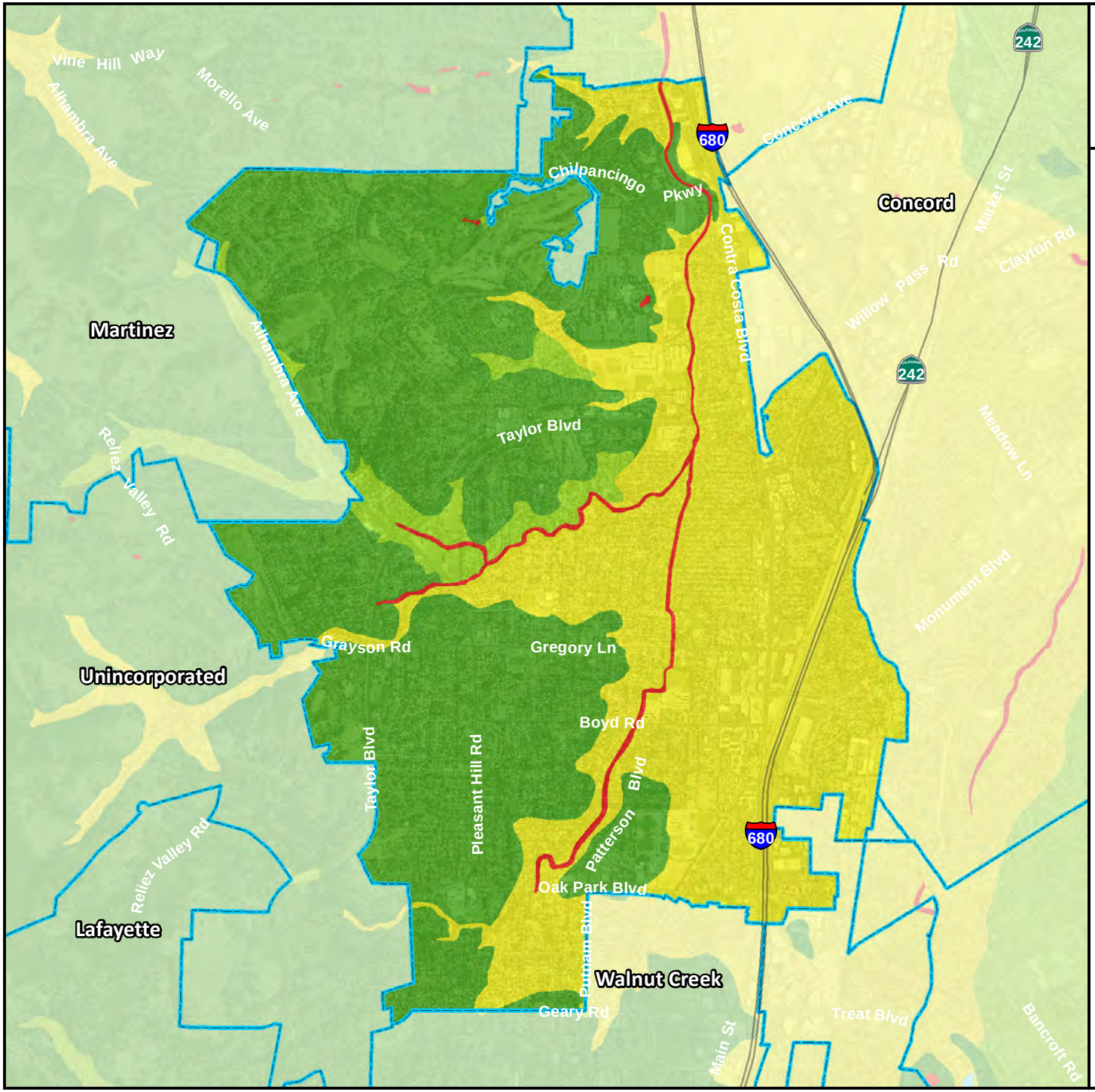
0 0.3 0.6 1.2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of Pleasant Hill

Liquefaction Susceptibility

- Contra Costa County Boundary
- City Boundaries
- Water Bodies

Susceptibility to Liquefaction

- Very Low
- Low
- Medium
- High
- Very High
- No Liquefaction Data Available

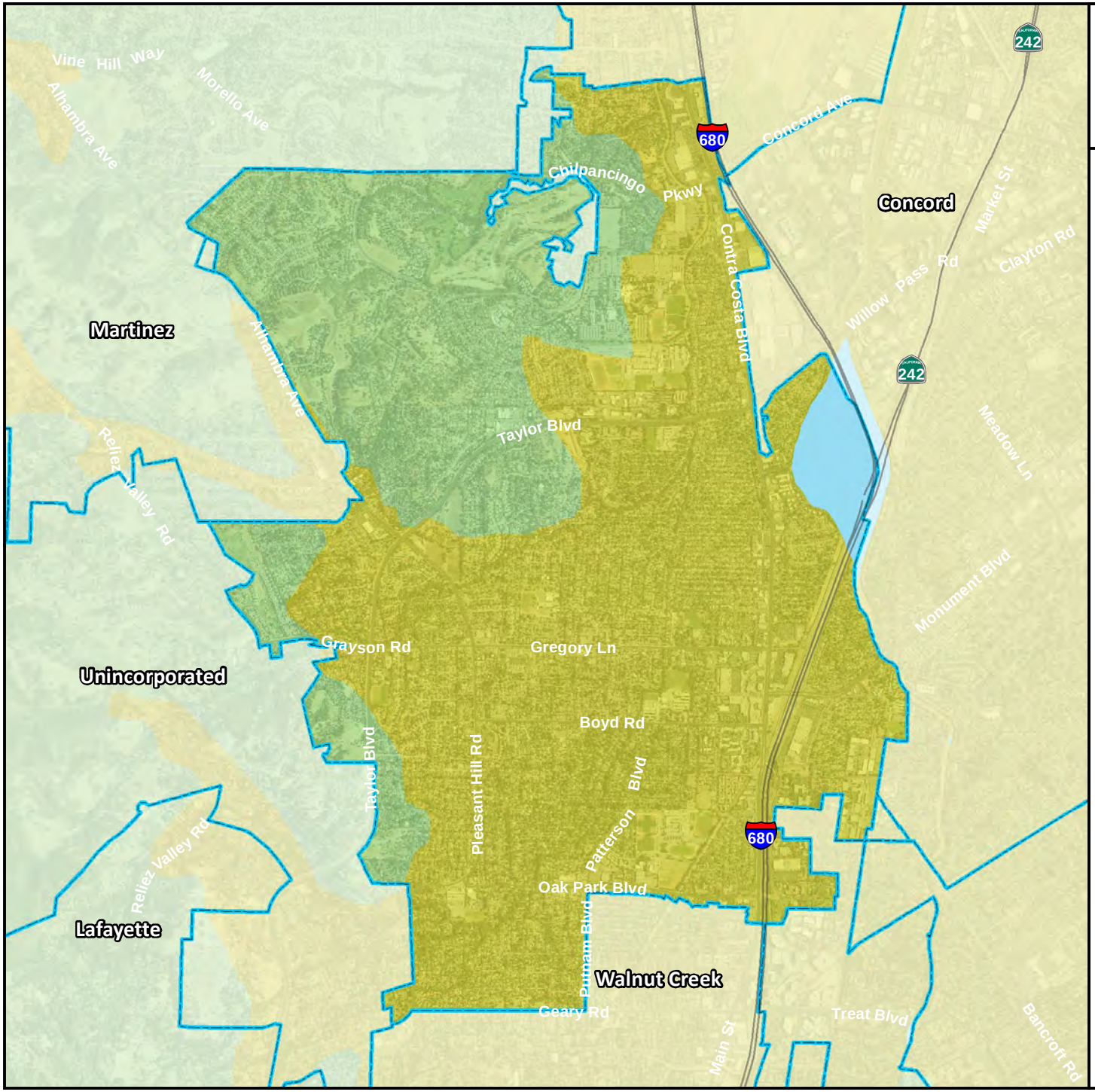
0 0.3 0.6 1.2

Miles

N
W E
S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The City of Pleasant Hill

National Earthquake Hazard Reduction Program (NEHRP) Soil Class

Contra Costa County Boundary

City Boundaries

Water Bodies

NEHRP Site Class / Soil Profile

- B / Rock
- C / Very Dense Soil - Soft Rock
- D / Stiff Soil
- E / Soft Soil
- No Soil Data Available

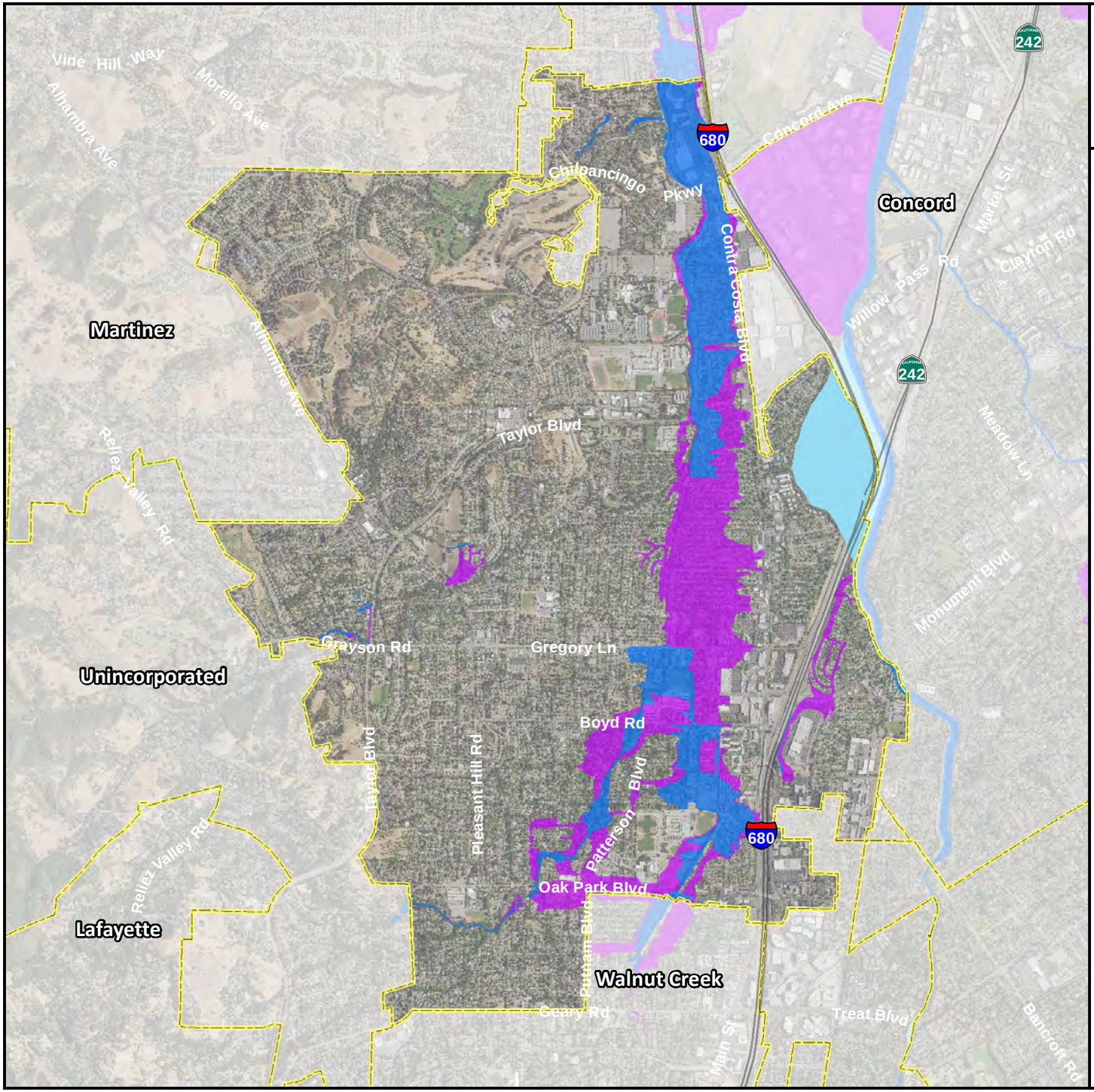
0 0.3 0.6 1.2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Department of Conservation, USDA



The City of Pleasant Hill

FEMA DFIRM Flood Hazard Areas

- 1% Annual Chance (100-Year) Flood Zone
- 0.2% Annual Chance (500-Year) Flood Zone
- Contra Costa County Boundary
- City Boundaries
- Water Bodies

Flood hazard areas as depicted on Effective FEMA Digital Flood Insurance Rate Maps (DFIRM)

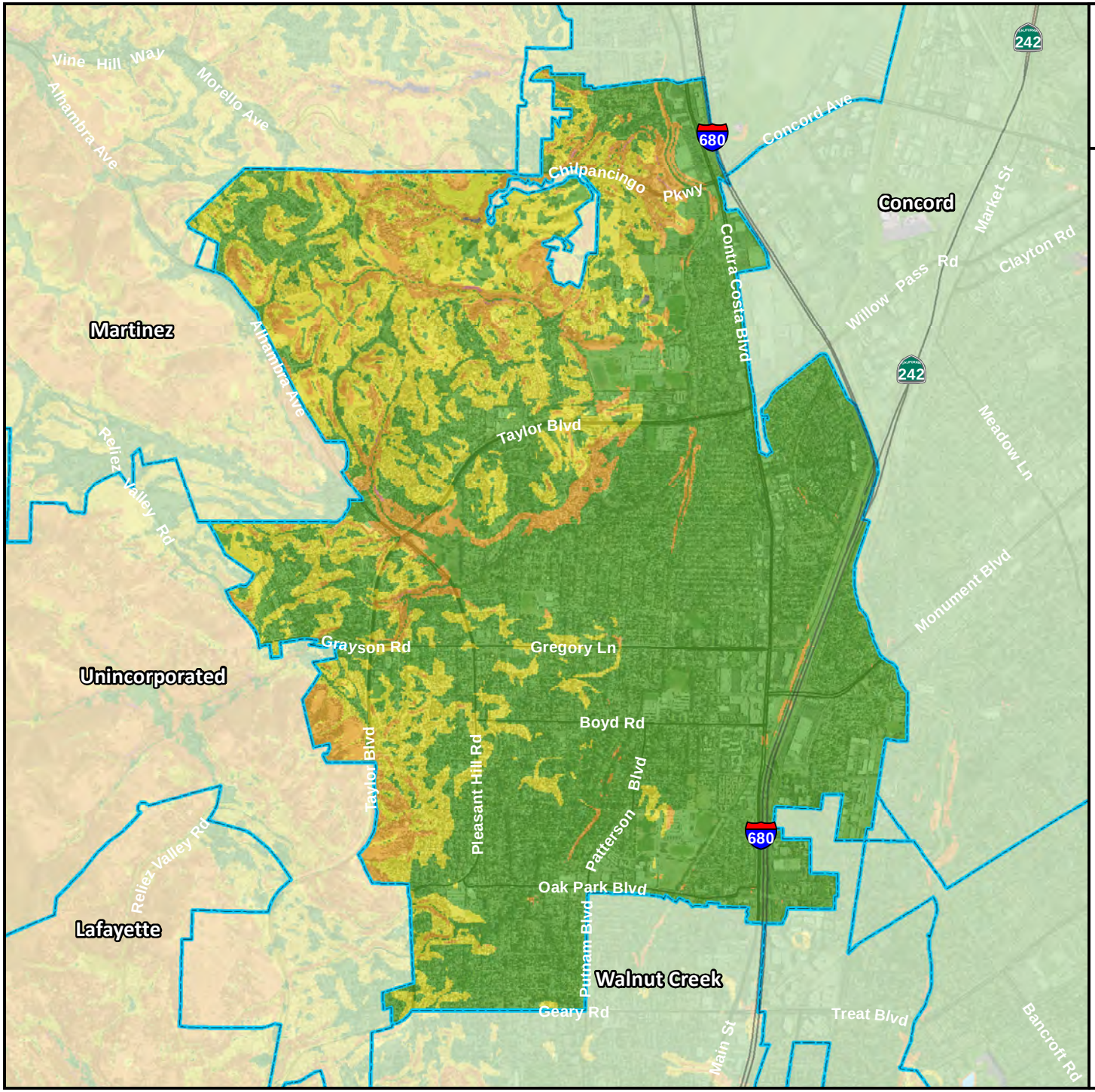
0 0.3 0.6 1.2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, FEMA, USDA



The City of Pleasant Hill

Landslide Susceptibility Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Type

Low

Moderate

High

Very High / Existing

Data Not Available

Source dataset created by Wills C.J., Perez, F., Gutierrez, C., 2011, Susceptibility to deep-seated landslides in California: California Geological Survey Map Sheet 58

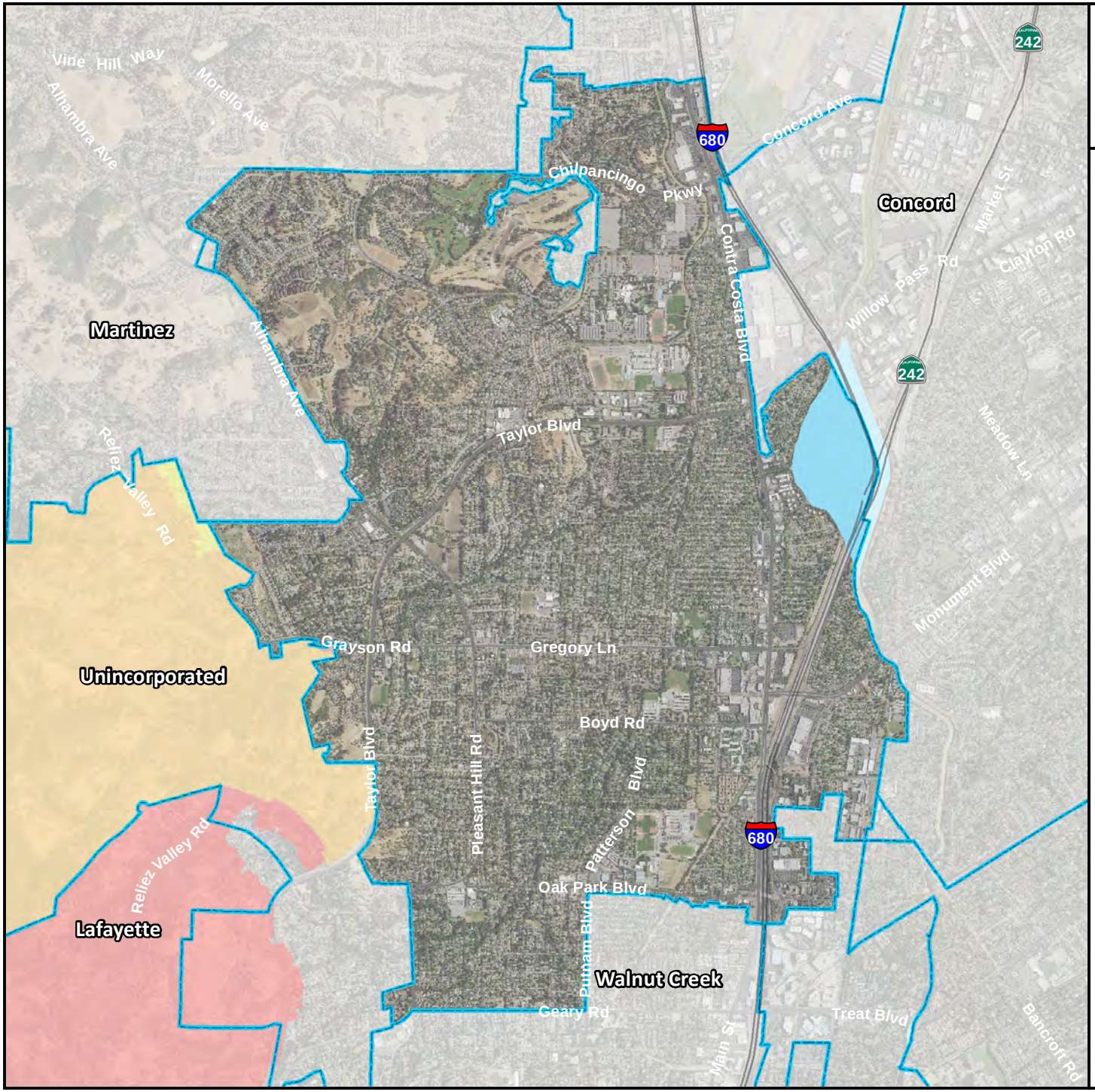
0 0.3 0.6 1.2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The City of Pleasant Hill

Wildfire Severity Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Wildfire Severity Zone

Moderate

High

Very High

0 0.3 0.6 1.2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, CalFIRE, USDA

12. CITY OF RICHMOND

12.1 HAZARD MITIGATION PLAN POINT OF CONTACTS

Primary Point of Contact
Genevieve Pastor-Cohen
Emergency Services Manager
440 Civic Center Plaza, 2nd Floor
P.O. Box 4046
Richmond, CA 94804
Telephone: 510-620-6866
E-mail Address:
genevieve_pastor-cohen@ci.richmond.ca.us

Alternate Point of Contact
Richard Mitchell
Director of Planning and Building Services
450 Civic Center Plaza, 2nd Floor
P.O. Box 4046
Richmond, CA 94804
Telephone: 510-307-8159
Email Address:
richard_mitchell@ci.richmond.ca.us

12.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation—**Richmond was founded and incorporated in 1905
- **Current Population**— 109,813 (US Census Bureau Population estimates, July 1, 2016 (V2016)
- **Population Growth—**Per the US Census Bureau, Richmond has experienced a relatively moderate rate of growth with a 6 percent population increase since 2000. There are currently 36,973 housing units within the City averaging 2.87 persons per household.
- **Location and Description**—The City of Richmond is located in the nine-county San Francisco Bay Area in West Contra Costa County. Major nearby Bay Area cities and employment centers include: the City of Oakland, 9 miles to the south; the City of San Francisco, 17 miles west; and the City of San Jose, 50 miles south. Richmond's land mass forms a promontory that stretches into the San Francisco and San Pablo bays. This shoreline defines a significant portion of the City's borders to the north, west and south. Neighboring San Francisco and Marin County provide attractive backdrops from Richmond across the Bay. The cities of El Cerrito, San Pablo and Pinole as well as unincorporated areas of the County border Richmond to the north and east; and the Berkeley Hills, San Pablo and Sobrante ridges frame the eastern edge of the City.
- **Brief History—**The Ohlone Indians were the first inhabitants of the Richmond area, settling an estimated 5,000 years ago. The name "Richmond" appears to predate actual incorporation by more than fifty years. Edmund Randolph, originally from Richmond, Virginia, represented the city of San Francisco when California's first legislature met in San Jose in December 1849, and he became state assemblyman from San Francisco. His loyalty to the town of his birth caused him to persuade a federal surveying party mapping the San Francisco Bay to place the names "Point Richmond" and "Richmond" on an 1854 geodetic coast map, which was the geodetic map at the terminal selected by the San Joaquin Valley Railroad; and by 1899 maps made by the railroad carried the name "Point Richmond Avenue," designating a county road that later became Barrett Avenue, a central street in Richmond.

Richmond is best known for its unique history and role in the World War II home front effort. Between 1940 and 1945, tens-of-thousands of workers from all over the country streamed into the City to support wartime industries. The City was home to four Kaiser shipyards which housed the most productive wartime shipbuilding operations of World War II, launching 747 ships during the war. The City was also home to approximately 55 war-related industries - more than any other city of its size in the United States. Today, the City is an important oil refining, industrial, commercial, transportation, shipping and government center.

- **Climate—** Richmond, like much of the coastal East Bay, enjoys a very mild Mediterranean climate year round. The climate is slightly warmer than the coastal areas of San Francisco, the Peninsula, and Marin County; it is however more temperate than areas further inland. The average highs range from 57 °F (14 °C) to 73 °F (23 °C) and the lows between 43 °F (6 °C) to 56 °F (13 °C) year round. Richmond usually enjoys an "Indian summer," and September is, on average, the warmest month. January is on average the coldest month.

  The highest recorded temperature in Richmond was 107 °F/41.6 °C in September 1971 while the coldest was 24 °F/-4.4 °C in January 1990.

  The rainy season begins in late October and ends in April with some showers in May. Most of the rain occurs during stronger storms which occur between November and March and drop 3.3 to 4.91 inches of rain per month. January and February are the rainiest months.

  Like most of the Bay Area, Richmond is made up of several microclimates. Southern parts of the city and the ridges receive more fog than northern areas. Summer temperatures are higher in inland areas, where the moderating influence of San Francisco Bay is lessened. The average wind speed is 6 to 9 miles per hour with stronger winds from March through August; the strongest winds are in June. Morning humidity is 75 percent to 92 percent year round; afternoon humidity is more variable. This percentage is in the high 20s to mid-30s May through October (the summer months) and climbs or descends through 40 to 70 percent during the winter.

- **Governing Body Format**—Richmond city government operates under a council-manager system with seven members (including mayor and vice mayor) elected to alternating four-year terms. Four council members shall be necessary to constitute a quorum for the transaction of business. The Mayor has the power to appoint, as well as ceremonial duties, presiding over council meetings, and meeting visiting dignitaries. Official city business is administered by the Office of the City Manager. The City Council will assume the responsibility for the adoption of this plan, and the Fire and Planning and Building Services Departments will oversee its implementation.

12.3 DEVELOPMENT TRENDS

California State Law requires that every county and city prepare and adopt a comprehensive long-range plan to serve as a guide for community development. The plan must consist of an integrated and internally consistent set of goals, policies, and implementation measures. In addition, the plan must focus on issues of the greatest concern to the community and be written in a clear and concise manner. City actions, such as those relating to land use allocations, annexations, zoning, subdivision and design review, redevelopment, and capital improvements, must be consistent with such a plan. The City of Richmond adopted a general plan update in 2012. Future growth and development will be managed as identified in this general plan.

Table 12-1 summarizes development trends in the performance period since development of the previous hazard mitigation plan and expected future development trends.

Table 12-1. Recent and Expected Future Development Trends

Criterion	Response					
Has your jurisdiction annexed any land since the development of the previous hazard mitigation plan? • If yes, give the estimated area annexed and estimated number of parcels or structures.	No N/A					
Is your jurisdiction expected to annex any areas during the performance period of this plan?	No					
Are any areas targeted for development or major redevelopment in the next five years? • If yes, please briefly describe	Yes Development is targeted in priority development areas (PDAs) and General Plan Change Areas, which do not fall within the mapped hazard areas.					
How many building permits were issued in your jurisdiction for new construction since the development of the previous hazard mitigation plan?		2012	2013	2014	2015	2016
	Single Family	1	0	0	0	2
	Multi-Family	0	0	0	0	0
	Other (commercial, mixed use, etc.)	1	13	36	15	20
Please provide the number of permits for each hazard area or provide a qualitative description of where development has occurred.	Development has occurred throughout the city during the performance period for this plan. For those hazards with a clearly defined extent and location, the City cannot estimate specific development impacts. For those hazards with impacts city-wide, it is safe to assume that this new development could be subject to impacts from those hazards. However, it is important to note that all new development was consistent with General Plan policies and municipal code standards and as a result most development has occurred outside of identified hazard zones					

12.4 CAPABILITY ASSESSMENT

The City of Richmond performed an inventory and analysis of existing capabilities, plans, programs and policies that enhance its ability to implement mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of legal and regulatory capabilities is presented in Table 12-2.
- Development and permitting capabilities are presented in Table 12-3.
- An assessment of fiscal capabilities is presented in Table 12-4.
- An assessment of administrative and technical capabilities is presented in Table 12-5.
- An assessment of education and outreach capabilities is presented in Table 12-6.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 12-7.
- Classifications under various community mitigation programs are presented in Table 12-8.
- The community's adaptive capacity for the impacts of climate change is presented in Table 12-9.

Table 12-2. Legal and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code	Yes	No	Yes	Yes
Comment: Article VI, Chapter 6.04.020 RMC adopts by reference the CBC. (2016)				
Zoning Code	Yes	No	Yes	Yes
Comment: Article XV, Chapter 15.04 RMC (2016)				
Subdivisions	Yes	No	Yes	Yes
Comment: Article XV, Chapter 15.04 RMC (2016)				
Stormwater Management	Yes	No	Yes	Yes
Comment: Article XII, Chapter 12.22 RMC (2013)				
Post-Disaster Recovery	Yes	No	No	No
Comment: Article V, Chapter 6.04.020 RMC (2016)				
Real Estate Disclosure	No	No	Yes	No
Comment: CA. State Civil Code 1102 requires full disclosure on Natural hazard Exposure of the sale/re-sale of any and all real property.				
Growth Management	Yes	No	Yes	No
Comment: Growth Management, General Plan(2030); Cal. Gov. Code §65300 et seq.				
Site Plan Review	Yes	No	No	No
Comment: Article XV, Chapter 15.04 RMC (2016)				
Environmental Protection	Yes	Yes	Yes	Yes
Comment: CA Public Resources Code section 2100- 2189.57; CEQA				
Flood Damage Prevention	Yes	Yes	Yes	Yes
Comment: Flood Damage Prevention: Article XII, Chapter 12.56 RMC (2001); Contra Costa County Flood Control				
Emergency Management	Yes	No	Yes	Yes
Comment: Emergency Plan Municipal Code Article 2 Chapter 2.20.080				
Climate Change	Yes	Yes	Yes	Yes
Comment: California SB-379: Land Use: General Plan: Safety Element				
Other:	Yes	Yes	Yes	Yes
Comment: Code for the Seismic Retrofit of Hazardous Unreinforced Masonry Bearing Wall Buildings: Article VI, Chapter 6.12 RMC				
Planning Documents				
General Plan	Yes	No	Yes	Yes
Is the plan compliant with Assembly Bill 2140? Yes				
Comment: Updated public safety and noise element adopted 2012. LHMP annex adopted 2013. LHMP update in progress.				
Capital Improvement Plan	Yes	No	No	Yes
How often is the plan updated? Reviewed And Updated Annually				
Comment: Engineering and Capital Improvements Projects adopts a 5 year capital improvement project..				
Floodplain or Watershed Plan	No	Yes	No	No
Comment: Contra Costa Flood Control				
Stormwater Plan	No	No	Yes	Yes
Comment: A Stormwater Plan is in progress				
Urban Water Management Plan	No	Yes	Yes	No
Comment: EBMUD adopted, updated an urban water management plan in 2016.				
Habitat Conservation Plan	No	No	No	No
Comment: None located				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Economic Development Plan	Yes	No	No	No
Comment: Economic Development Element, General Plan 2030 (2012)				
Shoreline Management Plan	Yes	Yes	Yes	Yes
Comment: BCDC Bay Plan 2011 and the Shoreline Overlay District 15.04.306				
Community Wildfire Protection Plan	Yes	No	Yes	Yes
Comment: General Plan 2030; Fire Prone Area Designation				
Forest Management Plan	Yes	No	No	Yes
Comment: Urban Greening Master Plan adopted 2017				
Climate Action Plan	Yes	No	No	Yes
Comment: Climate Action Plan adopted 2016				
Comprehensive Emergency Management Plan	Yes	Yes	Yes	Yes
Comment: Emergency Operations Plan amended 2016				
Threat & Hazard Identification & Risk Assessment (THIRA)	Yes	No	No	No
Comment: THIRA is being developed				
Post-Disaster Recovery Plan	No	No	Yes	Yes
Comment: Disaster Recovery Framework with Recovery Support Functions in progress				
Continuity of Operations Plan	Yes	No	Yes	Yes
Comment: Emergency Operations Plan amended 2016; Comprehensive COOP in progress				
Public Health Plan	Yes	Yes	Yes	Yes
Comment: Health and Wellness Element & General Plan 2030; RMC adopted 2015; in All Policies (2015)				
Other: Energy Assurance Plan	Yes	No	No	Yes
Comment: Energy Assurance Plan in progress				

Table 12-3. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits?	Yes
If no, who does? If yes, which department?	Planning and Building Services Department/Fire Prevention Bureau
Does your jurisdiction have the ability to track permits by hazard area?	Yes; Although the City has the ability to track permits by hazard area, this capability is not currently being utilized.
Does your jurisdiction have a buildable lands inventory?	Yes
If yes, please briefly describe.	As part of the Zoning Update completed in 2016, the City prepared a vacant land and underutilized land map.
If no, please quantitatively describe the level of buildout in the jurisdiction.	N/A

Table 12-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes, sewer
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other: Federal sponsored Grant Programs	Yes

Table 12-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Engineering and Capital Improvements Project (CIP) Department and Planning Division
Engineers or professionals trained in building or infrastructure construction practices	Yes	Engineering and Capital Improvements Project and Planning Division
Planners or engineers with an understanding of natural hazards	Yes	Planning Division, Building Division, and Fire Department
Staff with training in benefit/cost analysis	Yes	Finance
Surveyors	Yes	Contract personnel
Personnel skilled or trained in GIS applications	Yes	Planning Division, Information technology, Engineering and Capital Improvements Project Department
Scientist familiar with natural hazards in local area	Yes	Can contract for Services
Emergency Manager	Yes	Fire Department
Grant writers	Yes	All Departments. Can contract for this service
Other: Climate Resiliency Practices	Yes	City Manager's Office and Planning Division

Table 12-6. Education and Outreach Capability

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe.	Yes Household Emergency Preparedness Resources. http://www.ci.richmond.ca.us/2378/Earthquake-Hazard-Reduction
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe.	Yes The City is on NextDoor, twitter, and Facebook. @CA_Richmond and https://www.facebook.com/City-of-Richmond-CA-Local-Government-139438544014/

Criterion	Response
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly describe.	Yes Richmond Neighborhood Coordinating Council
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe.	Yes The City Manager weekly report, Listservs, and freeway sign
Do you have any established warning systems for hazard events? • If yes, please briefly describe.	Yes City participates in the County Community Warning system

Table 12-7. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	The City's Engineering and CIP Department
Who is your floodplain administrator? (department/position)	City Engineering
Are any certified floodplain managers on staff in your jurisdiction?	No
What is the date that your flood damage prevention ordinance was last amended?	Chapter 12.56 Flood Damage Prevention 2001)
Does your floodplain management program meet or exceed minimum requirements? • If exceeds, in what ways?	Non-compliant N/A
When was the most recent Community Assistance Visit or Community Assistance Contact?	2016
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? • If so, please state what they are.	No N/A
Do your flood hazard maps adequately address the flood risk within your jurisdiction? • If no, please state why.	Yes N/A
Does your floodplain management staff need any assistance or training to support its floodplain management program? • If so, what type of assistance/training is needed?	Yes Floodplain management techniques
Does your jurisdiction participate in the Community Rating System (CRS)? • If yes, is your jurisdiction interested in improving CRS Classification? • Is your jurisdiction interested in joining the CRS program?	No N/A Yes
How many Flood Insurance policies are in force in your jurisdiction?[a] • What is the insurance in force? • What is the premium in force?	169 $ 56,962,900 $ 173,256
How many total loss claims have been filed in your jurisdiction?[a] • How many claims were closed without payment/are still open? • What were the total payments for losses?	53 17/0 $ 348,472

a. According to FEMA statistics as of December 31, 2016

Table 12-8. Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	Yes	10	N/A
Public Protection	Yes	2	2015
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A

Table 12-9. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: Climate Action Plan Adopted 2016 and includes adaptation strategy.*	High
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: Climate Action Plan Adopted 2016 and includes adaptation strategy.*	Medium
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: Climate Action Plan Adopted 2016 and includes adaptation strategy.*	Medium
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: Climate Action Plan Adopted 2016 and includes adaptation strategy.*	High
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: Climate Action Plan Adopted 2016 and includes adaptation strategy.*	Medium
Participation in regional groups addressing climate risks *Comments/Additional Information: Climate Action Plan Adopted 2016 and includes adaptation strategy.*	High
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: Climate Action Plan Adopted 2016 and includes adaptation strategy.*	High
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: Climate Action Plan Adopted 2016 and includes adaptation strategy.*	High
Identified strategies for adaptation to impacts *Comments/Additional Information: Climate Action Plan Adopted 2016 and includes adaptation strategy.*	Medium
Champions for climate action in local government departments *Comments/Additional Information: Climate Action Plan Adopted 2016 and includes adaptation strategy.*	High
Political support for implementing climate change adaptation strategies *Comments/Additional Information: Climate Action Plan Adopted 2016 and includes adaptation strategy.*	High
Financial resources devoted to climate change adaptation *Comments/Additional Information: Climate Action Plan Adopted 2016 and includes adaptation strategy.*	Low
Local authority over sectors likely to be negative impacted *Comments/Additional Information: Climate Action Plan Adopted 2016 and includes adaptation strategy.*	Low

Criterion	Jurisdiction Rating[a]
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: Climate Action Plan Adopted 2016 and includes adaptation strategy.*	Medium
Local residents support of adaptation efforts Comments/Additional Information: Climate Action Plan Adopted 2016 and includes adaptation strategy.	Medium
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: Climate Action Plan Adopted 2016 and includes adaptation strategy.*	Low
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: Climate Action Plan Adopted 2016 and includes adaptation strategy.*	Low
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: Climate Action Plan Adopted 2016 and includes adaptation strategy.*	Low

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

12.5 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

12.5.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the City of Richmond made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **General Plan 2030**—The general plan includes "Public Safety & Noise" element to protect the community from unreasonable risk by establishing policies and actions to avoid or minimize the following hazards:
  - Natural Hazards such as earthquakes, flooding, wildland fires
  - Man-made Hazards such as hazardous materials exposure
- **Climate Action Plan**—The City's Climate Action Plan includes projects for reducing greenhouse gas emissions and adapting to likely impacts of climate change.
- **Emergency Operations Plans**—The Emergency Operations Plan integrates in its response actions mitigation considerations to reduce risk exposure to the community.

Resources listed in Section 12.11 were used to provide information for this annex on hazard events and local capabilities within the jurisdiction.

12.5.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the City of Richmond will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans

developed for this hazard mitigation plan in actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Stormwater Plan**—In compliance with state law, the City is updating its Municipal NPDES permit to consider green infrastructure in its stormwater program.
- **Continuity of Operations Plan**—The Continuity of Operations Plan is currently being updated.
- **Public Safety & Noise Element of General Plan 2030**—In compliance with the state law, this element contains implementing actions for 1) Risk management of natural and Human-Caused Disasters, 2) High levels of Police and Fire Service, 3) Emergency preparedness, and 4) Acceptable noise levels.
- **Climate Change and Energy Plan**—Supports the community's goals and policies identified in the City of Richmond's General Plan 2030.
- **Energy Assurance Plan**—The City is currently finalizing the plan and is integrating mitigation action recommendations.
- **Flood Prevention Ordinance**—Upon the update process, mitigation actions will be integrated into future plans.

12.6 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 12-10 lists past occurrences of natural hazards for which specific damage was recorded in the City of Richmond. Other hazard events that broadly affected the entire planning area, including the City of Richmond, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 12-10. Past Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Flooding	DR-1628	2/3/2006	22,000,000 Property (county-wide)
Severe Weather/Wind (F0 Tornado)	N/A	12/5/1998	$200,000 (per NCDC events database)
Severe Winter Storms/Flooding	DR-1298	02/09/1998	$500,000 (per NCDC events database)
Flooding	DR-1155	01/01/1997	N/A
Flooding	DR-1046	03/12/1995	N/A
Earthquake (Loma Prieta)	DR-845	10/17/1989	$25 Million (county-wide)
Flooding/Severe Weather	NA	1984	$350,000 (SHELDUS)
Severe Weather	NA	1982	$348,000 (SHELDUS)
Flood- Severe Storm/Thunder	DR-364	1/16/1973	$86,206 Property (County-wide)
Flood- Severe Storm/Thunder	DR-253	1/18/1969	$862,068 Property (County-wide)

12.7 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for the jurisdiction.

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 5
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0

- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: Unknown

Other noted vulnerabilities:

- Vulnerabilities have been noted in Tables 12-12 and 12-13, as appropriate.

12.8 HAZARD RISK RANKING

Table 12-11 presents a local ranking for the City of Richmond of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 12-11. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake[b]	54	High
2	Landslide[e]	39	High
3	Severe weather	30	Medium
4	Sea level rise[d]	20	Medium
5	Flood[c]	18	Medium
5	Dam and levee failure[a]	18	Medium
5	Wildfire[e]	18	Medium
6	Tsunami	12	Low
7	Drought	9	Low

a. Based on the level of detail conducted in the risk assessment, the risk ranking for this hazard is focused solely on dam failure impacts. See Chapter 6.4 of Volume 1 for combined dam inundation list on which this assessment is based.
b. Haywired M7.05 event was used to assign probability and impacts
c. 1-percent annual chance event was used to assign probability and impacts
d. 2100 upper range estimates and extreme tide are used to assign probability and impacts
e. Very High and High severity zones were used to assign probability and impacts

12.9 STATUS OF PREVIOUS PLAN ACTIONS

Table 12-12 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

12.10 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 12-13 lists the actions that make up the City of Richmond hazard mitigation action plan. Table 12-14 identifies the priority for each action. Table 12-15 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 12-12. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
R-1— Reduce damage to residential units following an earthquake by establishing a 'soft story' retrofit program for apartments and commercial buildings. *Comment:*			✓	COR-5
R-2—Conduct an Inventory of existing or suspected "soft-story" commercial or industrial structures. *Comment: This has not been performed as these properties are privately owned.*		✓		
R-3— Reduce risk of damage from future landslides and wildfires by developing special guidelines and regulations for more compact construction of residences proposed for rural hillside areas. *Comment: See Richmond Municipal Code Section 15.04.201-100*	✓			
R-4— Harden/retrofit the historic Winehaven buildings at Pt. Molate to prevent their loss during major earthquake *Comment:*			✓	COR-6
R-5— Perform vulnerability analysis of city owned docks and Piers. *Comment: In progress, preforming seismic analysis of terminal 1, pier in progress.*			✓	COR-7
R-6— Complete Port of Richmond Timber wharf replacement *Comment:*			✓	COR-8
R-7— Harden/Retrofit retaining walls in Pt. Richmond to prevent failure during seismic event *Comment: Completed tunnel One retaining wall in 2010*			✓	COR-9
R-8— Construct dock to support Ferry operations during emergency response functions. *Comment: Entitlements for work have been obtained by WETA and construction is anticipated to be complete by first quarter 2018*			✓	COR- 10
R-9— Complete EIR for ferry terminal to support Emergency ferry service *Comment: WETA adopted a mitigated negative declaration for proposed Richmond Ferry Terminal in 2014.*	✓			
R-10— Evaluate levies on Wildcat and San Pablo Creeks relative to new COE Standards *Comment:*			✓	COR-11
R-11— Complete Dornan Drive Tunnel Repair and Rehabilitation Project to mitigate the impacts from seismic and landslide events. *Comment: Construction completed in 2013.*	✓			
R-12— Fund emergency services training (ICS 300,400 and 700 for City Staff) *Comment: Bay Area UASI course offerings at no cost. This action is ongoing and considered a core capability.*	Continuous			
R-13— Evaluate the feasibility of establishing additional storm water retention basins to reduce flooding *Comment: Will be included in Storm Drainage Master Plan*			✓	COR- 12
R-14— Evaluate all underground storm water culverts to prevent sink holes *Comment:*			✓	COR-13
R-15— Acquire supplies and equipment to stock large capacity evacuation shelters to be utilized on all hazard events requiring evacuation. *Comment:*	Ongoing		✓	COR- 14

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update: Check if Yes	Carried Over to Plan Update: Enter Action #
R-16— Participate in the annual Operational Area Golden Guardian Exercise *Comment:*	Ongoing		✓	COR- 15
R-17— Partner with local Jurisdictions to stage an annual West County Safety Preparedness Fair *Comment:*	Ongoing		✓	COR- 16
R-18— Install Richmond's section of the FCC-P-25 East Bay Regional Communications System (a 36 site, 2 county P-25 Compliant com. *Comment: Installation completed in 2012*	✓			
R-19— Acquire designation as NWS "Storm Ready City" *Comment: This has been determined not to be a priority at this time*		✓		
R-20— Support County-wide initiatives identified in Volume 1. *Comment: County-wide initiatives were supported through the performance period of the 2011 plan and will continue to be supported during the performance period of the updated plan*	✓			
R-21— Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Volume 1. *Comment:*			✓	COR- 3
R-22— Continue to maintain compliance and good standing under the National Flood Insurance Program (NFIP). *Comment:*			✓	COR- 4
R-23— Continue to maintain/enhance the City's classification under the Community Rating System (CRS). *Comment:*			✓	COR-17
R-24— Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan *Comment:*			✓	COR-2
R-25— Update/enhance existing flood hazard mapping to better reflect current conditions. *Comment: See Contra Costa Adapting to Rising Tides Project.; Data update per FEMA map changes and Climate Action Adaptation Study*	Ongoing		✓	COR- 18
R-26— Where appropriate, support retrofitting, purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. *Comment:*			✓	COR-1
R-27— 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 6) the Liquefaction and Landslide Hazard Zones (designated under the Seismic Hazard Mapping Act). *Comment:*			✓	COR- 19

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update: Check if Yes	Carried Over to Plan Update: Enter Action #
R-28— Sponsor the formation and training of Community Emergency Response Teams (CERT) training through partnerships with local businesses.	Ongoing		✓	COR- 20
Comment:				
R-29— Increase efforts to reduce hazards in existing development in high wildfire hazard areas (identified as 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.	Ongoing		✓	COR- 21
Comment: See Richmond Municipal Code Section 15.04.201.100: See City Manager Report-Parks and Landscape Division				
R-30— Better inform residents of comprehensive mitigation activities, for all hazards of concern 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.	Partly Completed		✓	COR-22
Comment: Planning and Building Services Department publishes list of earthquake hazard reduction measurers online.				

Table 12-13. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
COR-1—Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	Planning & Building	High	HMGP, PDM, FMA	Short-term
COR-2—Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including the General Plan 2030.						
New and Existing	All Hazards	1, 4, 5, 7, 11, 12, 14, 17	Planning & Building	Low	Staff Time, General Funds	Ongoing
COR-3— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 16	Fire	Low	Staff Time, General Funds	Short-term
COR-4—Seek good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: • Update and enforce the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts. • Correct any identified non-compliance issues.						
New and Existing	Flood	3, 5, 6, 9, 10, 11, 15	Planning & Building	Low	Staff Time, General Funds	Ongoing
COR-5—Reduce damage to residential units following an earthquake by establishing a “soft story” retrofit program for apartments and commercial buildings						
Existing	Earthquake	3,4,7,8,16	Planning and Building	Low	Staff time, California Brace and Bolt program, FEMA	Short-term

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
COR-6—Harden/retrofit the historic Winehaven buildings at Pt. Molate to prevent their loss during major earthquake						
Existing	Earthquake	3,4,7,8,16	Planning and Building	High	General Fund, Community Development Block Grant, CIP	Long-Term
COR-7—Perform vulnerability analysis of city owned docks and piers.						
Existing	Tsunami, Severe Weather, Flood, Earthquake	1,4,6	Planning and Building, Port of Richmond	Low	Staff Time, General Funds	Short-Term
COR-8—Complete Port of Richmond Timber wharf replacement.						
Existing	Earthquake, Severe Weather, Tsunami	1	Port of Richmond	High	HMGP, PDM, FMA	Long-Term
COR-9—Harden/Retrofit retaining walls in Pt. Richmond to prevent failure during seismic event.						
Existing	Earthquake	1,6,15	DIMO	High	HMGP, PDM, FMA	Long-Term
COR-10—Construct dock to support Ferry operations during emergency response functions.						
New	Earthquake	1,2,16,13	WETA	High	HMGP, PDM, FMA	Long-Term
COR-11—Evaluate levees on Wildcat and San Pablo Creeks relative to new COE Standards.						
Existing	All Hazards	4, 11, 12	Water Resource	Low	Staff Time, General Fund	Short-Term
COR-12—Evaluate the feasibility of establishing additional storm water retention basins to reduce flooding.						
New and Existing	Flood	10, 12, 13	Water Resource	Low	Staff Time, General Fund	Short-Term
COR-13—Evaluate all underground storm water culverts to prevent sink holes.						
Existing	Severe Weather, Flood	10, 12,13	Water Resource	Low	Staff Time, General Fund	Short-Term
COR-14—Acquire supplies and equipment to stock large capacity evacuation shelters to be utilized on all hazards events requiring evacuation.						
Existing	All Hazards	2, 6,	Fire	Low	Staff Time, General Fund	Short-Term
COR-15—Participate in the annual Operational Urban Shield Exercise						
New and Existing	All Hazards	2,16	Fire	Low	Staff Time, General Fund	Short-Term
COR-16—Partner with local Jurisdictions to stage an annual West County Safety Preparedness Fair						
New and Existing	All Hazards	2,16	Fire	Low	Staff Time, General Fund	Short-term
COR-17—Review City's potential participation in the Community Rating System (CRS) Program.						
New and Existing	Flood	3,4,5,6,7,9,16	Engineering, Planning and Building	Low	Staff Time, Fees for Service	Ongoing
COR-18—Update/enhance existing flood hazard mapping to better reflect current conditions.						
New and Existing	Flood	5,6,9	I.T., Engineering	Low	Staff Time	Ongoing
COR-19— 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 six 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 6) the Liquefaction and Landslide Hazard Zones (designated under the Seismic Hazard Mapping Act).						
New and Existing	Flood, Earthquake, Wildfire, Dam and Levee Failure, Landslide	3,5,16	Fire	Low	Staff Time, General Fund	Ongoing

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
COR-20—Sponsor the formation and training of Community Emergency Response Teams (CERT) training through partnerships with local businesses.						
New and Existing	All Hazards	2,16	Fire	Low	Staff, General Fund	Ongoing
COR-21—Increase efforts to reduce hazards in existing development in high wildfire hazard areas (identified as 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.						
New and Existing	Wildfire	11,12,16	Fire, Planning and Building, Code Enforcement, Engineering	Low	Staff Time, General Fund	Short-term
COR-22—Better inform residents of comprehensive mitigation activities, for all hazards of concern 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.						
New and Existing	Flood, Wildfire, Earthquake	3,16	Fire	Low	Staff Time, General Fund	Ongoing
COR-23—Install flap gates at all City-owned stormwater outfalls.						
New and Existing	Severe Weather, Flood	10,12,13	Water Resource	Medium	EPA, Fees	Long-Term
COR-24— Increase tree canopies to reduce heat island effect.						
New and Existing	Severe Weather, Flood	17,18	Parks	Medium	EPA, General Fund, CIP	Ongoing
COR-25— Inventory City-owned culverts, levees and elevated structures.						
New and Existing	Levee Failure, Flood	1,2,6,13	Engineering, Water Resource	Medium	Staff Time, General Fund	Long-Term
COR-26—Develop a storm water drainage master plan to increase pervious surfaces and reduce flooding risk.						
New and Existing	Severe Weather, Flood	10,12,13	Water Resource	Low	Staff Time, Fees	Short-Term
COR-27—Develop inventory of known landslide areas.						
New and Existing	Landslide	1,2,6,13	Engineering	Low	Staff Time, General Fund	Short-Term
COR-28— Implement measures included in the City's Climate Action Plan (2016) to reduce Greenhouse Gas (GHG) emissions and improve the city's resilience to climate change.						
New and Existing	All Hazards	1,2,3,4,6,7,9,11,12,13,14,16,17,18	Planning & Building, Office of Emergency Services	High	Staff Time, Property Owners, FEMA, BCBD, EPA, California Earthquake Authority, Governor's Office of Emergency Services	Long-Term

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 12-14. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
COR-1	8	High	High	Yes	Yes	No	Medium	High
COR-2	8	Medium	Low	Yes	No	Yes	High	Low
COR-3	3	Low	Low	Yes	No	Yes	High	Low
COR-4	7	Medium	Low	Yes	No	Yes	High	Low
COR-5	5	High	Low	Yes	Yes	No	Low	Medium
COR-6	5	Medium	High	Yes	Yes	No	Medium	Low
COR-7	3	Medium	Low	Yes	No	Yes	Medium	Low
COR-8	1	Medium	High	Yes	Yes	No	Medium	High
COR-9	3	Medium	High	Yes	Yes	No	Medium	High
COR-10	4	Medium	High	Yes	Yes	No	Medium	High
COR-11	3	High	Low	Yes	No	Yes	Medium	Low
COR-12	3	High	Low	Yes	No	Yes	Medium	Low
COR-13	3	Medium	Low	Yes	No	Yes	Medium	Low
COR-14	2	Medium	Low	Yes	No	Yes	Medium	Low
COR-15	2	Medium	Low	Yes	No	Yes	Medium	Low
COR-16	2	Medium	Low	Yes	No	Yes	Medium	Low
COR-17	7	High	Low	Yes	No	Yes	High	Medium
COR-18	3	High	Low	Yes	No	Yes	High	Low
COR-19	3	High	Low	Yes	No	Yes	High	Low
COR-20	2	Medium	Low	Yes	Yes	Yes	Medium	Low
COR-21	3	High	Low	Yes	No	Yes	High	Medium
COR-22	2	Medium	Low	Yes	No	Yes	Medium	Low
COR-23	3	High	Medium	Yes	Yes	Yes	Medium	High
COR-24	2	Medium	Medium	Yes	Yes	Yes	Medium	Medium
COR-25	4	Medium	Medium	Yes	No	Yes	Medium	Medium
COR-26	3	High	Low	Yes	No	Yes	High	Low
COR-27	4	High	Low	Yes	No	Yes	High	Low
COR-28	14	High	High	Yes	Yes	No	High	High

a. See the introduction to this volume for explanation of priorities.

Table 12-15. Analysis of Mitigation Actions

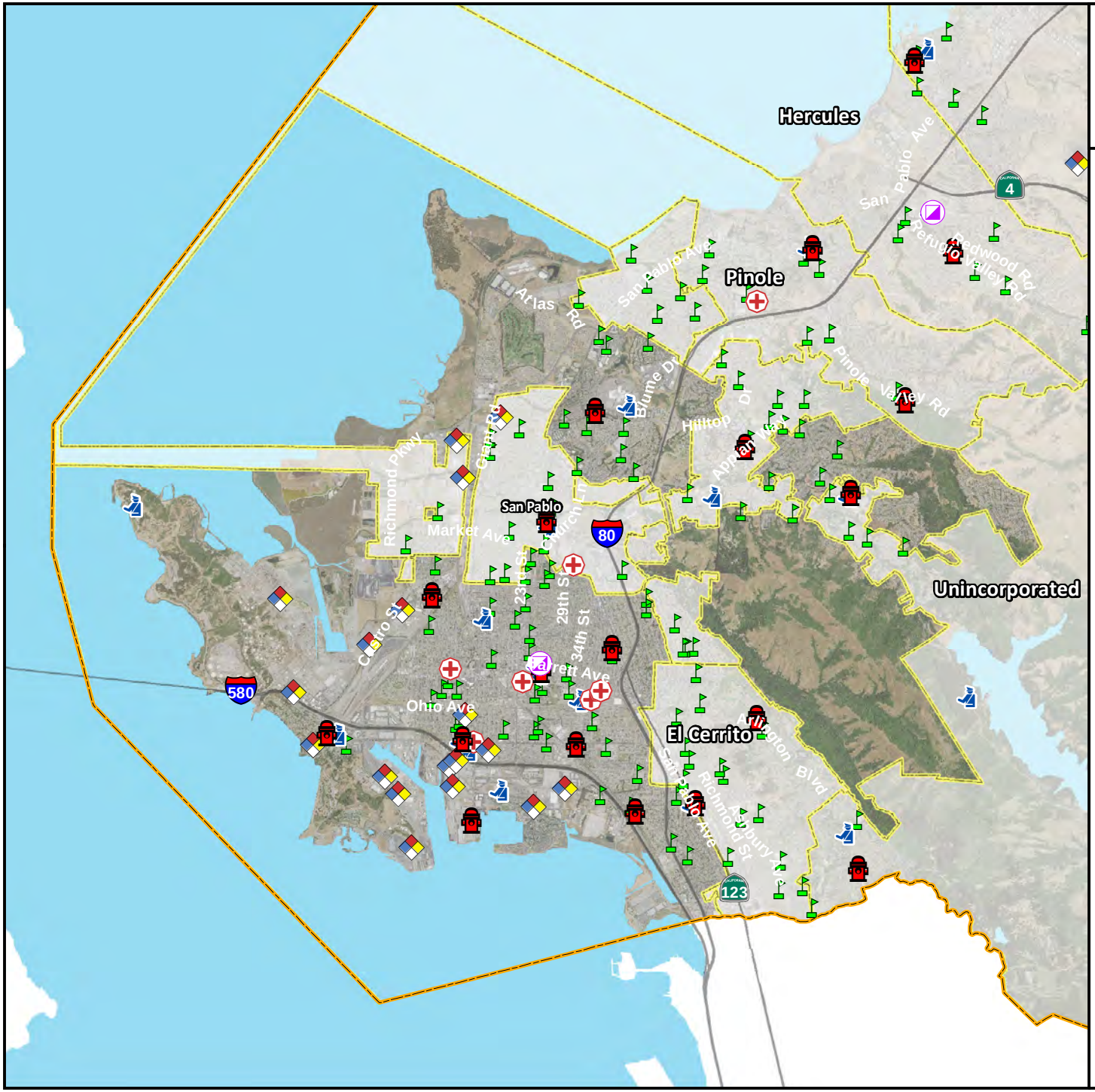
Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	COR-14,15,19,20, 21, 22,28	COR-1,2,3,4,28	COR-19, 22,28	COR-4,28	COR-28	COR-28	COR-28	COR-14,15,16,17,28
Dam and Levee failure	COR-25	COR-25						
Drought								
Earthquake	COR-22	COR-5,6,7,8,9,22	COR-22	COR-22	COR-22	COR-8,9,10		
Flood	COR-12,17,18, 22, 23, 26	COR-5, 13, 23, 25, 30, 31	COR-21, 22	COR-17	COR-22	COR-13	COR-24	
Landslide	COR-27							COR-27
Severe weather	COR-23,26	COR-7, 8,13,23				COR-13	COR-24	
Tsunami		COR-7,8						
Wildfire	COR-20, 22	COR-20, 22	COR-20, 22	COR-20,22	COR-20, 22	COR-20, 22		

a. See the introduction to this volume for explanation of mitigation types.

12.11 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed for this annex.

- **City of Richmond Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Richmond Flood Damage Prevention Ordinance**—The flood damage prevention ordinance
- **Climate Action Plan**—The Climate Action Plan was reviewed for adaptation measures and sea level rise studies.
- **General Plan 2030 Safety Element and Energy and Climate Change Element**—Provided goals and identified implementing actions to improve public safety and prepare for Climate Change.
- **Emergency Operations Plan**—The Emergency Operation Plan was reviewed for natural hazards impacting the City of Richmond.
- **Urban Greening Master Plan**—The Urban Greening Master Plan was reviewed for strategies to reduce heat island effect and improve permeability of stormwater.
- **ABAG Local Hazard Mitigation Plan**—The ABAG local hazard mitigation plan was consulted for natural hazard risk mitigation activities.
- **Vegetation Management Plan—**Reviewed for strategies to reduce fuel loads.
- **Storm Drain Master Plan—**Reviewed for applicable storm drain strategies.
- **Technical Reports and Information—**The following **o**utside resources and references were reviewed:
    - **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.
    - **SF Bay Plan 2011 version**—The SF Bay Plan 2011 was reviewed for San Francisco Bay Conservation and Development Commission policies pertaining to sea level rise.



The City of Richmond

Critical Facilities

- Emergency Operations Centers (Government)
- Fire Stations (Protective Functions)
- Hazardous Materials
- Medical Facilities
- Police Stations (Protective Functions)
- Schools & Educational Facilities
- Contra Costa County Boundary
- City Boundaries

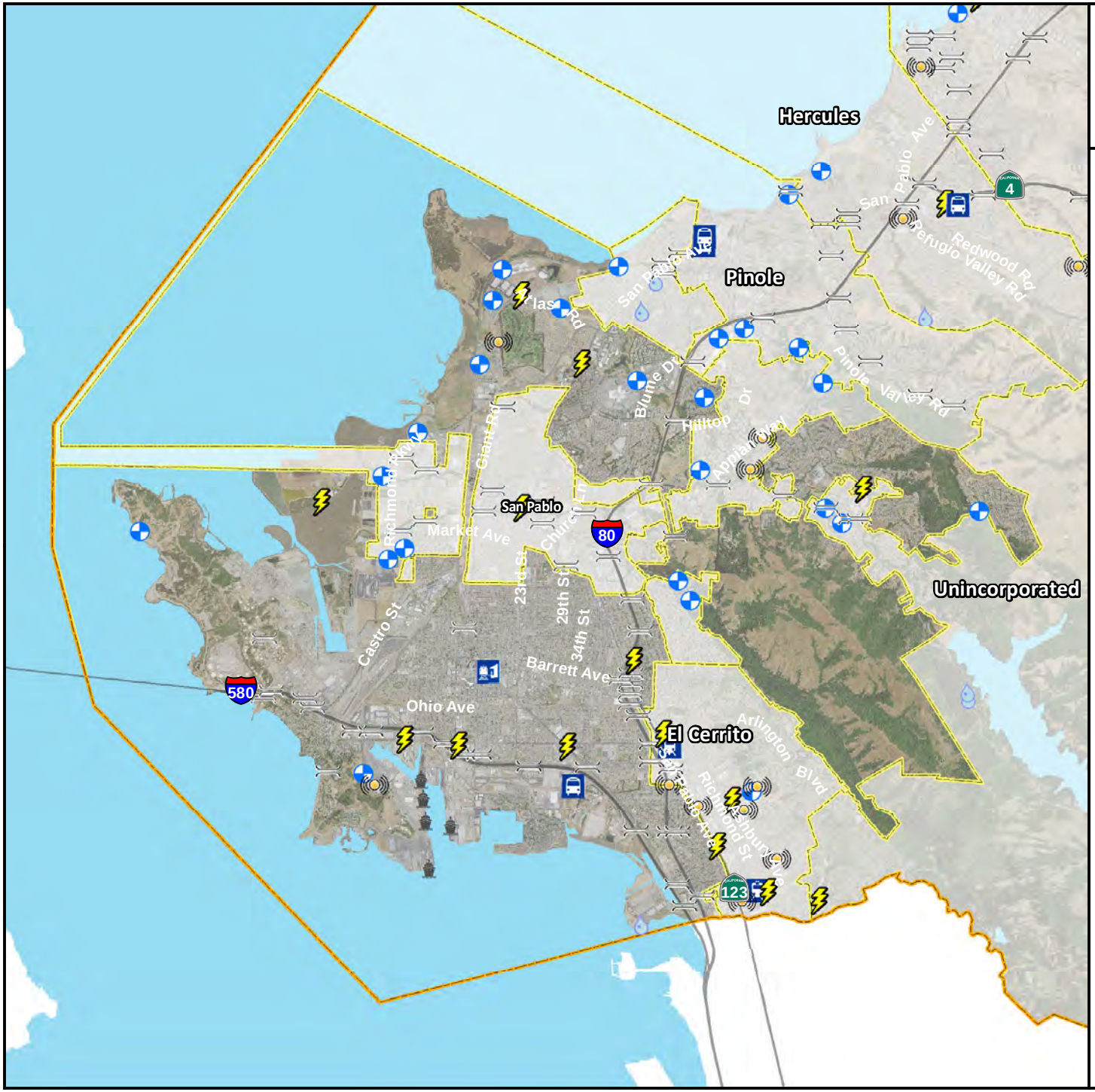
0 0.75 1.5 3

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of Richmond

Critical Infrastructure

- Airports (Other Critical Functions)
- Bus Facilities (Other Infrastructure)
- Communication Facilities
- Electric Power Facilities
- Highway Bridges
- Highway Tunnels (Other Infrastructure)
- Light Rail (Other Infrastructure)
- Natural Gas (Other Infrastructure)
- Port Facilities (Other Critical Functions)
- Water Supply Facilities
- Rail Facilities (Other Infrastructure)
- Wastewater Facilities
- Contra Costa County Boundary
- City Boundaries

0 0.75 1.5 3

Miles

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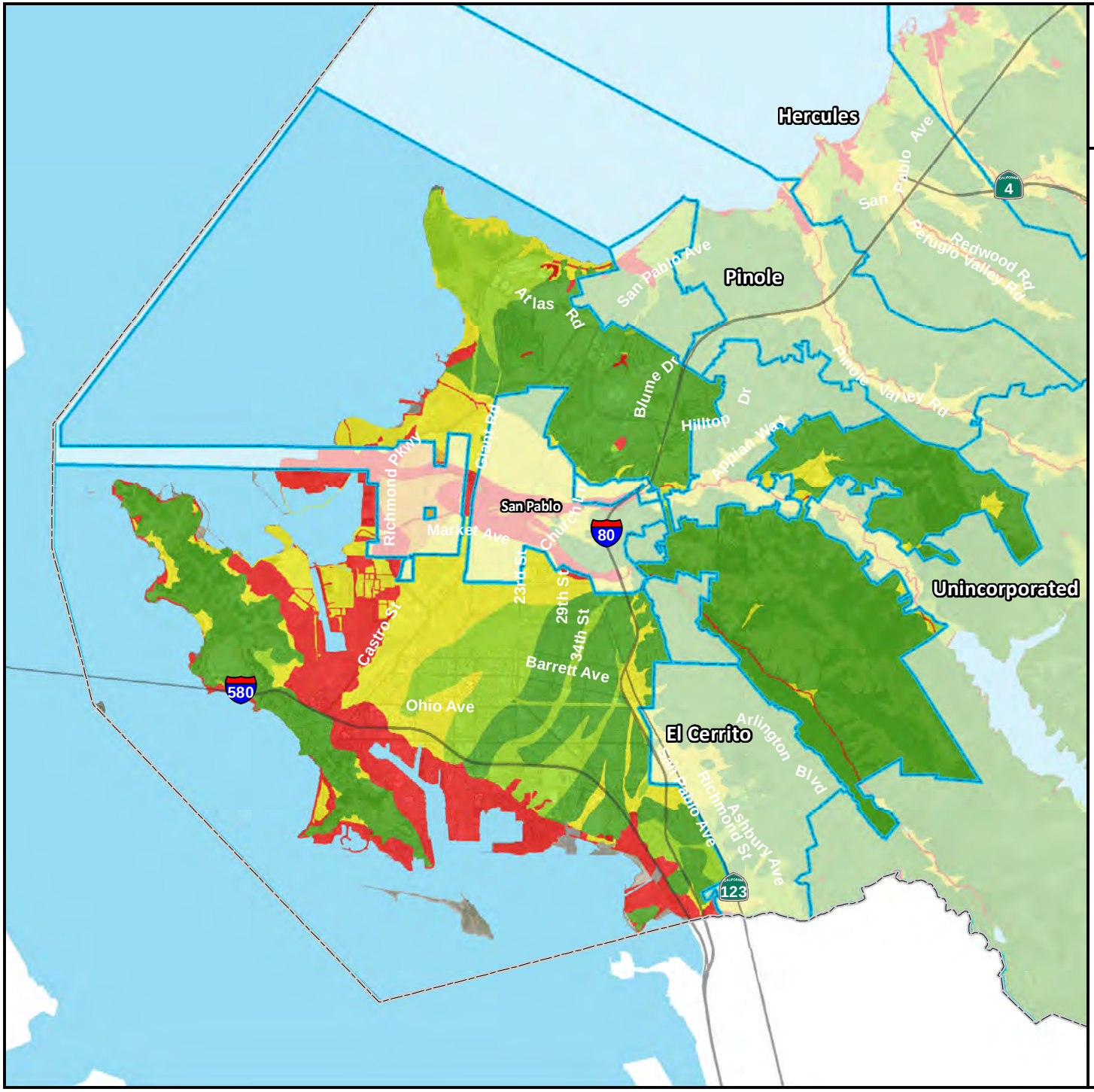
TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of Richmond

Liquefaction Susceptibility

Contra Costa County Boundary

City Boundaries

Water Bodies

Susceptibility to Liquefaction

- Very Low
- Low
- Medium
- High
- Very High
- No Liquefaction Data Available

0 0.75 1.5 3

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS

The City of Richmond

National Earthquake Hazard Reduction Program (NEHRP) Soil Class

Contra Costa County Boundary

City Boundaries

Water Bodies

NEHRP Site Class / Soil Profile

- B / Rock
- C / Very Dense Soil - Soft Rock
- D / Stiff Soil
- E / Soft Soil
- No Soil Data Available

0 0.75 1.5 3

Miles

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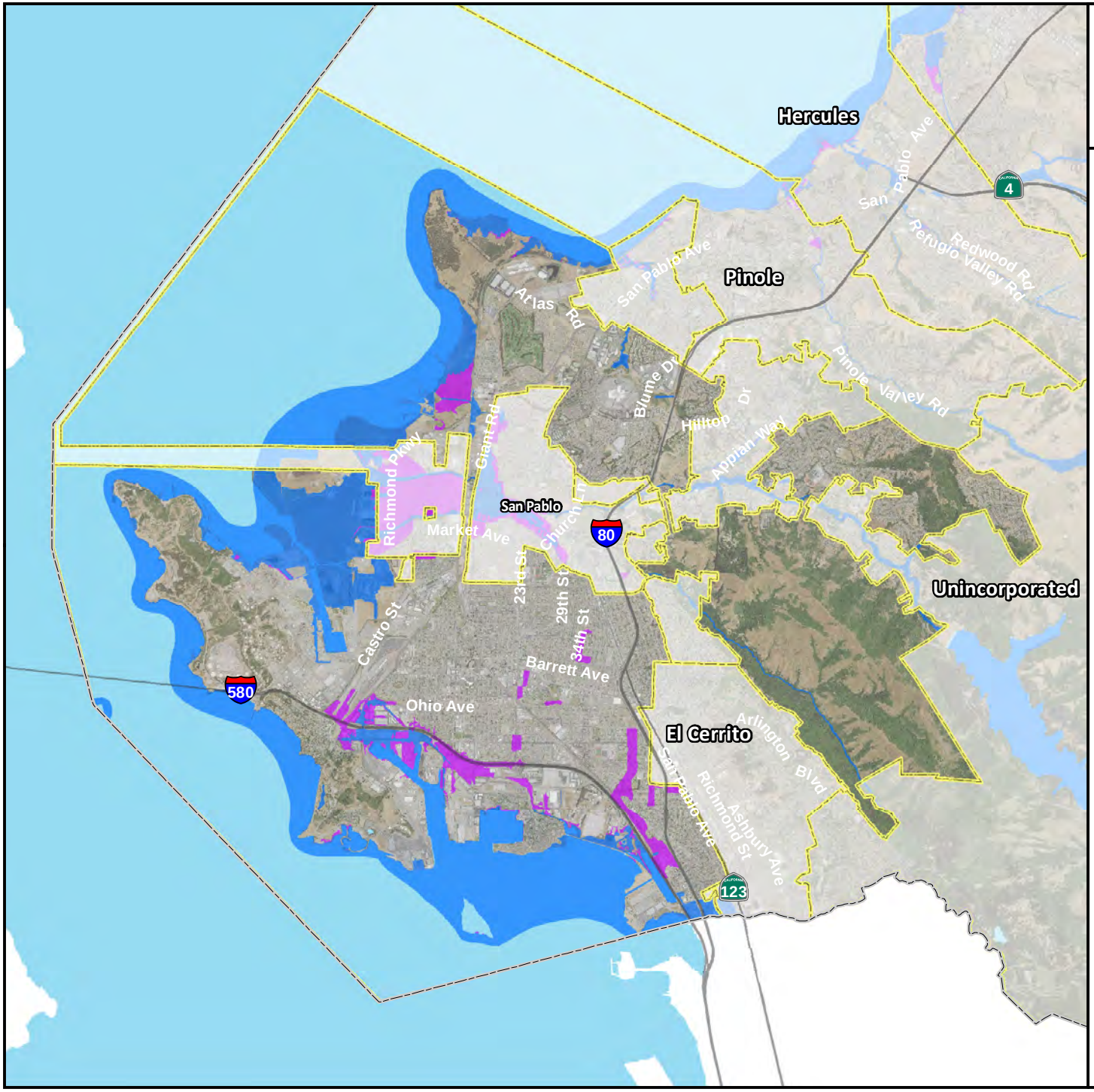
TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Department of Conservation, USDA



The City of Richmond

FEMA DFIRM Flood Hazard Areas

- 1% Annual Chance (100-Year) Flood Zone
- 0.2% Annual Chance (500-Year) Flood Zone
- Contra Costa County Boundary
- City Boundaries
- Water Bodies

Flood hazard areas as depicted on Effective FEMA Digital Flood Insurance Rate Maps (DFIRM)

0 0.75 1.5 3

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, FEMA, USDA

The City of Richmond

Landslide Susceptibility Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Type

Low

Moderate

High

Very High / Existing

Data Not Available

Source dataset created by Wills C.J., Perez, F., Gutierrez, C., 2011, Susceptibility to deep-seated landslides in California: California Geological Survey Map Sheet 58

0 0.75 1.5 3

Miles

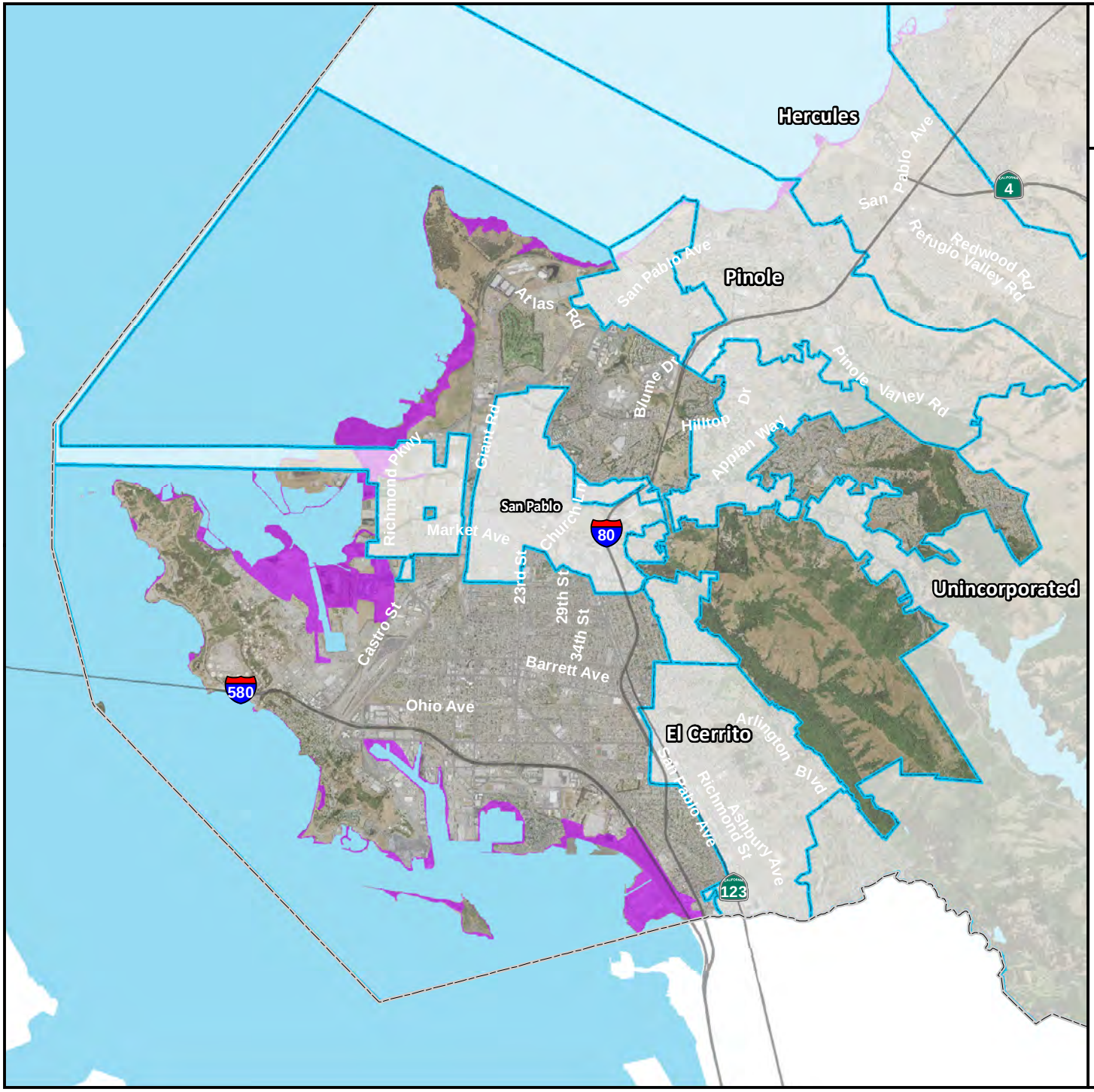
N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS

The City of Richmond

Tsunami Inundation Zones



Tsunami Evacuation Planning Scenario

Contra Costa County Boundary

City Boundaries

Water Bodies

This tsunami inundation map was prepared to assist cities and counties in identifying their tsunami hazard. It is intended for local jurisdictional, coastal evacuation planning uses only.

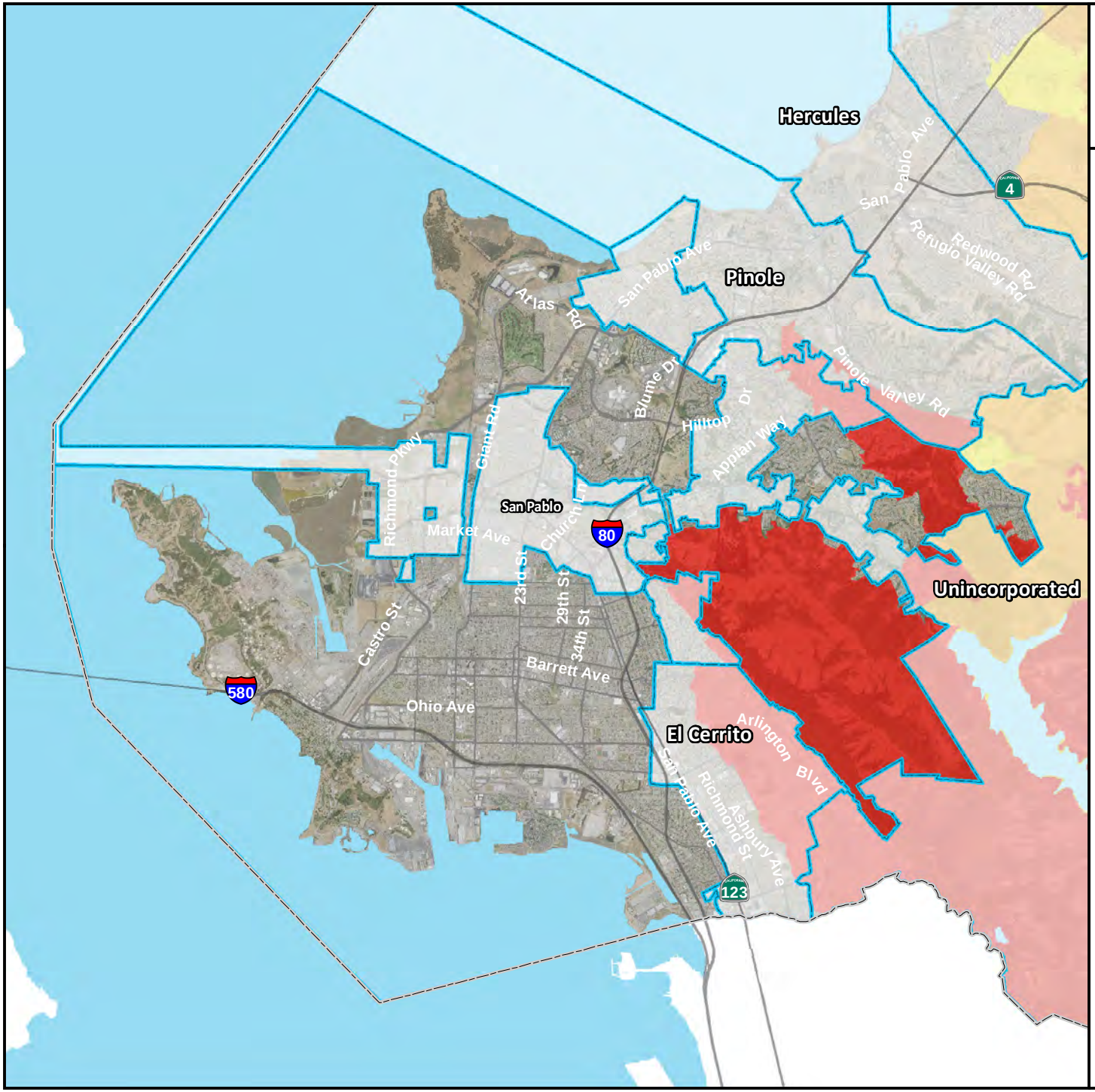
0 0.75 1.5 3

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, ABAG, USDA, USGS



The City of Richmond

Wildfire Severity Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Wildfire Severity Zone

Moderate

High

Very High

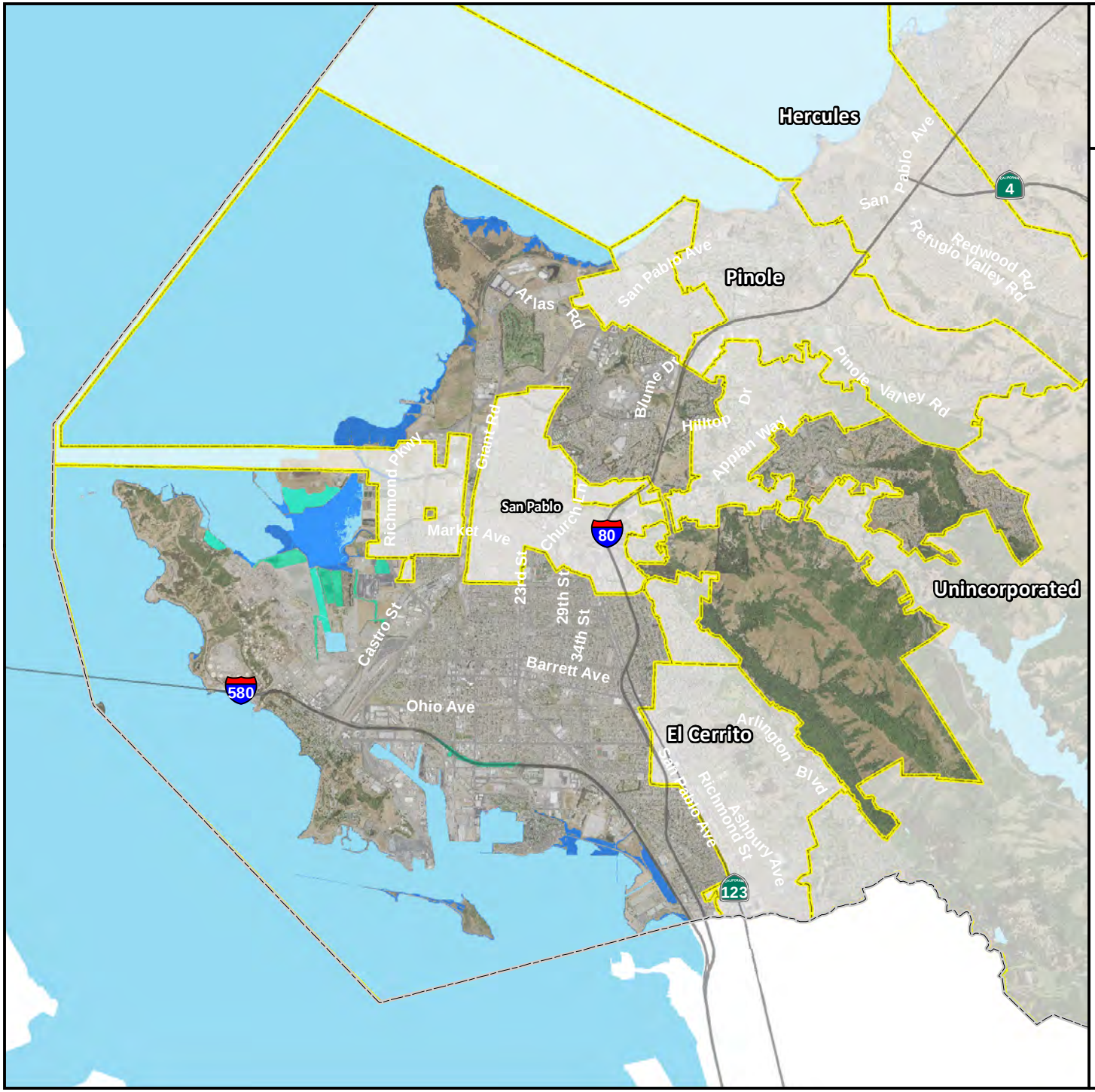
0 0.75 1.5 3

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, CalFIRE, USDA



The City of Richmond

Sea Level Rise - Mean Higher High Water Scenario Inundation Zones

- 12" Mean Higher High Water Scenario
- Low Lying Areas
- Contra Costa County Boundary
- City Boundaries

The inundation maps and the associated analyses are intended as planning level tools to illustrate the potential for inundation and coastal flooding under future SLR scenarios and (they) do not represent the exact location or depth of flooding or shoreline overtopping. The maps are based on model outputs and do not account for all of the complex and dynamic Bay processes or future conditions such as erosion, subsidence, future construction or shoreline protection upgrades, or other changes to San Francisco Bay or the region that may occur in response to SLR. For more context about the maps and analyses, including a description of the data and methods used, please see Adapting to Rising Tides: Transportation Vulnerability and Risk Assessment Pilot Project, Technical Report, November 2011.

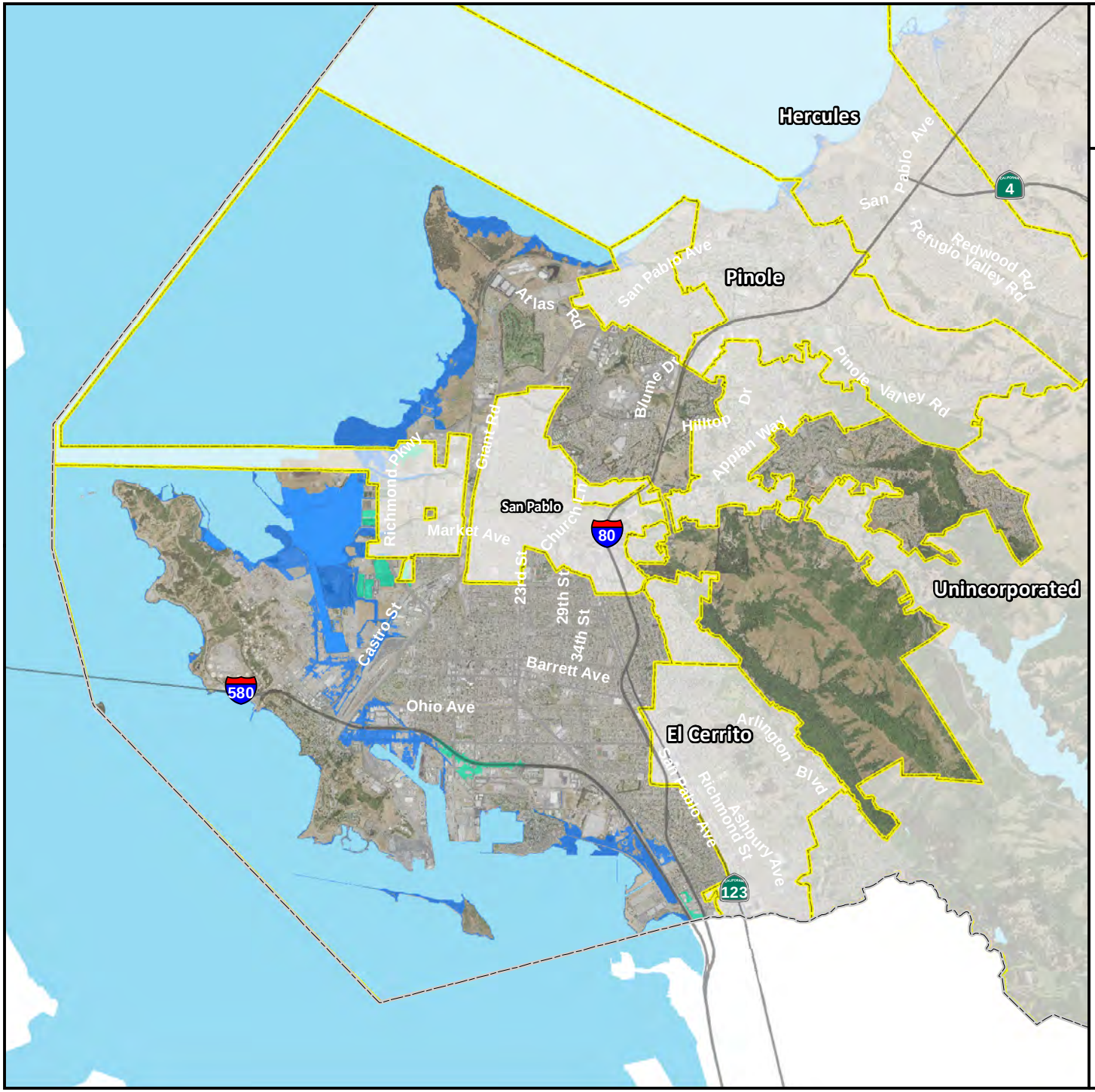
0 0.75 1.5 3

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, SFBCDC, USDA, USGS



The City of Richmond

Sea Level Rise - Mean Higher High Water Scenario Inundation Zones

- 12" Mean Higher High Water Plus 100-Year Extreme Tide
- Low Lying Areas
- Contra Costa County Boundary
- City Boundaries

The inundation maps and the associated analyses are intended as planning level tools to illustrate the potential for inundation and coastal flooding under future SLR scenarios and (they) do not represent the exact location or depth of flooding or shoreline overtopping. The maps are based on model outputs and do not account for all of the complex and dynamic Bay processes or future conditions such as erosion, subsidence, future construction or shoreline protection upgrades, or other changes to San Francisco Bay or the region that may occur in response to SLR. For more context about the maps and analyses, including a description of the data and methods used, please see Adapting to Rising Tides: Transportation Vulnerability and Risk Assessment Pilot Project, Technical Report, November 2011.

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Miles

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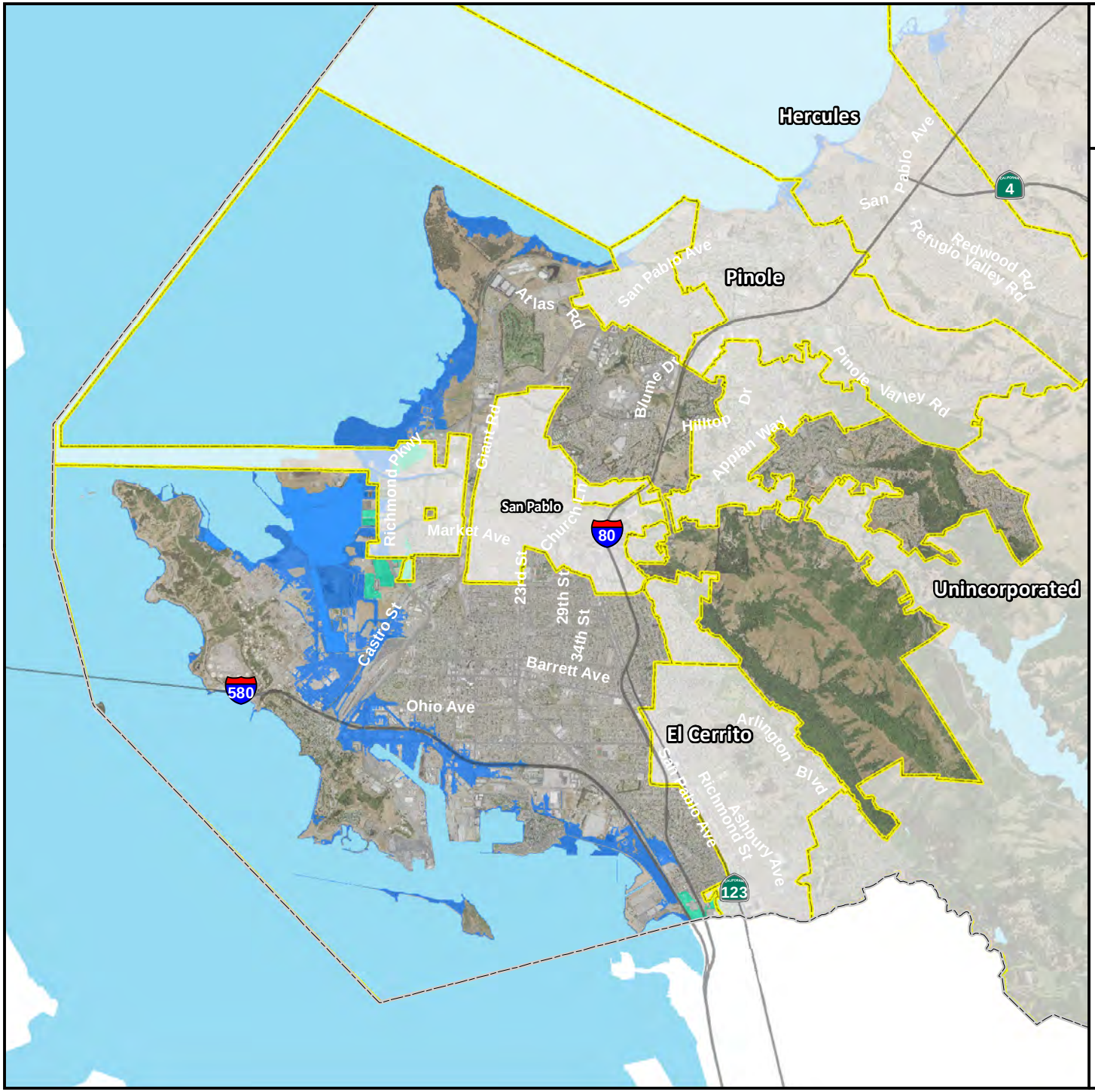


The City of Richmond

Sea Level Rise - Mean Higher High Water Scenario Inundation Zones

66" Mean Higher High Water Scenario

Low Lying Areas

Contra Costa County Boundary

City Boundaries

The inundation maps and the associated analyses are intended as planning level tools to illustrate the potential for inundation and coastal flooding under future SLR scenarios and (they) do not represent the exact location or depth of flooding or shoreline overtopping. The maps are based on model outputs and do not account for all of the complex and dynamic Bay processes or future conditions such as erosion, subsidence, future construction or shoreline protection upgrades, or other changes to San Francisco Bay or the region that may occur in response to SLR. For more context about the maps and analyses, including a description of the data and methods used, please see Adapting to Rising Tides: Transportation Vulnerability and Risk Assessment Pilot Project, Technical Report, November 2011.

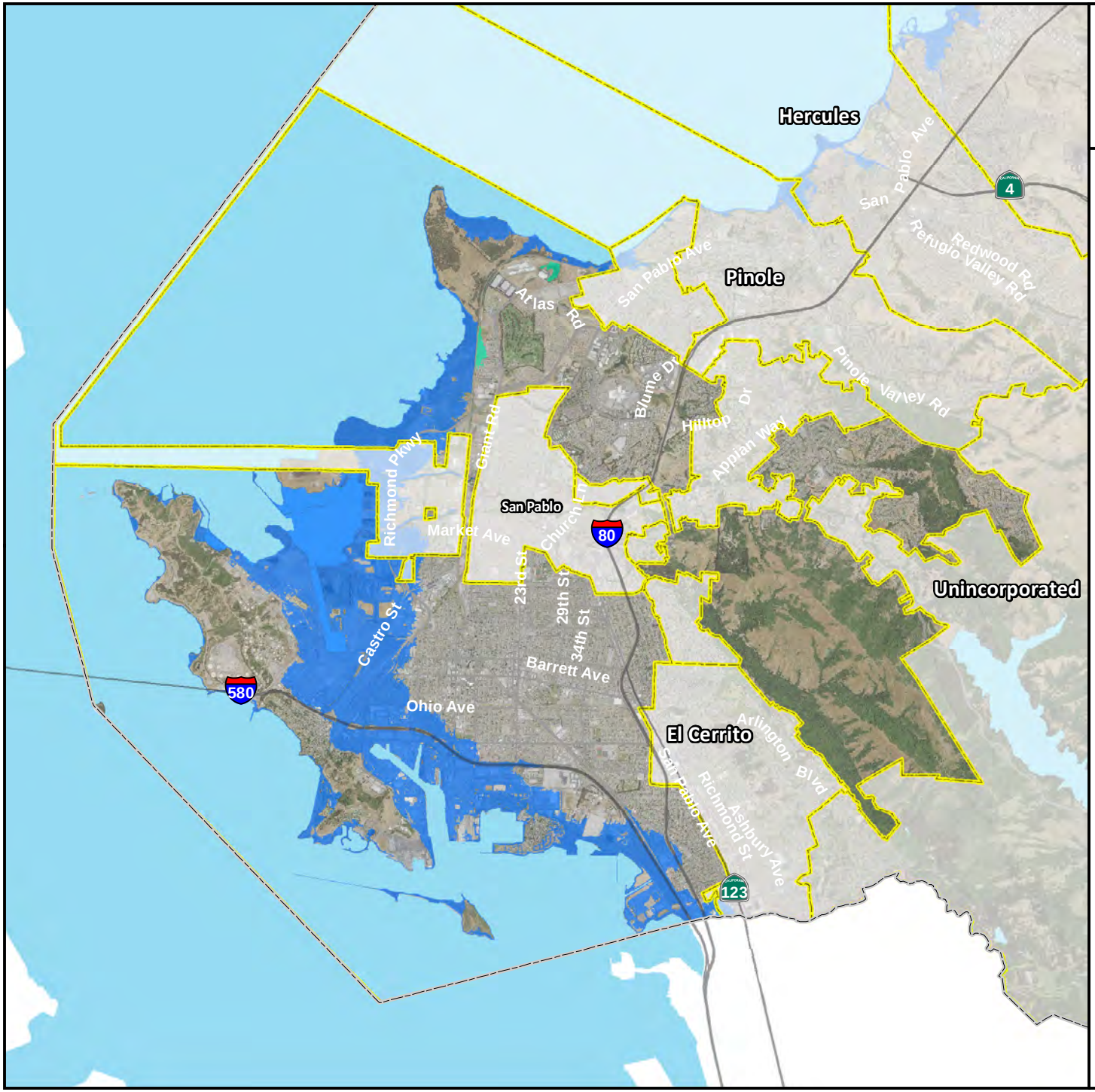
0 0.75 1.5 3

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, SFBCDC, USDA, USGS



The City of Richmond

Sea Level Rise - Mean Higher High Water Scenario Inundation Zones

66" Mean Higher High Water Plus 100-Year Extreme Tide

Low Lying Areas

Contra Costa County Boundary

City Boundaries

The inundation maps and the associated analyses are intended as planning level tools to illustrate the potential for inundation and coastal flooding under future SLR scenarios and (they) do not represent the exact location or depth of flooding or shoreline overtopping. The maps are based on model outputs and do not account for all of the complex and dynamic Bay processes or future conditions such as erosion, subsidence, future construction or shoreline protection upgrades, or other changes to San Francisco Bay or the region that may occur in response to SLR. For more context about the maps and analyses, including a description of the data and methods used, please see Adapting to Rising Tides: Transportation Vulnerability and Risk Assessment Pilot Project, Technical Report, November 2011.

0 0.75 1.5 3

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, SFBCDC, USDA, USGS

13. CITY OF SAN PABLO

13.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Ronalyn Nonato, Assistant Engineer
13831 San Pablo Ave #3
San Pablo, CA 94806
Telephone: 510-215-3065
e-mail Address: ronalynn@sanpabloca.gov

Alternate Point of Contact
Barbara Hawkins, Public Works Director/City Engineer
13831 San Pablo Ave #3
San Pablo, CA 94806
Telephone: 510-215-3061
e-mail Address: barbarah@sanpabloca.gov

13.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation**— April 27, 1948
- **Current Population**—The California Department of Finance (CA DOF) estimated population for the City of San Pablo is 30,829 as of January 1, 2016.
- **Population Growth**—The CA DOF estimated an increase in the population from 2015 (30,498) to 2016 (30,829) of 1.1 percent. Table 13-1 shows the CA DOF decennial population statistics for San Pablo from 1970 through 2010, with the percent change of the previous decades from 1980 to 2016.

Table 13-1. Population Statistics for San Pablo from 1970 to 2016

Year	Total City Population	Percentage Change from Previous Decade
1970	21,461	–
1980	19,750	-8.0%
1990	25,158	27%
2000	30,256	20%
2010	29,139	-3.7%
2016	30,829	5.8%

- **Location and Description**—The City of San Pablo is located in the northwestern portion of Contra Costa County and consists of 2.6 square miles. San Pablo's sphere of influence extends an additional 229 acres outside the city limits to include the Rollingwood and Hillside residential areas. San Pablo is bordered by the City of Richmond to the north, west, and south and to the east by the unincorporated community of El Sobrante in Contra Costa County. The city is bisected by Interstate 80, which separates east and west San Pablo, and is a throughway to the City of Vallejo, Sacramento to the north and east, and with Richmond, Berkeley, Oakland and San Francisco to the south and west.
  San Pablo is an innovative city with many community programs. The City has nine facilities available to the community, including a commercial kitchen, and four city maintained parks with soccer fields (one includes a turf field), baseball fields, and a senior center. Wildcat Canyon Park and Hilltop Lake Park are in close proximity to the city. The City recently developed and adopted a bicycle and pedestrian master

plan to create an enjoyable place for walking and bicycling in San Pablo. The City is dedicated to protecting the environment through clean water, energy conservation, climate action and waste recycling programs. San Pablo conserves natural resources by providing programs and resources to reduce waste, recycle products that can be made into new products, and safely dispose of hazardous waste. The City also has a food scrap composting program for residents.

- **Brief History**— The following summary is an abbreviated version of an historical outline provided by the San Pablo Historical Society (http://www.ci.san-pablo.ca.us/943/History).

  For thousands of years, Ohlone (also known as Costanoan) Indians resided in the bay area, living in villages along the East Bay of San Francisco. One village, between the two creeks now named Wildcat and San Pablo, is the site of what is now known as the city of San Pablo. Food was plentiful with two creeks providing fresh water, nourishing plants, and attracting animals. In addition, the bay was a source of fish and shellfish. In the late 1700s, the Spanish government in Mexico sent explorers into the area, followed by missionaries and settlers. Mission Dolores in San Francisco was founded in 1776. The ground in the area was not fertile for planting, and by 1815 the Indians had established Rancho San Pablo (the contra costa in Spanish) on the opposite coast of the bay to raise cattle and food for the mission. Rancho San Pablo was the first permanent non-Indian settlement in all of what is now Contra Costa County. Mexico gained independence from Spain, and began to divide up land owned by the missions. The overseer of Rancho San Pablo requested permission to claim the rancho as his own and in 1823, Francisco Castro was granted 17,000 acres of land. The rancho covered land that is now Richmond, El Sobrante, and Pinole, and extended all the way out to what is today called San Pablo Bay.

  The Gold Rush and the annexation of California by the United States brought drastic changes to San Pablo. A stage route was established from San Francisco and Oakland to Sacramento and saloons lined the main street, which was wide enough to accommodate the movement of cattle herds. The Castro descendants began to sell off portions of their Rancho to American ranchers and farmers. A Post Office was established, a school was built, and churches founded. Many of the new ranchers were immigrants to the United States from Azore Island Portuguese, Chile, Germany, France, and China. A few African-Americans lived in the area as well. It is assumed that a number of Mexicans, such as the Castro's and Alvarado's, continued to live in the area as well. San Pablo was the home of Governor Juan Bautista Alvarado, the first native-born governor of the State of California, who had married one of the Castro daughters. The city was incorporated on April 27, 1948.

  World War II changed the town of San Pablo forever. In just a few years, the population boomed from 2,000 to 25,000 people, due to the jobs at the Richmond Shipyard. People came from all over the United States to get jobs as welders. Many African Americans came from the South, and established the first sizable black community. Housing was put up on small lots as quickly as possible to accommodate these new workers. These tiny homes built during the war characterize San Pablo.

  There were nightclubs and dance halls featuring country bands, including the Lighthouse Inn San Pablo, which contributed to the City's reputation as a party town. Swing bands were popular among the young shipyard workers. The clubs were often open 24 hours a day to accommodate all three work shifts at the shipyard. The war had changed San Pablo into a suburban city. The last dairy ranchers sold out to giant corporations, and the last farmers divided and sold their land for housing tracts.

  Post-wartime, the community settled down to raise families. In the 1950s public works projects paved the streets, added sidewalks and installed streetlights. Playgrounds were opened, a hospital was built, Contra Costa College opened, and shopping centers replaced wartime housing.

Source: Wikipedia Commons (https://commons.wikimedia.org/wiki/File:Welcome_Sign_San_Pablo_California.jpg)

Figure 13-1. City of San Pablo

- **Climate**—San Pablo's climate is characterized by mild, wet winters and warm, dry summers. On average, the warmest month of the year is September (average high temperature of 74° F) and the coolest month is January (average low temperature of 43° F). The average annual high temperature is 66.7°F and the annual average low is 50.5°F. The wettest month of the year is January, with an average rainfall of approximately 4.84 inches. The annual average precipitation is approximately 24.98 inches. (http://www.usclimatedata.com/climate/sanpablo/california/united-states/usca2087)
- **Governing Body Format**—San Pablo is a General Law City, operating under the Council-Manager form of government. Under this system, the Council establishes the policies under which the City operates and appoints a trained and experienced City Manager to administer the affairs of the City. The City Manager's responsibilities include hiring of City staff, preparation of the Annual Budget, administration and coordination of the City's operations, general supervision over all property under the control of the City, and enforcement of City ordinances and applicable State laws.

  The City Council is made of five members elected at large to overlapping terms of four years and annually select two of their members to serve as Mayor and Vice Mayor. The Mayor represents the City at community functions, serves as the City's liaison with other governmental agencies, and serves as the presiding officer at council meetings.

  The Council is the legislative body; its members are the community's decision makers. The Council approves the budget and determines the public services to be provided and the taxes, fees and assessments to pay for these public services. The City Council is responsible for adopting this plan, while the City Manager is responsible for overseeing its implementation.

13.3 DEVELOPMENT TRENDS

The San Pablo General Plan 2030, April 2011, outlines a long-range vision for the physical development in the City. The existing city limits include residential, commercial and industrial developments, as well as public facilities, including parks and schools. San Pablo's Economic Development Program has short and long-range economic development strategies to encourage the growth of new businesses, attraction of new business,

enhancement of existing businesses as well as the creation and retention of jobs. According to California Department of Finance (CA DOF) estimates, San Pablo had a total of 9,475 housing units as of January 2014, which is only a two percent increase since 2000 when there were 9,307 housing units in San Pablo. Slightly less than half the homes in San Pablo are in single-family detached buildings. Another 16 percent of the households live in large, multi-unit buildings of 20 units or more, while the rest live in smaller multi-unit buildings. The 2015 City of San Pablo Housing Element states three-quarters of the households in San Pablo are families, and 43 percent of the households are families with children, compared to 34 percent in Contra Costa County. San Pablo is largely a residential city, with 5,265 jobs, or one job for every 5.5 residents (http://www.ci.san-pablo.ca.us/DocumentCenter/View/4936).

The City has considered the housing needs of seniors, people living with a disability, large families, female-headed households, extremely low income households and persons, homeless people and farmworkers. There are 12 affordable housing developments in San Pablo, in which 7 provide housing for lower income families and 5 provide housing for seniors. In total, including all rental assistance vouchers, there are 901 subsidized households/housing units in San Pablo, which represents 10 percent of the households in the City. Other methods of assistance include (subsidized) rents, handicapped accessible homes, and buildings near public transportation. The City has also conducted an assessment to identify vacant sites for possible housing development.

San Pablo is highly urbanized within its 2.8 square miles planning area. The Land Use and Physical Design Element of the General Plan presents a framework to guide future land use decisions and development approved in San Pablo. This focuses on six distinctive areas of interest: urban form, community design, residential neighborhoods, mixed use, and civic and institutional.

Source: 2010-2012 American Community Survey

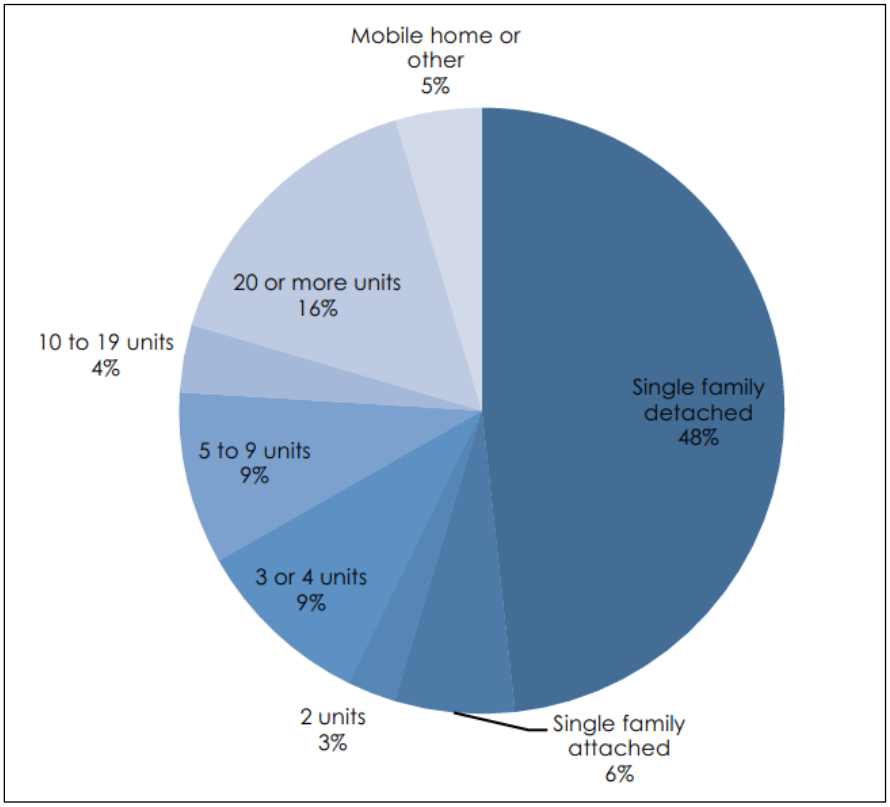


Figure 13-2. Residential Building Types in San Pablo (2012)

Sites for retail development (newly constructed neighborhood shopping center and community trade areas) available in the City include College Center, Princeton Plaza, San Pablo Towne Center, and Plaza Sobrante. Several new restaurants and retail stores have found a home in San Pablo and new projects are in the works.

The Lytton Band of Pomo Indians (Band) operate a casino, inclusive of Class II and Class III gaming defined by the Indian gaming Regulatory Act of 1988, PL 100-497, 24 U.S.C., National Indian Gaming Commission regulations, and the Compact between the City of San Pablo and the Band. In partial consideration for the services and covenants which the City agrees to provide to the Band, the Band agreed to provide a minimum annual municipal services payment and incremental municipal services payment to the City.

According to the City's 2016 Comprehensive Annual Financial Report, the principal employers in the city are:

- Contra Costa College—585 employees
- Creekside Health Care Center—243 employees
- Vale Healthcare Center—169 employees
- Food Maxx—99 employees
- Raley's—82 employees
- Casino San Pablo—500 employees
- City of San Pablo—182 employees
- San Pablo Healthcare Center—153 employees
- Las Mantanas—91 employees
- San Pablo Super Market—84 employees.

Table 13-2 summarizes development trends in the performance period since development of the previous hazard mitigation plan and expected future development trends.

Table 13-2. Recent and Expected Future Development Trends

Criterion	Response					
Has your jurisdiction annexed any land since the development of the previous hazard mitigation plan? • If yes, give the estimated area annexed and estimated number of parcels or structures.	No N/A					
Is your jurisdiction expected to annex any areas during the performance period of this plan? • If yes, please describe land areas and dominant uses. • If yes, who currently has permitting authority over these areas?	No. The City is land locked and surrounded by incorporated jurisdictions. There are no unincorporated areas to annex. The City is urban. Open space and parkland are very limited in San Pablo. N/A N/A					
Are any areas targeted for development or major redevelopment in the next five years? • If yes, please briefly describe, including whether any of the areas are in known hazard risk areas	Yes • City Hall Development • Plaza San Pablo Developments • San Pablo Ave. and Rumrill Blvd. Affordable Housing • La Quinta Hotel Inn All of these developments could be considered exposed to seismic and severe weather risks. However, these risk would be mitigated by the influence of building code standards.					
How many building permits for new construction were issued in your jurisdiction since the development of the previous hazard mitigation plan?		2012	2013	2014	2015	2016
	Single Family	1	3	3	2	5
	Multi-Family	0	0	1	1	0
	Other (commercial, mixed use, etc.)	0	0	0	0	0
Please provide the number of permits for each hazard area or provide a qualitative description of where development has occurred.	Other than development regulated by the City's Flood Damage Prevention Ordinance, the City does not track development by hazard zones. The City cites development restrictions on a case-by-case basis.					

13.4 CAPABILITY ASSESSMENT

The City of San Pablo performed an inventory and analysis of existing capabilities, plans, programs and policies that enhance its ability to implement mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of legal and regulatory capabilities is presented in Table 13-3.
- Development and permitting capabilities are presented in Table 13-4.
- An assessment of fiscal capabilities is presented in Table 13-5.
- An assessment of administrative and technical capabilities is presented in Table 13-6.
- An assessment of education and outreach capabilities is presented in Table 13-7.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 13-8.
- Classifications under various community mitigation programs are presented in Table 13-9.
- The community's adaptive capacity for the impacts of climate change is presented in Table 13-10.

Table 13-3. Legal and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code	Yes	No	Yes	No
Comment: Title 15.04.010 (Ord. 2016-007 § 1 (part), 2016) The California Code, 2016 Edition, including all volumes and appendices.				
Zoning Code	Yes	No	Yes	No
Comment: Title 17, Ord. 2015-002 § 3 (Exh. 1)(part), 2015				
Subdivisions	Yes	No	No	No
Comment: Title 16, Ord. 05-002 § 1 (part), 2005				
Stormwater Management	Yes	No	No	No
Comment: Title 8, Chapter 8.40, Ord. 2016-006 § 1 (part), 2016: Ord. 05-001 § 1 (part), 2005				
Post-Disaster Recovery	No	No	No	No
Comment: None Located				
Real Estate Disclosure	No	No	Yes	No
Comment: Required for Section 1102 of the CA Civil Code				
Growth Management	No	No	Yes	Yes
Comment: San Pablo General Plan 2030 was developed pursuant to CA General Planning Law (Cal. Gov. Code §65300 et seq.) which is intended to manage growth in the State of CA.				
Site Plan Review	No	No	No	No
Comment: City has general policy, but no specific code regulating site review requirements.				
Environmental Protection	Yes	No	Yes	No
Comment: The City of San Pablo is dedicated to protecting the environment. The City manages Clean Water, Energy Conservation and Climate Action and Waste and Recycling programs. State of California Public Resources Code 21000-21189.3 has regulated to local governments the requirement to maintain a quality environment for the people in the state now and in the future. The legislature requires all agencies to regulate activities of private individuals, corporations, and itself to protect that environment through project analysis and alternatives using the California Environmental Quality Act (CEQA). The City of San Pablo as the lead agency has the responsibility of project review.				
Flood Damage Prevention	Yes	No	Yes	No
Comment: Title 15, Chapter 15.28; Ord. 13-002 § 6, 2013				
Emergency Management	Yes	No	Yes	No
Comment: Title 2, Chapter 36 (Disaster Council), Ord. 646 § 1, 1973				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Climate Change	Yes	No	Yes	Yes
Comment: In 2011, the City of San Pablo completed the City's Greenhouse Gas Inventory . The Greenhouse Gas Inventory provided baseline information on the City's emissions. The City has since developed a Climate Action Plan that provides a policy framework to reduce our city's greenhouse gas emissions, while also promoting city improvements to increase livability, health and safety of our community. California SB-379: Land Use: General Plan: Safety Element				
Other:	No	No	No	No
Comment: None identified				
Planning Documents				
General Plan	Yes	No	Yes	Yes
Is the plan compliant with Assembly Bill 2140? No				
Comment: San Pablo General Plan 2030, 2011; Housing Element 2015				
Capital Improvement Plan	Yes	No	No	Yes
How often is the plan updated? 5-year, reviewed annually				
Comment: City of San Pablo Capital Improvement Plan, 2016. Includes roads, drainage, transportation, facilities, lighting				
Floodplain or Watershed Plan	No	No	No	No
Comment: None Located				
Stormwater Plan	Yes	No	No	Yes
Comment: In the process of developing the City's Storm drain Network Development and Modeling Plan. Drainage needs identified by this plan could potentially be identified as hazard mitigation projects for incorporation in to this hazard mitigation plan.				
Urban Water Management Plan	No	Yes	No	Yes
Comment: San Pablo is under the authority of the East Bay Municipal Utility District (EBMUD) Urban Water Management Plan				
Habitat Conservation Plan	No	No	No	No
Comment: None Located				
Economic Development Plan	No	No	No	No
Comment: None Located				
Shoreline Management Plan	No	No	No	No
Comment: No shoreline in San Pablo				
Community Wildfire Protection Plan	No	Yes	No	Yes
Comment: San Pablo is under the authority of the Contra Costa County Community Wildfire Protection Plan.				
Forest Management Plan	No	No	No	No
Comment: None Located				
Climate Action Plan	Yes	No	No	Yes
Comment: City of San Pablo Climate Action Plan, 2012				
Comprehensive Emergency Management Plan	Yes	No	Yes	Yes
Comment: City of San Pablo Comprehensive Emergency Management Plan, October 2012				
Threat & Hazard Identification & Risk Assessment (THIRA)	No	Yes	No	Yes
Comment: The City of San Pablo is part of the Bay Area UASI THIRA.				
Post-Disaster Recovery Plan	No	No	No	Yes
Comment: Comprehensive Emergency Management Plan (CEMP) Recovery Annex				
Continuity of Operations Plan	No	No	No	No
Comment: Continuity of Government in CEMP				
Public Health Plan	No	Yes	No	No
Comment: The City of San Pablo relies upon the Contra Costa County Health Services Department for public health.				
Other:	No	No	No	No
Comment: None Located				

Table 13-4. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? • If no, who does? If yes, which department?	Yes The Building Department is responsible for: • Reviewing plans prior to construction and legalization • Issuing building, electrical, plumbing, and mechanical permits • Performing field inspections for the Community of San Pablo
Does your jurisdiction have the ability to track permits by hazard area?	No
Does your jurisdiction have a buildable lands inventory? • If yes, please briefly describe. • If no, please quantitatively describe the level of buildout in the jurisdiction.	No N/A 90% to 95% buildout

Table 13-5. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes (through Contra Costa County)
Capital Improvements Project Funding	Yes – requires Council action
Authority to Levy Taxes for Specific Purposes	No – City has not adopted this option
User Fees for Water, Sewer, Gas or Electric Service	Yes – PG&E Rule 20A credits
Incur Debt through General Obligation Bonds	No – City has not adopted this option
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No, City has not deployed this option
State-Sponsored Grant Programs	Yes, CA Flood Safe Initiative, Measure 82 funds
Development Impact Fees for Homebuyers or Developers	No – City has not adopted this option
Other	No

Table 13-6. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Development Services Department
Engineers or professionals trained in building or infrastructure construction practices	Yes	Development Services – Building Division / Public Works Dept. - Engineering Division
Planners or engineers with an understanding of natural hazards	Yes	Public Works Department
Staff with training in benefit/cost analysis	Yes	Finance Department
Surveyors	Yes	Public Works Department
Personnel skilled or trained in GIS applications	Yes	Information Technology / Development Services
Scientist familiar with natural hazards in local area	No	Public Works Dept. consultants
Emergency Manager	Yes	Police Department
Grant writers	Yes	All departments that apply for grants
Other	No	

Table 13-7. Education and Outreach Capability

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes – the City Manager serves as the primary public outreach representative for the City. The Police Department and Contra Costa Fire Protection District also have Public Information Officers.
Do you have personnel skilled or trained in website development?	Yes, contract consultant
Do you have hazard mitigation information available on your website? • If yes, please briefly describe.	Yes The Public Works Department hosts a page devoted to flood preparedness and mitigation as part of its participating the CRS program. Additionally, the City maintained a link on the City page linking to the 2017 HMP Project Website.
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe.	Yes The City has Twitter, Facebook, and Nextdoor. The Police Department has Twitter, Facebook, and Instagram.
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly describe.	Yes Planning Commission, Safety Commission
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe.	Yes Community Emergency Response Team, Neighborhood Watch, Neighborhood Engagement Team, E-newsletter Subscription, and a City Council social media professional services provider.
Do you have any established warning systems for hazard events? • If yes, please briefly describe.	Yes Community Warning System (Contra Costa County) The City Manager serves as the primary public outreach representative for the City. The Police Department and Contra Costa Fire Protection District also have Public Information Officers.

Table 13-8. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Development Services - Building Division / Public Works Department
Who is your floodplain administrator? (department/position)	Development Services - Building Division / Chief Building Inspector. Contract Building Official
Are any certified floodplain managers on staff in your jurisdiction?	Yes. Contractor has CFM's on Staff.
What is the date that your flood damage prevention ordinance was last amended?	1987, updated 2013
Does your floodplain management program meet or exceed minimum requirements? • If exceeds, in what ways?	Meets N/A
When was the most recent Community Assistance Visit or Community Assistance Contact?	September 22, 2016
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? • If so, please state what they are.	No N/A
Do your flood hazard maps adequately address the flood risk within your jurisdiction? • If no, please state why.	No Does not accurately reflect urban drainage flood problems. City is in the process of developing a Storm drain Network Development and Modeling Plan
Does your floodplain management staff need any assistance or training to support its floodplain management program? • If so, what type of assistance/training is needed?	Yes Floodplain administration, public education and outreach, CFM training
Does your jurisdiction participate in the Community Rating System (CRS)? • If yes, is your jurisdiction interested in improving CRS Classification? • Is your jurisdiction interested in joining the CRS program?	Yes (currently class 8) Yes, depending upon resources needed N/A
How many flood insurance policies are in force in your jurisdiction?[a] • What is the insurance in force? • What is the premium in force?	334 $83,730,400 $436,894
How many total loss claims have been filed in your jurisdiction?[a] • How many claims are still open/were closed without payment? • What were the total payments for losses?	66 0/22 $467,444

a. According to FEMA statistics as of January 31, 2017

Table 13-9. Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	Yes	8	10/01/2013
Building Code Effectiveness Grading Schedule	Yes	3	01/29/2013
Public Protection	Yes[a]	3/9	Unknown
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A

a. The City of San Pablo is part of the Contra Costa Consolidated Fire District

Table 13-10. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts	High
Comment: *In 2009, the San Pablo City Council supported local, regional, and state initiatives designed to address the major sources of pollution by passing Resolution 2009-063, which laid the groundwork for developing a Climate Action Plan (CAP). City staff have since worked on developing a local greenhouse gas emissions inventory, emission forecasts and reduction measures to meet established pollution reduction goals.*	
Jurisdiction-level monitoring of climate change impacts	High
Comment: The City monitors and reports on the performance of strategies for implementation over time. Each measure has been assigned a metric of success to be tracked throughout the full length of implementation in order to ensure that residents, business owners and the City are seeing the expected results	
Technical resources to assess proposed strategies for feasibility and externalities	High
Comment: Strategic Energy Innovation (SEI) consultants provided guidance in the development of the GHG forecast and the quantification of the GHG reduction measures in the CAP. In addition, beginning in 2010, the City of San Pablo participated in an AmeriCorps National Service program, Climate Corps Bay Area (CCBA). CCBA is an 11 month program that matches non-profit and local government partners with CCBA members to address climate change mitigation strategies. At the City, these members have been involved in the research, quantification and analysis of the City's past GHG emissions, existing efficiency strategies and proposed reduction measures through an extensive job training component.	
Jurisdiction-level capacity for development of greenhouse gas emissions inventory	High
Comment: An inventory was conducted of the GHG 2005 base year to 2007 interim period. The CAP is the overarching plan to update the inventory, forecast, and reduce local GHG emissions.	
Capital planning and land use decisions informed by potential climate impacts	Medium
Comment: The Transportation and Land Use measures address existing land uses throughout the City with the hope of increasing the availability of services to meet resident's everyday needs. In addition, these measures encourage the use of alternative modes of transportation, walking, biking, and carpools to reduce vehicle miles traveled.	
Participation in regional groups addressing climate risks	High
Comment: The CAP was developed through strong collaboration between City staff, SEI, members of the Small Cities Climate Action Partnership (SCCAP) and CCBA members. The SCCAP is a collaborative effort between the cities of El Cerrito, Albany, Piedmont and San Pablo, with consultation from SEI, and is funded by a grant from the Environmental Protection Agency (EPA).	
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes	High
Comment: *In 2009, the San Pablo City Council showed its support for local, regional and state initiatives designed to address the major sources of pollution by passing Resolution 2009-063, which laid the groundwork for developing a CAP. The CAP is a Council approved policy-planning document which outlines a course of action for the City of San Pablo to reduce GHG emissions to 15% below 2005 levels by 2020 and 30% below 2005 levels by 2035, as recommended by Assembly Bill 32 (AB 32).*	
Identified strategies for greenhouse gas mitigation efforts	High
Comment: *The CAP provides municipal measures and strategies for energy use reduction in the building, streetlight, waste, transportation, and land use sectors. Purchasing and education and outreach measures were also developed.*	
Identified strategies for adaptation to impacts	Medium
Comment: *The CAP has identified strategies for adaptation to impact and is a call for action that will help avert these worst case scenarios and ensure resiliency in the face of the impacts as water supplies, flood control measures and shorelines change.*	
Champions for climate action in local government departments	High
Comment: None provided	
Political support for implementing climate change adaptation strategies	Medium
Comment: *The San Pablo City Council showed its support for local, regional and state initiatives designed to address the major sources of pollution by passing Resolution 2009-063 which supports adaptation strategies for climate change.*	

Criterion	Jurisdiction Rating[a]
Financial resources devoted to climate change adaptation	Medium
Comment: *The City developed a reinvestment mechanism which accounts for budgetary constraints by developing a steady resource devoted to energy efficiency and other environmental programs. Energy Upgrade California, PG&E's residential rebates and the Contra Costa County Weatherization program provide residents with financial incentives to reduce their energy use. In 2011 implemented a 4-day work week and a lights-out policy at night at City facilities which significantly reduces the City's energy use (14%) while providing additional financial benefits. PG&E provides financial assistance to income-qualified renters and home- owners interested in pursuing energy efficiency programs through their Energy Savings Assistance Program.*	
Local authority over sectors likely to be negative impacted	Medium
Comment: *The local authority is limited. For example: the transportation sector, which makes up 60% of emissions, included traffic on local roads, major thoroughfares such as San Pablo Avenue and the portion of I-80 Freeway which runs through the city. San Pablo does not have authority over the I-80 Freeway, even though it runs through the city. Other sectors where the City has limited authority include solid waste, wastewater, and water.*	
Public Capacity	
Local residents knowledge of and understanding of climate risk	Medium
Comment: *Through a series of outreach measures (booths at events, online surveys, public meetings and presentations), staff collected feedback from the San Pablo community on GHG reduction priorities, proposed measures and implementation strategies.*	
Local residents support of adaptation efforts	Low
Comment: *From April 2010 through April 2012, the City administered a communitywide online survey distributed at citywide events, on the website, and included in the City's quarterly newsletter and the City Manger's weekly e-newsletter; held a community workshop to present progress on the CAP; surveyed participants at the 2012 Cinco de Mayo parade; received feedback from San Pablo residents at the Middle College Earth Day & Family Fun Day; and presented specific elements of the CAP at San Pablo's Senior Center. Overall, 128 citizens presented specific feedback on implementation strategies and timelines.*	
Local residents' capacity to adapt to climate impacts	Low
Comment: *Ease of implementation of the CAP will depend on active participation from residents and business owners and may require collaboration with community leaders and groups.*	
Local economy current capacity to adapt to climate impacts	Medium
Comment: *San Pablo has a diverse, yet limited economy due to its size (2.8 square miles). When comparing the relative strength of industries in San Pablo, and comparing these industries to data from larger geographical entities, San Pablo has competitive advantages in the transportation, warehousing, and utilities sector and the arts, recreation, and other services (gaming) sector.*	
Local ecosystems capacity to adapt to climate impacts	Medium
Comment: *As annual temperatures continue to rise, the Sierra Nevada snowpack will decrease, putting stress on California's water supply. Periods of drought and high temperatures will affect local ecosystems, lead to increases in wildfire and threaten at-risk members of the San Pablo community.*	

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

13.5 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

13.5.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the City of San Pablo made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- The General Plan, building code, and zoning ordinance incorporate information on hazard risk and guide development within the City of San Pablo.
- Ongoing public outreach and education is conducted on natural hazard risk, particularly for the flood hazard as part of the City's participation in the CRS program.
- Information on flood risk has been improved by conducting studies and surveys of "hot spots" to help develop City projects and improve efficiency in the storm drain maintenance plan.
- The City of San Pablo coordinates with other Public Utility Agencies to gain knowledge from each agency's projects and new system developments to better prepare in an event of a flood.
- The City has storm drain systems (pipes, ditches, swales, etc.) maintenance program designed to ensure maximum capacity and avoid flooding.
- The City is a participant in the regional San Pablo Ave. SMART corridors and I-80 Integrated Corridor Mobility (ICM) projects, managed by Alameda County Transportation Commission (CMA), would coordinate with the Caltrans staff at Regional Traffic Management Center (TMC) in the event of a disaster.
- City staff provides information to real estate agents and property owners regarding questions related flood, fire, earthquake, and landslide hazard zones.
- The City requires drainage plan review for property improvements and appropriate fees are collected.
- Information on sandbag locations is provided in the City newsletter to residents as well as the City website.
- The Police Department sponsors the formation and training of Community Emergency Response Teams and educates the community through the Police Citizens Academy.
- The City is covered under the Contra Costa County Community Warning System that is fully explained at the following website: http://www.co.contracosta.ca.us/index.aspx?nid=161
- Projects within the City of San Pablo are required, through the Planning review process and CEQA, to analyze potential environmental impacts and mitigate any impacts.
- The City ensures that erosion and stormwater control measures are in place for construction activities prior to and during wet weather.
- The City annually inspects and documents construction sites prior to the rainy season. Additionally, site visits are regularly conducted during the rainy season.
- Due to the geologic formation of the area, geotechnical reports are required for new home construction, most remodels, and new development projects.

Resources listed in Section 13.11 were used to provide information for this annex on hazard events and local capabilities within the jurisdiction.

13.5.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the City of San Pablo will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan in actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans

and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **City of San Pablo General Plan**—Future updated to the City's general plan pursuant to the requirements of CA SB379.
- **Community Rating System (CRS) program**—The City will request for this hazard mitigation plan under future CRS program verification audits and is committed to maintaining this plan pursuant to the plan maintenance strategy identified in Chapter 19 of Volume 1.
- **Climate Action Planning**—Future updates to the City's Climate Action Plan will look to the Hazard Mitigation plan for appropriate information on risk associated with natural hazards to inform climate action policies and programs.
- **Storm-Drain Network Development and Modeling Plan** —Upon its completion, grant eligible projects identified by this plan will be incorporated in to the hazard mitigation plan via the plan maintenance protocol identified in Chapter 19 of Volume 1.

13.6 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 13-11 lists past occurrences of natural hazards for which specific damage was recorded in the City of San Pablo. Other hazard events that broadly affected the entire planning area, including the City of San Pablo, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 13-11. Past Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Narrative
Severe Winter Storms, Flooding, Mudslides	DR-4308	4/1/2017	Like all Cities in the San Francisco Bay Area, San Pablo was impacted by events that triggered this disaster declaration.
Severe Winter Storms, Flooding, and Mudslides	DR-4305	3/16/2017	Like all Cities in the San Francisco Bay Area, San Pablo was impacted by events that triggered this disaster declaration.
Severe Storms, Flooding, and Mudslides	DR-4301	2/14/2017	Like all Cities in the San Francisco Bay Area, San Pablo was impacted by events that triggered this disaster declaration.
Drought	N/A	2012-2016	Like Most cities in the State of CA, San Pablo was impacted by the latest drought to impact the State from 2012-2016.
Landslide (William St./Hillcrest Road)	N/A	03/2011	Four families were displaced from their homes with no deaths or injuries. The San Pablo City Council declared it to be a local emergency.
Flood (Wildcat Creek and San Pablo Creek Area, 50-year storm)	N/A	12/2005	The San Pablo City Council declared a local emergency and received FEMA and NRCS grant money for creek bank repair.

13.7 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for the jurisdiction.

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 6
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: Unknown

Other noted vulnerabilities include the following:

- The North Hayward Fault Zone passes directly underneath the eastern portion of the City and is considered a high earthquake hazard as any large movements would cause ground shaking and surface rupture in the area.
- If a magnitude 7.5 earthquake occurred on the Hayward fault, a 2007 study predicts that the San Pablo Dam would slump and decrease in height, allowing water to flow over the top, resulting in flooding downstream. If such disaster occurs, 51 miles of roadway and almost all schools and government buildings in the city will be inundated, per East Bay Municipal Utility District (EBMUD) and EBMUD Summit Reservoir Replacement Project reports.
- Landslides in San Pablo are primarily located near the upland areas, along the creeks, and in the hillier northern part of the City. Sloping areas with greater than 30 degree gradient on both sides of San Pablo Dam Road east of the I-80 freeway are especially prone to land sliding.
- An estimated 9 percent of the population resides in special flood hazard areas; however almost 19 percent of the population is estimated to reside in the 0.2 percent-annual-chance flood hazard area. Flood insurance mandates generally only apply to the special flood hazard area.

13.8 HAZARD RISK RANKING

Table 13-12 presents a local ranking for the City of San Pablo of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 13-12. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake[b]	54	High
2	Dam and levee failure[a]	36	High
3	Severe weather	30	Medium
3	Landslide[e]	30	Medium
4	Flood[c]	18	Medium
5	Drought	9	Low
6	Wildfire[e, f]	6	Low
7	Sea level rise[d]	0	None
7	Tsunami	0	None

a. Based on the level of detail conducted in the risk assessment, the risk ranking for this hazard is focused solely on dam failure impacts. See Chapter 6.4 of Volume 1 for combined dam inundation list on which this assessment is based. Failure is assigned a medium probability of occurrence as a secondary impact from earthquake.
b. "Haywired" M7.05 event was used to assign probability and impacts
c. 1-percent annual chance event was used to assign probability and impacts
d. 2100 upper range estimates and extreme tide are used to assign probability and impacts
e. Very High and High severity zones were used to assign probability and impacts
f. There is no mapped risk within the city, but a score was given due to potential smoke impacts on people and the economy

13.9 STATUS OF PREVIOUS PLAN ACTIONS

Table 13-13 summarizes the actions that were recommended and provided with detailed implementation information, such as responsible agency and timeline for implementation, in the previous version of the hazard mitigation plan, and includes the implementation status of those actions at the time this update was prepared.

Table 13-13. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
Infra a-11 and a-12—Increase public safety, communication and power back-up.		✓		
Comment: This action is now covered by objective# 1, Increase resilience of infrastructure and critical facilities.				
Infra d-1, d-4, d-5, d-6, d-7, d-8, d-9, d-16 and d-17—Reduce flooding hazard and ensure the safety of potable drinking water.		✓		
Comment: This action is now covered by objectives #1 (Increase resilience of infrastructure and critical facilities) and #10 (Provide/Improve flood protection with flood control structures, and drainage maintenance plans)				
Heal a-1—Increased public safety during a seismic event.		✓		
Comment: This action is now covered by objective # 3; Inform the public on the risk from hazards of concern and increase awareness, preparation, mitigation, response, and recovery activities to promote public safety.				
Infr b-1—Maintain a primary emergency response route during a seismic event. Retrofit of seismically-deficient city- and county-owned bridges and road structures.		✓		
Comment: This action is now covered by objectives #1 (Increase resilience of infrastructure and critical facilities), #2 (Sustain reliable local emergency operations and facilities during and after a disaster) and #13 (Eliminate or minimize disruption of local government operations caused by known hazards).				
Infr a-10—Improved the visibility and safety of pedestrian path of travel to serve as an effective evacuation path in an event of an emergency. - Citywide Traffic Calming Measures (PW 507) – Traffic & street improvements. - 23rd Street Traffic Calming (PW 548) - Church Lane Bridge Widening at San Pablo Creek (HBRR, PW 341) - I-80/San Pablo Dam Rd. Interchange (PW 483)	✓			
Comment: The Public Works (PW) actions identified are considered to be complete as of this plan update process and will not be carried over to this plan.				

13.10 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 13-14 lists the actions that make up the City of San Pablo hazard mitigation action plan. Table 13-15 identifies the priority for each action. Table 13-16 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 13-14. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
SP-1— Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	Engineering, *Development Services	High	HMGP, PDM, FMA	Short-term
SP-2— Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including the City of San Pablo General Plan and Climate Action Plan.						
New and Existing	All Hazards	1, 4, 5, 7, 11, 12, 14, 17	Development Services	Low	Staff Time, General Funds	Ongoing
SP-3— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 16	All City departments	Low	Staff Time, General Funds	Short-term
SP-4—Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: • Enforce the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts.						
New and Existing	Flood	3, 5, 6, 9, 10, 11, 15	Development Services - Building /Public Works	Low	Staff Time, General Funds	Ongoing
SP-5—Through the ongoing implementation of the City's 4-year work plan that is part of its Capital Improvements Program (CIP), identify feasible and cost-effective projects that are eligible for funding under FEMA's Hazard Mitigation Assistance (HMA) suite of grant programs and pursue funding for those projects.						
New and Existing	All Hazards	1,7,10,13,15	Public Works-Engineering	High	FEMA HMA Grant Funding, CIP for local match	Short-term
SP-6—Develop a Debris management plan for all hazards of concern that will easily integrate in to future updates to the hazard mitigation plan.						
Existing	All Hazards	2,6,13,17,18	Development Services/Public Works	Medium	General Funds, HMA grants, EPA Grants	Short-term
SP-7— Acquire the current Corporation Year that is both seismically vulnerable and subject to flooding and dam failure inundation, and restore the vacated parcel to a connected open space use.						
Existing	Dam Failure, Flood and Earthquake	1,2,15,17	Public Works, Development Services	High	FEMA HMA grants, General funds for local match.	Long-term
SP-8— Complete the Storm-Drain Network Development and Modeling Plan which will include a drainage system needs assessment. Once the needs have been identified, package projects that would be eligible for FEMA grant funding and prioritize projects for the pursuit of FEMA HMA grant funding when those opportunities arise. These projects would be above and beyond those targeted under action SP-5.						
New and Existing	Urban drainage –Flood	1,7,10,13,15	Public Works-Engineering	High	FEMA HMA Grant Funding, CIP for local match	Short-term
SP-9—Update the City's Comprehensive Emergency Management Plan (CEMP) such that it is consistent with the risk assessment of the hazard mitigation plan						
New and Existing	All hazards	2,6,13,16	Police Department	Medium	EMPG, Bay Area UWASI, General Funds	Short-term

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
SP-10— Strengthen the City zoning ordinance to manage landslide risk with the creation of a Hillside Zoning Overlay District that would include standards/policies to reduce vulnerability from landslides/earth movement.						
New	Landslide	3,4,5,6,7,11, 12	Development Services	Low	General Funds	Short-term
SP-11—Geographic Information System (GIS) data consolidation initiative. Integrate a consolidated GIS data package that includes the best available data and science on risk from natural hazards into all city departments GIS capabilities. This initiative could be expanded to a county-wide initiative leveraging the partnership created through the development of this multi-jurisdictional hazard mitigation plan.						
New and Existing	All Hazards	3,6,12,16	Information Technology Division	Medium	HMGP (possible 5% initiative), General Funds	Short-term
SP-12—Prepare and conduct a disaster planning for small business workshop utilizing the information on risk and vulnerability contained in this plan.						
New and Existing	All Hazards	3,6,16	Public Works-Engineering	Low	General Funds	Short-term
SP 13—Consider the acquisition and use of drone technology with Light Imaging Detection and Ranging (LiDAR) capability to monitor hillside geomorphology during the wet weather season to monitor landslide conditions.						
New and Existing	Landslide	3,6,12,16	Public Works-Engineering	High	HMGP (possible 5% initiative), General Funds	Long-term
SP-14—Consider the deployment of a data backup initiative such as “Rack Space” to backup and store critical data offsite.						
New and Existing	All Hazards	3,6,12,16	Information Technology Division	Medium	HMGP (possible 5% initiative), General Funds	Short-term
SP-15—Develop Disaster Documentation Program: to include tracking disasters affecting San Pablo, and tracking via photos, high water marks or other perishable data and damage incurred during and after disaster events. This data can be used for tracking and trending, and ultimately mitigation planning.						
New	All Hazards	3,6,12,16	All City Departments	Low	General Funds	Short-term
SP-16—Continue the City’s participation in the Community Rating System (CRS) program						
New and Existing	Flood	3, 5, 6, 9, 10, 11, 15	Building Department/Public Works	Low	Staff Time, General Funds	Ongoing
SP-17—Where appropriate, install green infrastructures (bio-swales) within the public right of way and City owned parcels that are adjacent to vulnerable water courses to filter and reduce storm drain runoff to prevent creek bank erosion and flooding.						
New and Existing	Flood	9, 17, 18	Public Works	Low	California Natural Resources Agency, EPA, HMGP (possible 5% initiative), General Fund.	Long-term
SP-18—Develop or expand open space uses (such as pedestrian trails) adjacent to vulnerable water courses where feasible and cost-effective.						
New and Existing	Flood	5, 9, 17	Public Works	Low	HMGP (possible 5% initiative), General Fund	Long-term
SP-19— Identify and track capital project needs that have not been identified through the City’s current capital improvement program for possible grant funding, based on damage following hazard events.						
New and Existing	All Hazards	1, 15	Public Works	Medium	HMGP (possible 5% initiative), General Fund	Long-term

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 13-15. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
SP-1	8	High	High	Yes	Yes	No	Medium	High
SP-2	8	Medium	Low	Yes	No	Yes	High	Low
SP-3	3	Low	Low	Yes	No	Yes	High	Low
SP-4	7	Medium	Low	Yes	No	Yes	High	Low
SP-5	5	High	High	Yes	Yes	Yes	High	High
SP-6	5	Medium	Medium	Yes	Yes	No	Medium	High
SP-7	4	High	High	Yes	Yes	No	Medium	High
SP-8	5	High	High	Yes	Yes	No	Medium	High
SP-9	4	Medium	Medium	Yes	Yes	Yes	High	High
SP-10	7	Medium	Low	Yes	No	Yes	High	N/A
SP-11	4	Medium	Medium	Yes	Maybe	No	Medium	Medium
SP-12	3	Medium	Low	Yes	No	Yes	High	N/A
SP-13	4	High	High	Yes	Maybe	No	Medium	Medium
SP-14	4	Medium	Medium	Yes	Maybe	No	Medium	Medium
SP-15	4	Medium	Low	Yes	No	Yes	High	N/A
SP-16	7	Medium	Low	Yes	No	Yes	High	N/A
SP-17	3	Medium	Low	Yes	Yes	Yes	High	High
SP-18	3	Medium	Low	Yes	Yes	Yes	High	High
SP-19	2	Medium	Medium	Yes	Yes	No	Medium	High

a. See the introduction to this volume for explanation of priorities.

Table 13-16. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	SP-2, SP-3, SP-6, SP-11, SP-14, SP-15	SP-1, SP-19	SP-11, SP-12, SP-15	SP-6	SP-6, SP-9	SP-5, SP-19		SP-6, SP-11, SP-12, SP-14, SP-15
Dam and Levee failure		SP-7		SP-7			SP-7	
Drought								
Earthquake		SP-7		SP-7			SP-7	
Flood	SP-4, SP-16, SP-18	SP-4, SP-7, SP-16	SP-4, SP-16	SP-7, SP-16, SP-17, SP-18	SP-16	SP-8, SP-16	SP-4, SP-7, SP-16, SP-17	SP-16
Landslide	SP-10, SP-13						SP-10	
Severe weather								
Tsunami	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wildfire								

a. See the introduction to this volume for explanation of mitigation types.

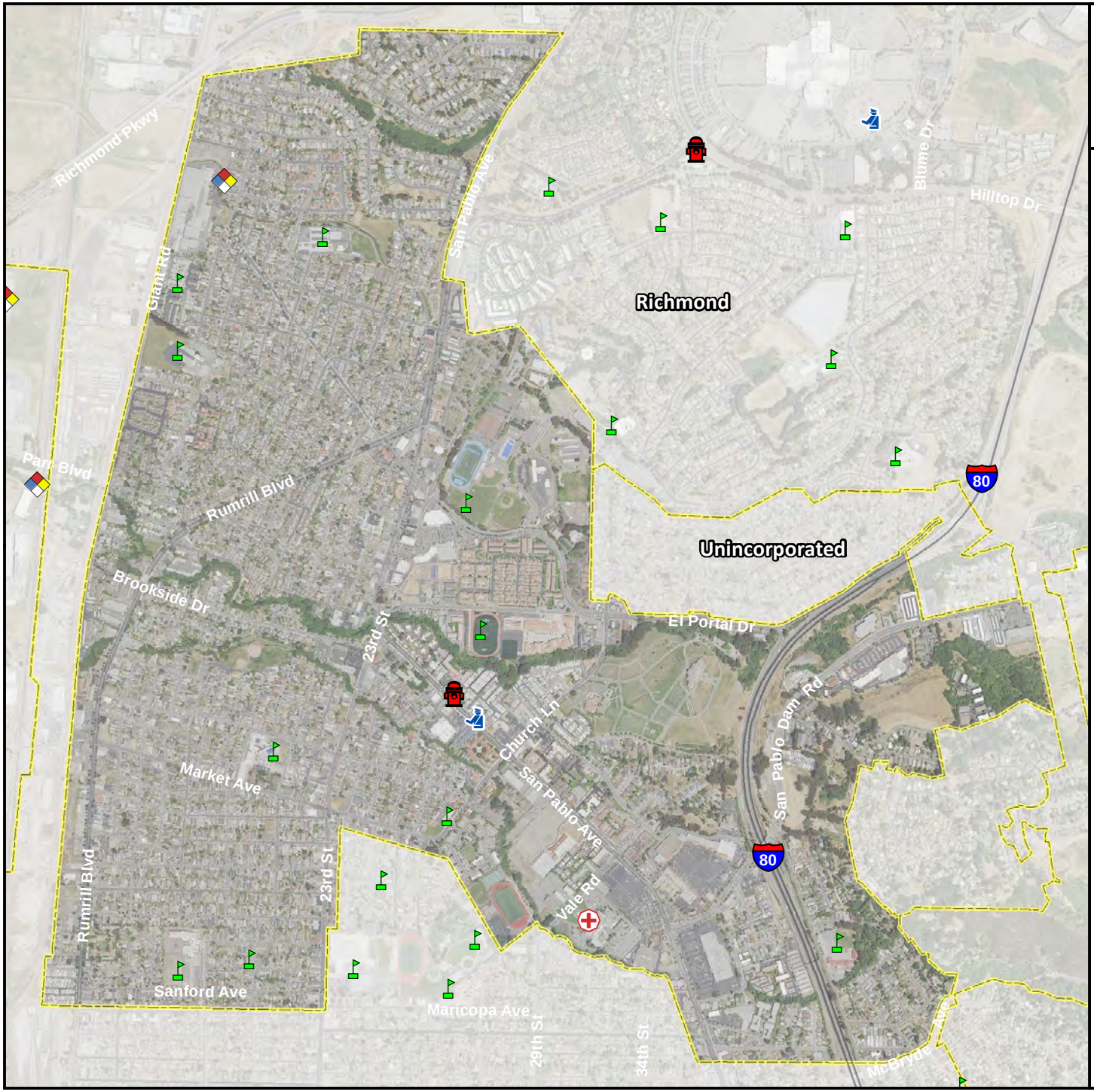
13.11 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **City of San Pablo Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of San Pablo Flood Damage Prevention Ordinance**—The flood damage prevention ordinance was reviewed for compliance with the National Flood Insurance Program.
- **Flood Manual Plan—**The Annual Flood Management Plan and Stormwater Drainage Ordinance (Municipal Code Chapter 13.04) was reviewed for compliance with the National Flood Insurance Program.
- **San Pablo General Plan 2030 Volume I: General Plan Policies**—The General Plan, including the Housing, Land Use and Physical Design, Circulation, Conservation, Economic Development, Open Space and Conservation, and Safety and Noise Elements were reviewed for information regarding goals and policies consistent with hazard mitigation for carry over as goals and objectives.
- **Capital Improvement Plan**—The Capital Improvement Plan was reviewed to identify cross-planning initiatives for inclusion as mitigation projects.

  - Yuba Ave. Drainage Diversion Project (YUB-DRN)
  - Replace Drain Pipe Under Hillcrest Road (HIL-DRN)
  - Subdrain Inspection/Cleaning by Princeton Plaza (PPZ-SDR)
  - Monitor/Replace Hydraugers by Princeton Plaza (PPZ-HYD)
  - Randy Lane Drainage Relocation (RLN-DRN)

- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.



The City of San Pablo

Critical Facilities

- Emergency Operations Centers (Government)
- Fire Stations (Protective Functions)
- Hazardous Materials
- Medical Facilities
- Police Stations (Protective Functions)
- Schools & Educational Facilities
- Contra Costa County Boundary
- City Boundaries

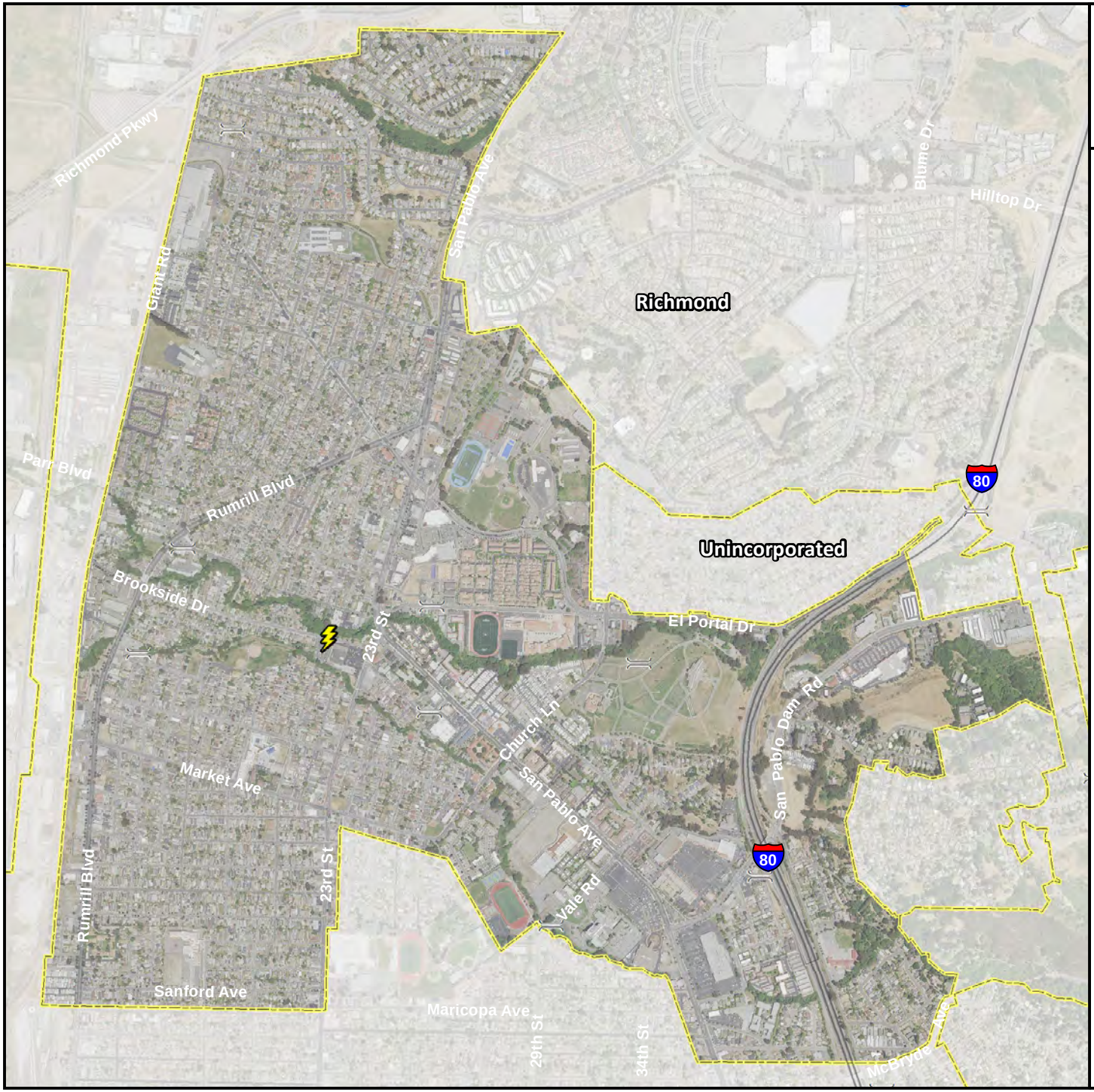
0 0.15 0.3 0.6

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of San Pablo

Critical Infrastructure

- Airports (Other Critical Functions)
- Bus Facilities (Other Infrastructure)
- Communication Facilities
- Electric Power Facilities
- Highway Bridges
- Highway Tunnels (Other Infrastructure)
- Light Rail (Other Infrastructure)
- Natural Gas (Other Infrastructure)
- Port Facilities (Other Critical Functions)
- Water Supply Facilities
- Rail Facilities (Other Infrastructure)
- Wastewater Facilities
- Contra Costa County Boundary
- City Boundaries

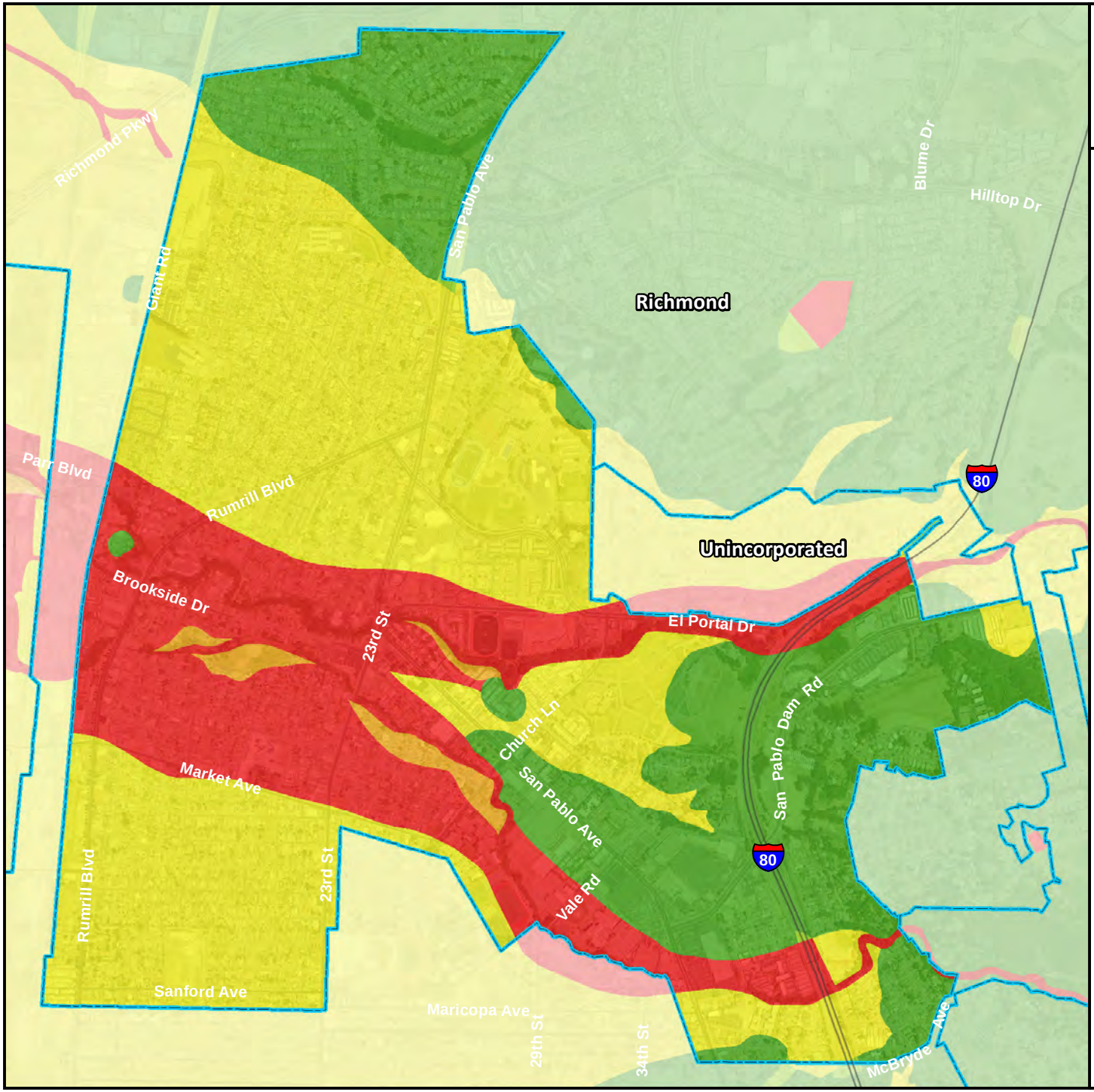
0 0.15 0.3 0.6

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of San Pablo

Liquefaction Susceptibility

Contra Costa County Boundary
City Boundaries
Water Bodies

Susceptibility to Liquefaction

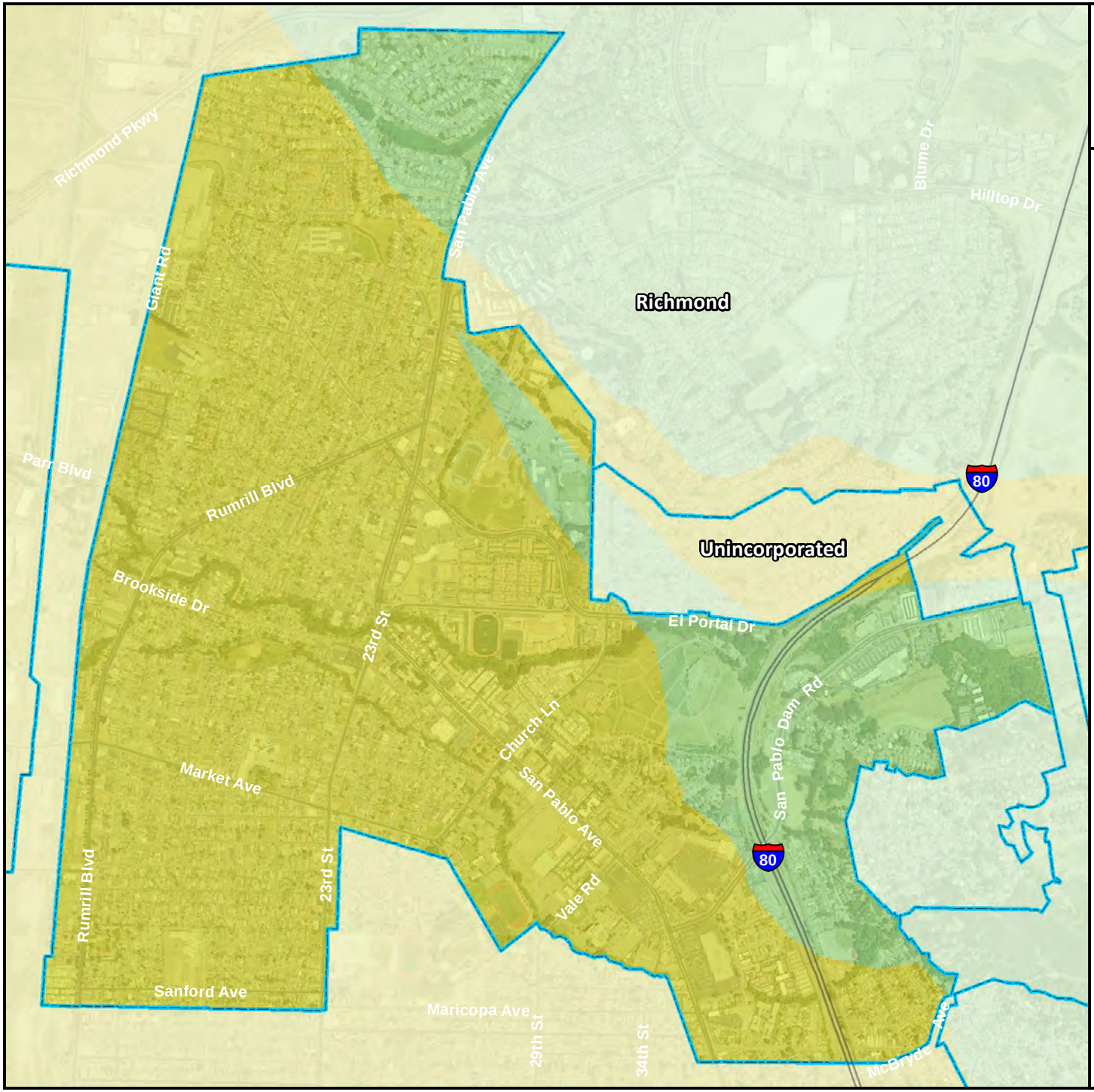
Very Low
Low
Medium
High
Very High
No Liquefaction Data Available

0 0.15 0.3 0.6
Miles

N
W E
S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The City of San Pablo

National Earthquake Hazard Reduction Program (NEHRP) Soil Class

Contra Costa County Boundary

City Boundaries

Water Bodies

NEHRP Site Class / Soil Profile

B / Rock

C / Very Dense Soil - Soft Rock

D / Stiff Soil

E / Soft Soil

No Soil Data Available

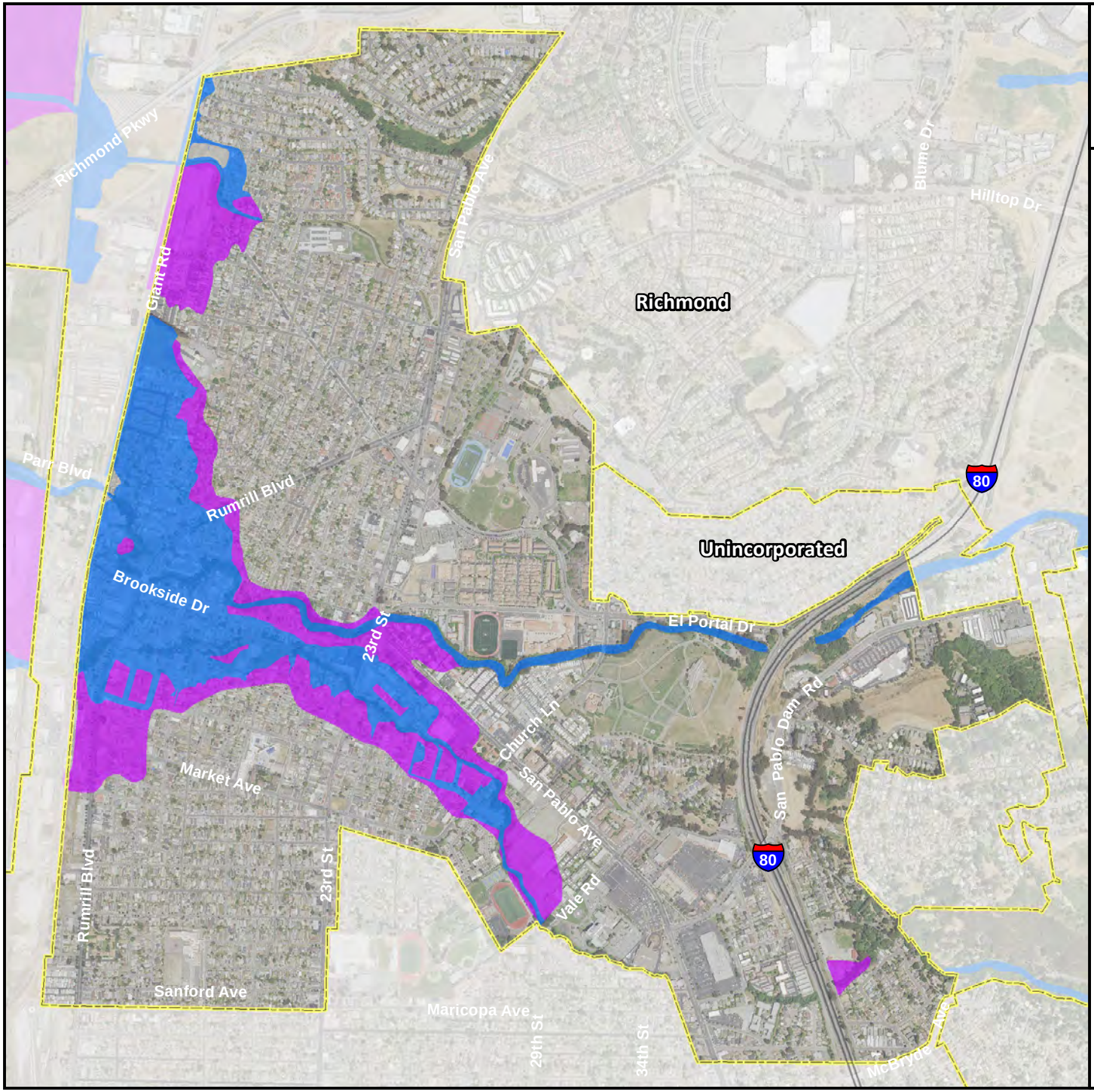
0 0.15 0.3 0.6

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Department of Conservation, USDA



The City of San Pablo

FEMA DFIRM Flood Hazard Areas

- 1% Annual Chance (100-Year) Flood Zone
- 0.2% Annual Chance (500-Year) Flood Zone
- Contra Costa County Boundary
- City Boundaries
- Water Bodies

Flood hazard areas as depicted on Effective FEMA Digital Flood Insurance Rate Maps (DFIRM)

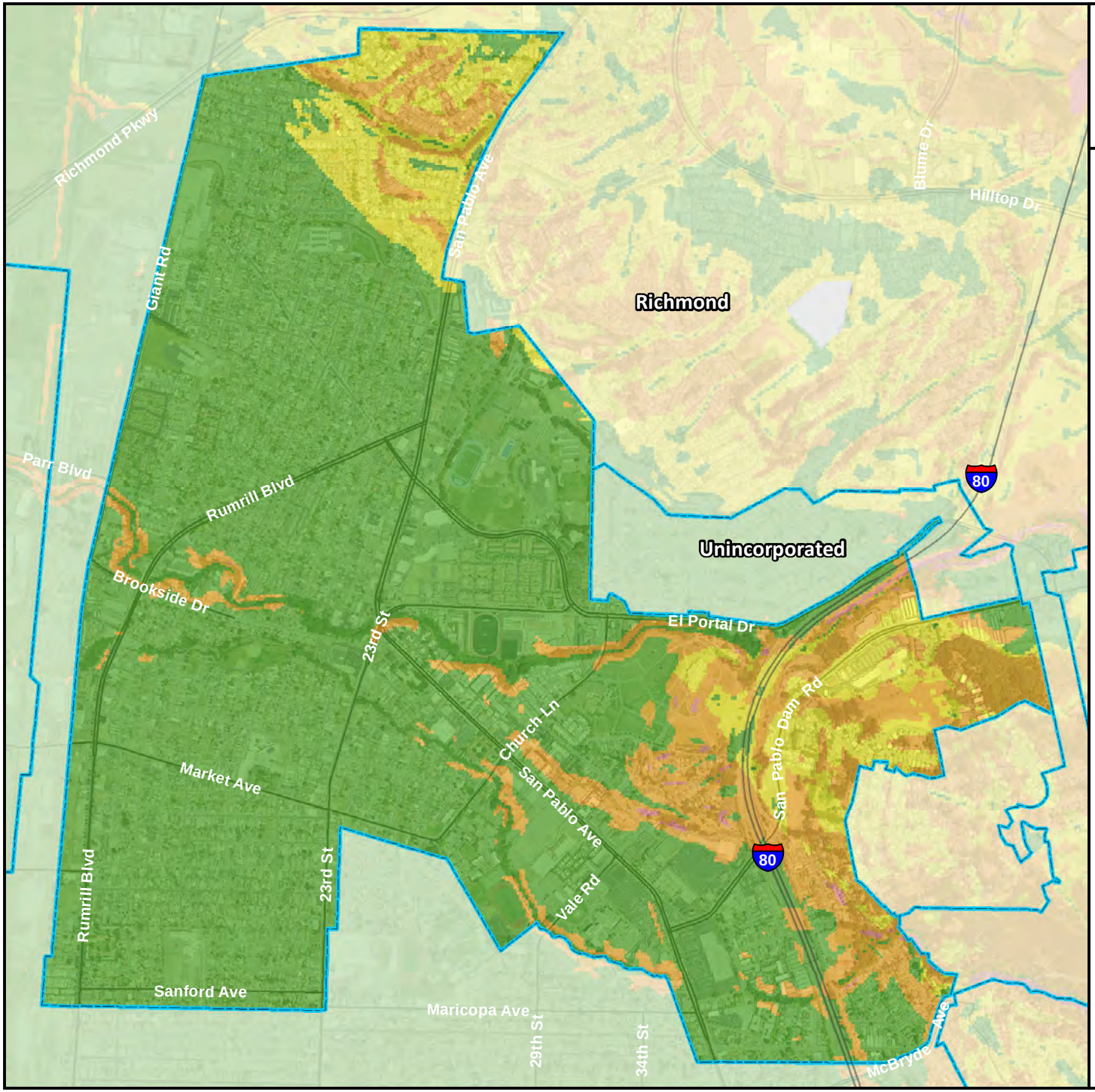
0 0.15 0.3 0.6

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, FEMA, USDA



The City of San Pablo

Landslide Susceptibility Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Type

Low

Moderate

High

Very High / Existing

Data Not Available

Source dataset created by Wills C.J., Perez, F., Gutierrez, C., 2011, Susceptibility to deep-seated landslides in California: California Geological Survey Map Sheet 58

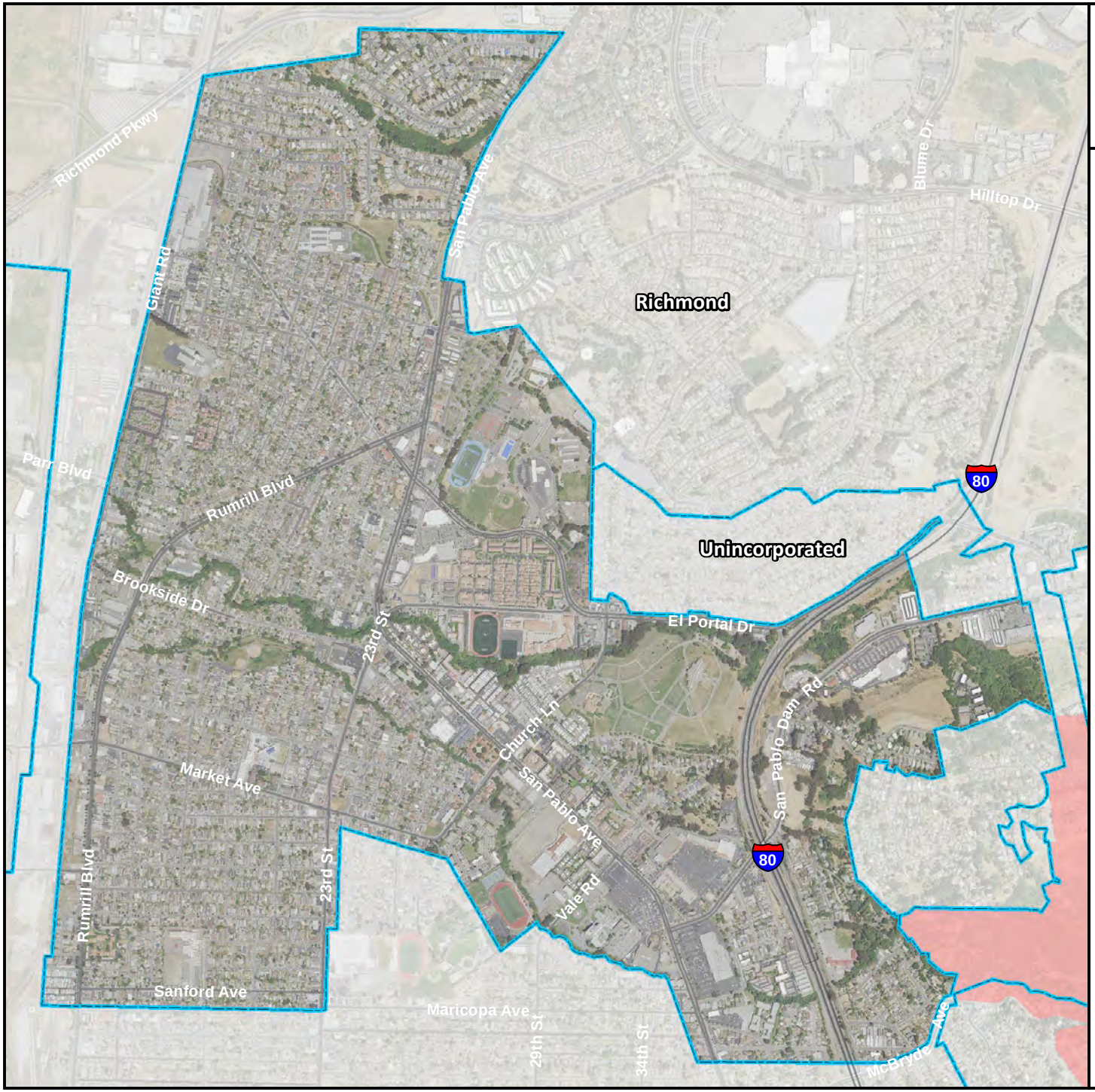
0 0.15 0.3 0.6

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The City of San Pablo

Wildfire Severity Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Wildfire Severity Zone

Moderate

High

Very High

0 0.15 0.3 0.6

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, CalFIRE, USDA

14. CITY OF SAN RAMON

14.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Steven Spedowfski, Senior Analyst
2401 Crow Canyon Road
San Ramon, CA 94583
Telephone: 925-973-2653
e-mail Address: spedowfski@sanramon.ca.gov

Alternate Point of Contact

Robin Bartlett, Division Manager
2401 Crow Canyon Road
San Ramon, CA 94583
Telephone: 925-973-2683
e-mail Address: rbartlett@sanramon.ca.gov

14.2 JURISDICTION PROFILE

- **Date of Incorporation**—1983
- **Current Population**—80,550 as of January 1, 2017 (California Department of Finance)
- **Population Growth**—San Ramon is expected to increase to about 94,000 people by 2035.
- **Location and Description**—San Ramon is in southern Contra Costa County, surrounded by the municipalities of Danville and Dublin and the unincorporated areas of Alameda and Contra Costa counties. Primarily undeveloped hillsides rising to over 1,000 feet in elevation lie to the west of the City. To the east lie the Dougherty Hills. The primary transportation corridor is I-680 along the San Ramon Valley floor, linking San Ramon to Central Contra Costa County to the north and Silicon Valley and San Jose to the south.
- **Brief History**—San Ramon is a young city, incorporated in 1983, one of California's outstanding urban villages. It has a variety of homes, parks and stores and a major employment center, Bishop Ranch Business Park. It was once home to the Seunen Indians, Ohlone/Costanoans who lived adjacent to the valley creeks. After 1797 it was Mission San Jose grazing land; later it included Jose Maria Amador's 16,000-acre Rancho San Ramon. San Ramon Creek was named after an Indian vaquero, Ramon, who tended mission sheep here. In an 1855 land title case, Don Amador explained that "San" was added to the creek's name to conform with Spanish custom. American settlers first came to San Ramon in 1850 when Leo and Mary Jane Norris purchased 4,450 acres of land from Amador.

  During the 1860s, the village became a hub of community activity. In 1864 a stage line established by Brown and Co. ran from San Ramon through the valley to Oakland. A church was dedicated in 1860, the general store was built in 1863 and students left their home-based classrooms to attend the San Ramon Grammar School beginning in 1867.

  With the arrival of the San Ramon Branch Line of the Southern Pacific in 1891, other changes took place. The name "San Ramon" permanently replaced references to "Limerick." Crops and passengers could travel in and out of the area, no matter what the weather. Until 1909, San Ramon was the terminus for the line and boasted a two-story depot, the engine house and a turnaround for the locomotive.

In 1895 attorney Thomas Bishop acquired 3,000 acres of Norris land (after a divorce case in which Bishop's law firm represented Margaret Norris). The Bishop Ranch raised cattle and sheep and was planted to hay, grain, diversified fruit crops and walnuts.

As with the entire Tri-Valley, agriculture was the basis for San Ramon's economy until suburban development began. In 1966, the new Interstate-680 freeway was completed through San Ramon to Dublin. In 1970, Western Electric purchased 1,733 acres of the Bishop Ranch and proposed a "new town" complete with a variety of housing, green belts, stores and light industry, placed in the center of San Ramon. Eventually part of the land became new homes and, in 1978, 585 acres became today's Bishop Ranch Business Park, a premier modern office development.

In 1983 San Ramon voters overwhelmingly voted to incorporate as a city and took control over development, police, parks and other services. A new library, community center, parks and hospital testify to the new city's energy.

- **Climate—**San Ramon's climate is warm during summer when temperatures tend to be in the mid-80s and cold during winter when temperatures tend to be in the 50s. Temperature variations between night and day tend to be moderate during summer and limited during winter. The annual average precipitation at San Ramon is 14 inches. Winter tends to be wetter than summer. The wettest month of the year is January, with an average rainfall of 2.7 inches.
- **Governing Body Format**—The City Council is the elected policy-making body for the City of San Ramon. It is comprised of four Councilmembers elected at-large who serve four-year overlapping terms and an elected Mayor who serves for a two-year term. The City Council appoints the City Manager and the City Attorney. The City Council assumes responsibility for adoption of this plan, the City Manager will oversee its implementation.

14.3 DEVELOPMENT TRENDS

San Ramon's population is anticipated to increase to about 94,000 people by the year 2035. Employment is also anticipated to increase to about 57,650 jobs by 2035. Much of this population and employment growth is anticipated through build-out of Dougherty Valley under the terms of a settlement agreement, completion of the City Center project, and implementation of the North Camino Ramon and Crow Canyon Specific Plans.

Table 14-1 summarizes development trends in the performance period since development of the previous hazard mitigation plan and expected future development trends.

14.4 CAPABILITY ASSESSMENT

The City of San Ramon performed an inventory and analysis of existing capabilities, plans, programs and policies that enhance its ability to implement mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of legal and regulatory capabilities is presented in Table 14-2.
- Development and permitting capabilities are presented in Table 14-3.
- An assessment of fiscal capabilities is presented in Table 14-4.
- An assessment of administrative and technical capabilities is presented in Table 14-5.
- An assessment of education and outreach capabilities is presented in Table 14-6.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 14-7.
- Classifications under various community mitigation programs are presented in Table 14-8.
- The community's adaptive capacity for the impacts of climate change is presented in Table 14-9.

Table 14-1. Recent and Expected Future Development Trends

Criterion	Response					
Has your jurisdiction annexed any land since the development of the previous hazard mitigation plan? • If yes, give the estimated area annexed and estimated number of parcels or structures.	Yes 1,000 Parcels					
Is your jurisdiction expected to annex any areas during the performance period of this plan?	Yes Per the Dougherty Valley Settlement agreement, the City will continue to annex development in Dougherty Valley. Approximately 3,000 homes are yet to be built.					
Are any areas targeted for development or major redevelopment in the next five years? • If yes, please briefly describe	Yes Various Specific Plan Areas (City Center, North Camino Ramon, Crow Canyon)					
How many new construction building permits were issued in your jurisdiction since the development of the previous hazard mitigation plan?		2012	2013	2014	2015	2016
	Single Family	0	0	0	0	1
	Multi-Family	0	0	39	77	48
	Other (commercial, mixed use, etc.)	0	0	0	1	3
Please provide the number of permits for each hazard area or provide a qualitative description of where development has occurred.	• Special Flood Hazard Areas: 0 • Landslide: 0 • High Liquefaction Areas: 0 • Dam Failure Inundation Area: 0 • Wildfire Risk Areas: 0					

Table 14-2. Legal and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code *Comment: California Building Code (2013)*	Yes	No	Yes	Yes
Zoning Code *Comment: SRMC Title D (2015)*	Yes	No	Yes	No
Subdivisions *Comment: SRMC Title C Div. C5 (10/28/2008)*	Yes	No	No	No
Stormwater Management *Comment: SRMC Title B Div. B6 (2014)*	Yes	No	No	Yes
Post-Disaster Recovery *Comment: None Located*	No	No	No	No
Real Estate Disclosure *Comment: Cal. Civ. Code §1102 et seq.*	No	No	Yes	No
Growth Management *Comment: San Ramon General Plan 2020; Cal. Gov. Code §65300 et seq.*	Yes	No	Yes	Yes
Site Plan Review *Comment: SRMC Title D*	Yes	No	Yes	No
Environmental Protection *Comment: Through CEQA Review*	Yes	No	Yes	Yes
Flood Damage Prevention *Comment: Floodplain Management Program SRMC Title C Div. C4 (2009)*	Yes	No	Yes	Yes

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Emergency Management *Comment: Emergency Operations Plan (see description below)*	Yes	No	Yes	Yes
Climate Change *Comment: California SB-379: Land Use: General Plan: Safety Element*	Yes	No	Yes	Yes
Other: *Comment: None identified*	N/A	N/A	N/A	N/A
Planning Documents				
General Plan *Is the plan compliant with Assembly Bill 2140?* Yes *Comment: San Ramon General Plan 2035 Adopted 4/28/2015*	Yes	No	Yes	Yes
Capital Improvement Plan *How often is the plan updated?* Annually *Comment: SR 5-year CIP (2017-2021)*	Yes	No	No	Yes
Floodplain or Watershed Plan *Comment: N/A*	No	No	No	No
Stormwater Plan *Comment: N/A*	No	No	No	No
Urban Water Management Plan *Comment: N/A*	No	No	No	No
Habitat Conservation Plan *Comment: N/A*	No	No	No	No
Economic Development Plan *Comment: San Ramon General Plan 2020*	Yes	No	Yes	Yes
Shoreline Management Plan *Comment: N/A*	No	No	No	No
Community Wildfire Protection Plan *Comment: N/A*	No	No	No	No
Forest Management Plan *Comment: N/A*	No	No	No	No
Climate Action Plan *Comment: Council Resolution 2011-094*	Yes	No	Yes	Yes
Comprehensive Emergency Management Plan *Comment: Emergency Operations Plan, Contra Costa OES*	Yes	Yes	Yes	Yes
Threat & Hazard Identification & Risk Assessment (THIRA) *Comment: N/A*	No	No	No	No
Post-Disaster Recovery Plan *Comment: N/A*	No	No	No	No
Continuity of Operations Plan *Comment: N/A*	No	No	No	No
Public Health Plan *Comment: N/A*	No	No	No	No
Other: *Comment: N/A*	N/A	N/A	N/A	N/A

Table 14-3. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? • If no, who does? If yes, which department?	Yes N/A
Does your jurisdiction have the ability to track permits by hazard area?	Yes
Does your jurisdiction have a buildable lands inventory? • If yes, please briefly describe. • If no, please quantitatively describe the level of buildout in the jurisdiction.	No N/A Approximate buildout population of 100K based on General Plan

Table 14-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	N/A

Table 14-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Engineering Department and Community Development staff
Engineers or professionals trained in building or infrastructure construction practices	Yes	Engineering Department and Community Development staff
Planners or engineers with an understanding of natural hazards	Yes	Engineering Department and Community Development staff
Staff with training in benefit/cost analysis	Yes	Administrative Services Department
Surveyors	Yes	Available through contract when necessary
Personnel skilled or trained in GIS applications	Yes	Engineering Department Senior Analyst
Scientist familiar with natural hazards in local area	Yes	Available through contract when necessary
Emergency Manager	Yes	San Ramon Police Department, Emergency Preparedness Manager
Grant writers	Yes	Available through contract when necessary
Other	N/A	N/A

Table 14-6. Education and Outreach Capability

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe.	Yes Floodplain awareness, emergency preparedness
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe.	Yes Floodplain awareness
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly describe.	No N/A
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe.	Yes Social media outreach, public meetings
Do you have any established warning systems for hazard events? • If yes, please briefly describe.	Yes AM radio station and social media

Table 14-7. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Public Works Engineering
Who is your floodplain administrator? (department/position)	District Engineering Division Manager
Are any certified floodplain managers on staff in your jurisdiction?	Yes
What is the date that your flood damage prevention ordinance was last amended?	2009
Does your floodplain management program meet or exceed minimum requirements? • If exceeds, in what ways?	Exceeds Freeboard requirement, all development restricted in floodplain
When was the most recent Community Assistance Visit or Community Assistance Contact?	2016
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? • If so, please state what they are.	No N/A
Do your flood hazard maps adequately address the flood risk within your jurisdiction? • If no, please state why.	Yes N/A
Does your floodplain management staff need any assistance or training to support its floodplain management program? • If so, what type of assistance/training is needed?	No N/A
Does your jurisdiction participate in the Community Rating System (CRS)? • If yes, is your jurisdiction interested in improving CRS Classification? • Is your jurisdiction interested in joining the CRS program?	Yes Yes N/A
How many Flood Insurance policies are in force in your jurisdiction?[a] • What is the insurance in force? • What is the premium in force?	111 $30,141,100 $80,633
How many total loss claims have been filed in your jurisdiction?[a] • How many claims were closed without payment/are still open? • What were the total payments for losses?	11 5/0 $168,890

a. According to FEMA statistics as of December 31, 2016

Table 14-8. Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	Yes	6	05/1/11
Building Code Effectiveness Grading Schedule	Yes	2	7/7/2009
Public Protection	No	N/A	N/A
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A

Table 14-9. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: None provided*	Low
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: None provided*	Low
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: None provided*	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: None provided*	Low
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: None provided*	Low
Participation in regional groups addressing climate risks *Comments/Additional Information: None provided*	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: None provided*	Medium
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: None provided*	Medium
Identified strategies for adaptation to impacts *Comments/Additional Information: None provided*	Medium
Champions for climate action in local government departments *Comments/Additional Information: None provided*	Medium
Political support for implementing climate change adaptation strategies *Comments/Additional Information: None provided*	Low
Financial resources devoted to climate change adaptation *Comments/Additional Information: None provided*	Low
Local authority over sectors likely to be negative impacted *Comments/Additional Information: None provided*	Medium
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: None provided*	Low
Local residents support of adaptation efforts *Comments/Additional Information: None provided*	Low
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low

Criterion	Jurisdiction Rating[a]
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

14.5 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

14.5.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the City of San Ramon made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **Flood Control Program—**The City of San Ramon assists all property owners by participating in the Federal Emergency Management Agency's (FEMA's) Community Rating System (CRS) program. The CRS program is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum National Flood Insurance Program (NFIP) requirements. As a result of the City's participation in this program, private property owners benefit with a discount on their private property flood insurance premiums. As part of this program, each year Engineering staff sends notices to flood zone property owners located within areas designated as Special Flood Hazard Areas (SFHA's). These areas are designated by FEMA through a Flood Insurance Study (FIS) and mapped on a Flood Rate Insurance Map (FIRM).
- **Emergency Operation Plan—**In 2006, the San Ramon City Council adopted its Emergency Operations Plan. In 2009, an update to the plan was completed. The Emergency Operations Plan identifies the actions to take when an event occurs due to a major earthquake, hazardous materials incident, flood, national security emergency, wildfire, landslide, or dam failure. The hazard mitigation plan is integrated in this plan by reference.

  The City's plan is in compliance with state and federal laws. The objectives of the plan are to reduce injury and loss of life, property and natural resource through effective management of emergency resources. The Emergency Operations Plan identifies the City's emergency planning, organizational, and response policies and procedures, integrating and coordinating these with other governmental levels when required. The Emergency Operations Plan institutes the Incident Command System, the Standardized Emergency Management System, and the National Incident Management System, which provide a common system that is recognized throughout California as a basis for managing large emergency incidents that could involve multiple agencies.

  The City's response to disasters is based on four phases: increased readiness; initial response operations; extended response operations; and recovery operations. All supporting departmental plans support the Emergency Operations Plan and inform staff of the procedures for recalling departmental personnel,

disaster assignments, and departmental resource lists. Response to emergency situations follows the Incident Command System, ensuring unified command by all emergency response teams. Depending on the incident, the most appropriate agency will be the lead agency and will be supported by the other emergency response teams.

- **Ongoing Activities**—The City conducts many routine operations that incorporate mitigation goals and objectives. Such activities are listed in the status of previous actions table below and described as ongoing activities.

14.5.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the City of San Ramon will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan in actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **General Plan Updates—**Although elements of the General Plan support some of the goals listed in this plan through the Land Use and Safety sections, Local Hazard Mitigation is not defined specifically. Staff will evaluate current language and assess integration opportunities during future General Plan updates.
- **Climate Action Plan—**The Climate Action Plan will also be reviewed for integration opportunities. Areas outlined in the Climate Action Plan that address land use and development guidelines can help reduce risk.

14.6 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 14-10 lists past occurrences of natural hazards for which specific damage was recorded in the City of San Ramon. Other hazard events that broadly affected the entire planning area, including the City of San Ramon, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

14.7 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for the jurisdiction.

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 1
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: Unknown

Table 14-10. Past Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Severe Storm	DR CA 4305 and 4308	2017	$274,000
Wind	NA	2015	Estimated < $50,000
Severe Storm/Wind	NA	2012	Estimated < $50,000
Wind	NA	2011	Estimated < $50,000
Landslide - Canyon Lakes	NA	2008	$100,000
Wind	NA	2008	Estimated < $50,000
Frost Damage	NA	2007	Estimated < $50,000
Landslide - Thomas Ranch	NA	2006	$650,000
Landslide - Westside	NA	2005	$200,000
Landslide - Barbados	NA	2004	$100,000
Flood - Sunnyglen	NA	2003	$320,000
Frost Damage/Wind	NA	2002	Estimated < $50,000
Landslide - Old Ranch Road	NA	2001	$40,000
Wind	NA	2001	Estimated < $50,000
Landslide - Alta Mesa	NA	2000	$850,000
Heat/Wind	NA	2000	Estimated < $50,000
Landslide - Fountainhead	NA	1999	$60,000
Wind	NA	1999	Estimated < $50,000
Landslide - Cree Court	NA	1998	$1,660,000
Wind	NA	1998	Estimated < $50,000
Severe Storm/Wind	NA	1995	Estimated < $50,000
Frost Damage	NA	1994	Estimated < $50,000
Wind	NA	1993	Estimated < $50,000
Heat/Wind/Frost Damage	NA	1992	Estimated < $50,000
Frost Damage	NA	1990	Estimated < $50,000
Frost Damage	NA	1989	Estimated < $50,000
Wind	NA	1988	Estimated < $50,000
Wind	NA	1987	Estimated < $50,000
Severe Storm/Wind	NA	1983	Estimated < $50,000
Wind	NA	1982	Estimated < $50,000
Frost Damage	NA	1981	Estimated < $50,000
Severe Storm	NA	1980	Estimated < $50,000

Other noted vulnerabilities:

- Over the past 10 years, the City has experienced approximately $624,000 in severe storm damage.
- The City's drainage system continues to age causing a rise in capital projects in order to maintain flood control efforts.
- The drainage infrastructure inventory needs to be updated/completed in order to address localized flooding during severe storms.
- Various slopes need to be evaluated for preventative erosion protection and/or repair activities in areas that threaten public infrastructure and private property.
- Slopes and hillsides need monitoring in order to determine if preventative measures should be installed to minimize the risk of landslides during storm events.

14.8 HAZARD RISK RANKING

Table 14-11 presents a local ranking for the City of San Ramon of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 14-11. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake[b]	54	High
2	Landslide[e]	54	High
3	Severe weather	30	Medium
4	Flood[c]	18	Medium
5	Wildfire[e]	14	Medium
6	Drought	9	Low
7	Dam and levee failure[a]	0	None
7	Sea level rise[d]	0	None
7	Tsunami	0	None

a. Based on the level of detail conducted in the risk assessment, the risk ranking for this hazard is focused solely on dam failure impacts. See Chapter 6.4 of Volume 1 for combined dam inundation list on which this assessment is based.
b. Haywired M7.05 event was used to assign probability and impacts
c. 1-percent annual chance event was used to assign probability and impacts
d. 2100 upper range estimates and extreme tide are used to assign probability and impacts
e. Very High and High severity zones were used to assign probability and impacts

14.9 STATUS OF PREVIOUS PLAN ACTIONS

Table 14-12 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

14.10 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 14-13 lists the actions that make up the City of San Ramon hazard mitigation action plan. Table 14-14 identifies the priority for each action. Table 14-15 summarizes the mitigation actions by hazard of concern and mitigation type.

14.11 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **City of San Ramon Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of San Ramon Flood Damage Prevention Ordinance**—The flood damage prevention ordinance was reviewed for compliance with the National Flood Insurance Program.
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.

Table 14-12. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
SR-1—Develop and distribute public outreach materials. *Comment: Distributed flood information on an annual basis, emergency preparedness info added to City website.*	X			
SR-2—Maintain firebreaks and manage vegetation along hillsides and open space located near development. *Comment: Ongoing routine activity.*	X			
SR-3—Install native plants and vegetation whenever feasible in order to reduce the amount of water required and damage during drought. *Comment: Ongoing routine activity.*	X			
SR-4—Inspect and clean stormwater inlets, drains, culverts, and other conveyance devices annually. *Comment: Ongoing routine activity.*	X			
SR-5—Institute low impact development techniques. *Comment: Ongoing routine activity.*	X			
SR-6—Conduct a Citywide Drainage Infrastructure Study to create a digital inventory of key drainage infrastructure. *Comment: Carried over to plan update.*			X	SR-5
SR-7—Conduct current and future storm damage repairs along all City maintained creeks. *Comment: Ongoing routine activity.*	X			
SR-8—Continue to repair and make structural improvements to storm drains, pipelines, and/or channels. *Comment: Ongoing routine activity.*	X			
SR-9—Enforce provisions under creek protection, stormwater management, and discharge control ordinances. *Comment: Ongoing routine activity.*	X			
SR-10—Ensure that utility systems in new developments are constructed in ways that reduce or eliminate flood damage. *Comment: Ongoing routine activity.*	X			
SR-11—Sponsor the formation and training of Community Emergency Response Teams (CERT) training through partnerships with local businesses. [Note - these programs go by a variety of names in various cities and areas.] *Comment: Ongoing routine activity.*	X			
SR-12—Provide redundancy for critical functions. *Comment: Wording/intent of action unclear.*		X		
SR-13—Adopt and enforce the International Building Code, including future amendments, ratified by the State as the State Building Code. *Comment: Ongoing routine activity.*	X			
SR-14—Include retrofitting/replacement of critical system elements in CIP. *Comment: Ongoing routine activity.*	X			
SR-15—Develop a strategy to take advantage of post disaster opportunities. *Comment: Intent of action unclear.*		X		

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update: Check if Yes	Carried Over to Plan Update: Enter Action #
SR-16—Warehouse critical infrastructure components such as pipeline and road repair material. *Comment: Ongoing routine activity.*	X			
SR-17—Develop and adopt a Continuity of Operations Plan (COOP). *Comment: Elements of a COOP complete although no formal plan was adopted.*		X		
SR-18—Further enhance seismic risk assessment to target high hazard buildings for mitigation opportunities. *Comment: No high hazard buildings present.*		X		
SR-19—Develop a post disaster action plan that includes a grant funding and debris removal components. *Comment: Goal of action unclear, plan not necessary for grant funding/debris removal activities.*		X		
SR-20—Purchase portable facilities (hoses, pumps, emergency generators) to allow pipelines to bypass failure zones. *Comment: Wording/intent of action unclear.*		X		
SR-21—Comply with all applicable building and fire codes, as well as other regulations when constructing or significantly remodeling infrastructure facilities. *Comment: Ongoing routine activity.*	X			
SR-22—Ensure a reliable source of water for fire suppression. *Comment: Ongoing routine activity.*	X			
SR-23—Maintain access roads to ensure fire equipment have adequate access to sites. *Comment: Ongoing routine activity.*	X			
SR-24—Provide emergency power generation in critical buildings to maintain continuity of government and services. *Comment: Ongoing routine activity.*	X			
SR-25—Install monitoring devices to determine landslide probability in high risk areas. *Comment: Ongoing routine activity.*	X			
SR-26—Install and maintain drainage devices in landslide prone areas in order to reduce the probability of a landslide. *Comment: Ongoing routine activity.*	X			
SR-27—Develop a GIS based mapping system to track potential hazards and maintenance activities. *Comment: Ongoing routine activity.*	X			
SR-28—Conduct a watershed analysis of runoff and drainage systems to predict areas of insufficient capacity in the storm drain and natural creek system. *Comment: Accuracy of existing drainage systems mapping insufficient to complete this action item.*		X		

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
SR-29—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 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.		X		
Comment: No such critical buildings exist under City's jurisdiction				
SR-30—Conduct an inventory of existing or suspected soft-story residential structures.	X			
Comment: No soft story structures found. Reviewed in 2012.				
SR-31—Use the soft-story inventory to require owners to inform all existing tenants that they live in this type of building and the standard to which it may have been retrofitted, as well as require owners to inform tenants that they will live in this type of building prior to signing a lease.		X		
Comment: No soft story structures found.				
SR-32—Use the soft-story inventory to require owners to inform all existing tenants that they should be prepared to live elsewhere following an earthquake if the building has not been retrofitted.		X		
Comment: No soft story structures found.				
SR-33—Explore development of local ordinances or State regulations to require or encourage owners of soft-story structures to strengthen them.		X		
Comment: No soft story structures found.				
SR-34—Support County-wide initiatives identified in Volume 1.	X			
Comment: Ongoing routine activity.				
SR-35—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Volume 1.	X			
Comment: Ongoing routine activity.				
SR-36—Continue to maintain compliance and good standing under the National Flood Insurance Program			X	SR-4
Comment: Ongoing routine activity.				
SR-37—Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan			X	SR-2
Comment:				

Table 14-13. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
SR-1— Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	Public Works, Community Development	High	HMGP, PDM, FMA	Short-term
SR-2— Consider integration of the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including the General Plan.						
New and Existing	All Hazards	1, 4, 5, 7, 11, 12, 14, 17	Community Development	Low	Staff Time, General Funds	Ongoing
SR-3— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 16	Public Works	Low	Staff Time, General Funds	Short-term
SR-4—Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: • Enforce the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts.						
New and Existing	Flood	3, 5, 6, 9, 10, 11, 15	Public Works	Low	Staff Time, General Funds	Ongoing
SR-5—Complete the Citywide Drainage Infrastructure Inventory to create a digital inventory of key drainage infrastructure.						
New and Existing	Flood	3, 5, 6, 10	Public Works	Medium	HMGP, General Fund	Ongoing
SR-6—Conduct slope stability activities along Bollinger Creek in the Canyon Park area to reduce or prevent creek bank erosion.						
Existing	Flood, Landslides	1, 3, 10, 17	Public Works	High	HMGP, PDM, FMA, General Fund, Assessment District	Long-term
SR-7—Install surface and sub-surface drainage infrastructure and conduct slope stabilization activities along hillsides neighboring the Alcosta Senior Center.						
Existing	Landslides, Earthquake	1, 6, 7, 13, 17	Public Works	Medium	HMGP, PDM, FMA, General Fund	Long-term
SR-8—Reinforce retaining wall along San Ramon Creek supporting slope along Crow Canyon Road.						
Existing	Flood, Landslides	1, 6, 7, 13, 17	Public Works	High	HMGP, PDM, FMA, General Fund	Long-term
SR-9—Enhance fire break mowing, fuel control, and grazing activities within open space parcels owned or maintained by the City of San Ramon.						
Existing	Wildfire	1, 3, 4, 6, 12, 13, 14, 17	Public Works	Medium	HMGP, PDM, General Fund	Short-term
SR-10—Conduct Citywide drainage infrastructure repairs along creeks and storm drain systems. Tasks include debris removal, sediment removal, erosion repair, and infrastructure replacement.						
Existing	Flood	1, 3, 5, 6, 10, 12, 13, 15, 17	Public Works	Medium	HMGP, General Fund	Short-term
SR-11—Install Green Infrastructure where feasible throughout the City in order to promote climate resiliency through the reduction of urban heat, recharging the aquifer, and reducing runoff to the floodplain.						
New and Existing	Severe Weather, Drought, Flood	1, 4, 7, 10, 12, 13, 15, 17	Public Works	High	HMGP, General Fund	Long-term

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 14-14. Mitigation Action Priority

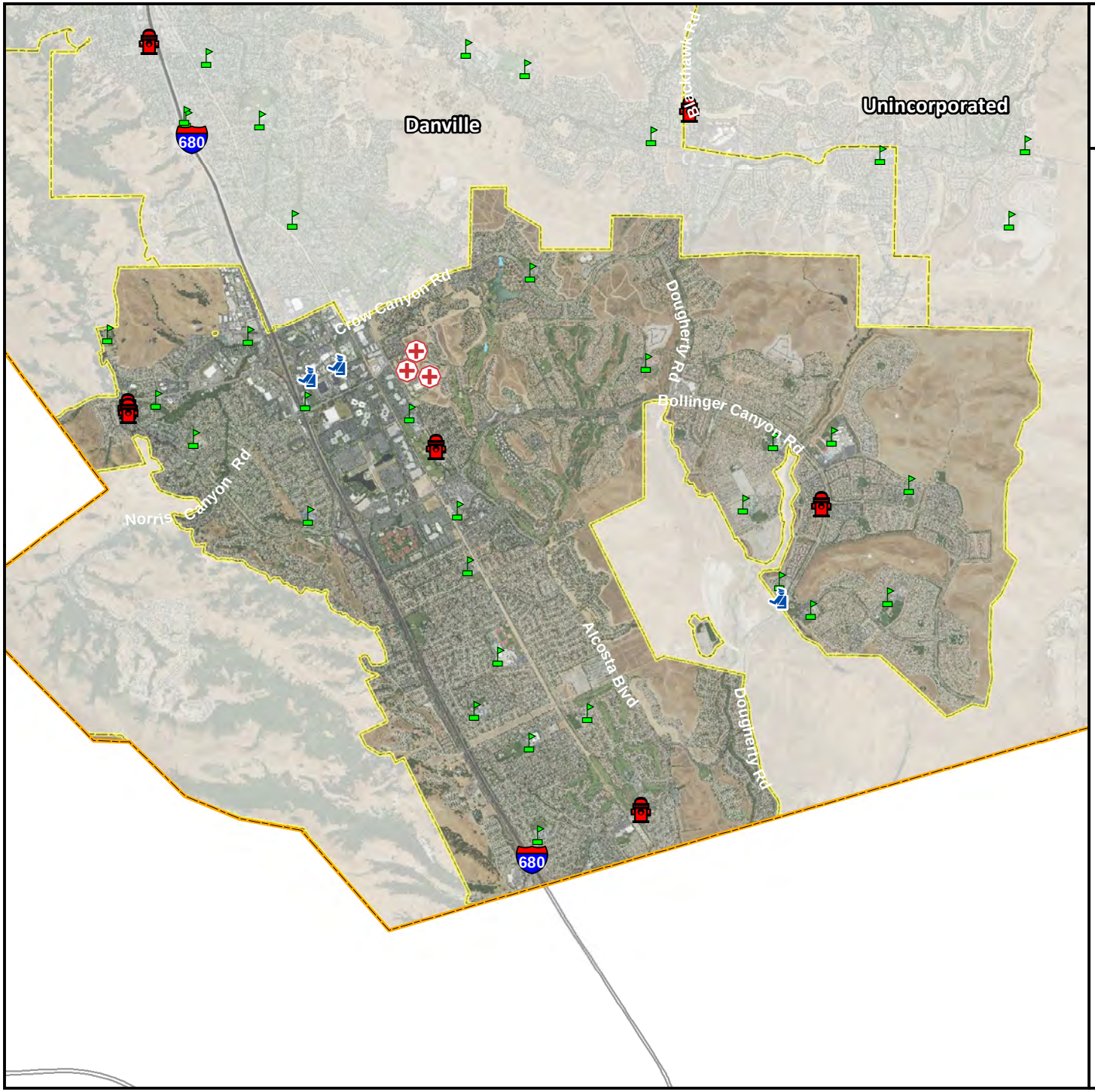
Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
SR-1	8	High	High	Yes	Yes	No	Medium	High
SR-2	8	Medium	Low	Yes	No	Yes	High	Low
SR-3	3	Low	Low	Yes	No	Yes	High	Low
SR-4	7	Medium	Low	Yes	No	Yes	High	Low
SR-5	4	Medium	Medium	Yes	Yes	No	Medium	Medium
SR-6	4	Medium	High	No	Yes	No	Medium	High
SR-7	5	High	High	Yes	Yes	No	Medium	High
SR-8	5	High	High	Yes	Yes	No	Medium	High
SR-9	8	Medium	Medium	Yes	Yes	No	Medium	High
SR-10	9	High	High	Yes	Yes	No	Medium	High
SR-11	8	High	High	Yes	Yes	No	High	High

a. See the introduction to this volume for explanation of priorities.

Table 14-15. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	SR-1, SR-2, SR-3	SR-1, SR-2, SR-3	SR-2, SR-3	SR-2, SR-3	SR-2, SR-3	SR-1	SR-2, SR-3	SR-1, SR-2, SR-3
Dam and Levee failure								
Drought	SR-11	SR-11		SR-11		SR-11	SR-11	
Earthquake								
Flood	SR-4, SR-5, SR-6, SR-8, SR-10, SR-11	SR-4, SR-5, SR-6, SR-8, SR-10, SR-11	SR-4, SR-5, SR-6, SR-8, SR-10	SR-4, SR-6, SR-8, SR-10, SR-11	SR-5	SR-5, SR-6, SR-8, SR-10, SR-11	SR-11	SR-4
Landslide	SR-6, SR-7, SR-8	SR-6, SR-7, SR-8	SR-6, SR-8	SR-6, SR-7, SR-8		SR-6, SR-7, SR-8		
Severe weather	SR-11	SR-11		SR-11		SR-11	SR-11	
Tsunami								
Wildfire	SR-9	SR-9	SR-9	SR-9				

a. See the introduction to this volume for explanation of mitigation types.



The City of San Ramon

Critical Facilities

- Emergency Operations Centers (Government)
- Fire Stations (Protective Functions)
- Hazardous Materials
- Medical Facilities
- Police Stations (Protective Functions)
- Schools & Educational Facilities
- Contra Costa County Boundary
- City Boundaries

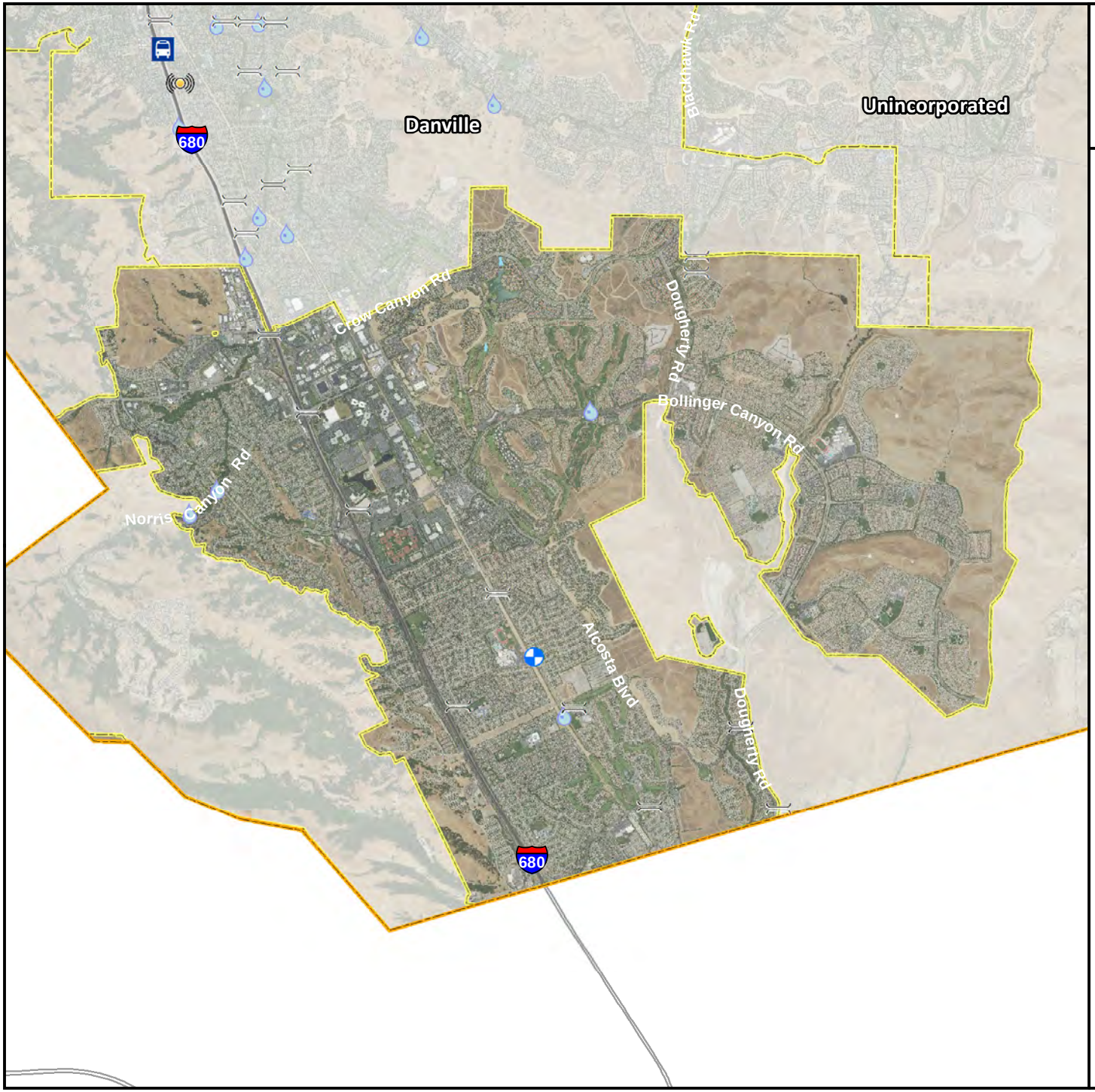
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of San Ramon

Critical Infrastructure

- Airports (Other Critical Functions)
- Bus Facilities (Other Infrastructure)
- Communication Facilities
- Electric Power Facilities
- Highway Bridges
- Highway Tunnels (Other Infrastructure)
- Light Rail (Other Infrastructure)
- Natural Gas (Other Infrastructure)
- Port Facilities (Other Critical Functions)
- Water Supply Facilities
- Rail Facilities (Other Infrastructure)
- Wastewater Facilities
- Contra Costa County Boundary
- City Boundaries

0 0.5 1 2

Miles

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W E
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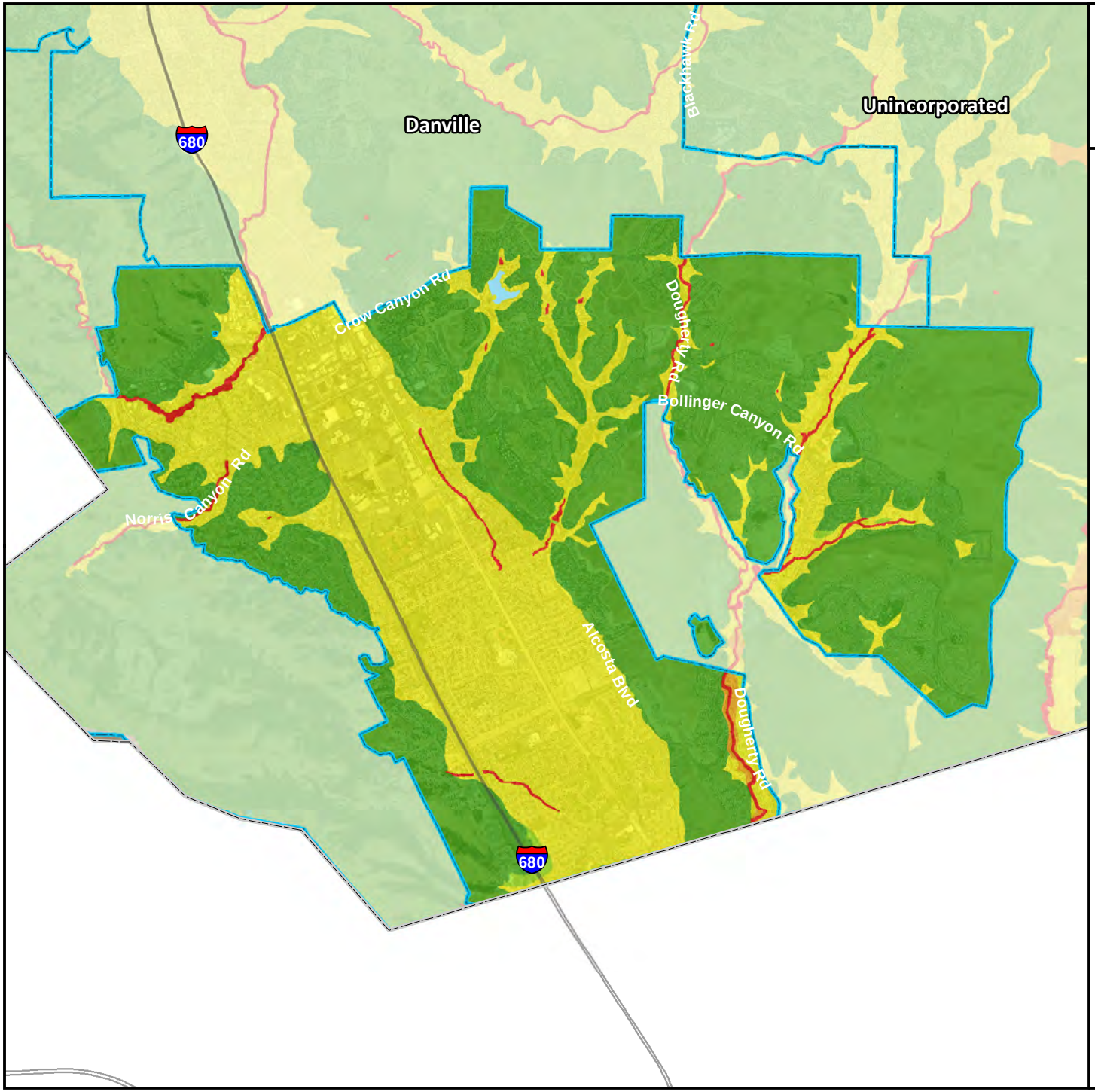
TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of San Ramon

Liquefaction Susceptibility

Contra Costa County Boundary
City Boundaries
Water Bodies

Susceptibility to Liquefaction

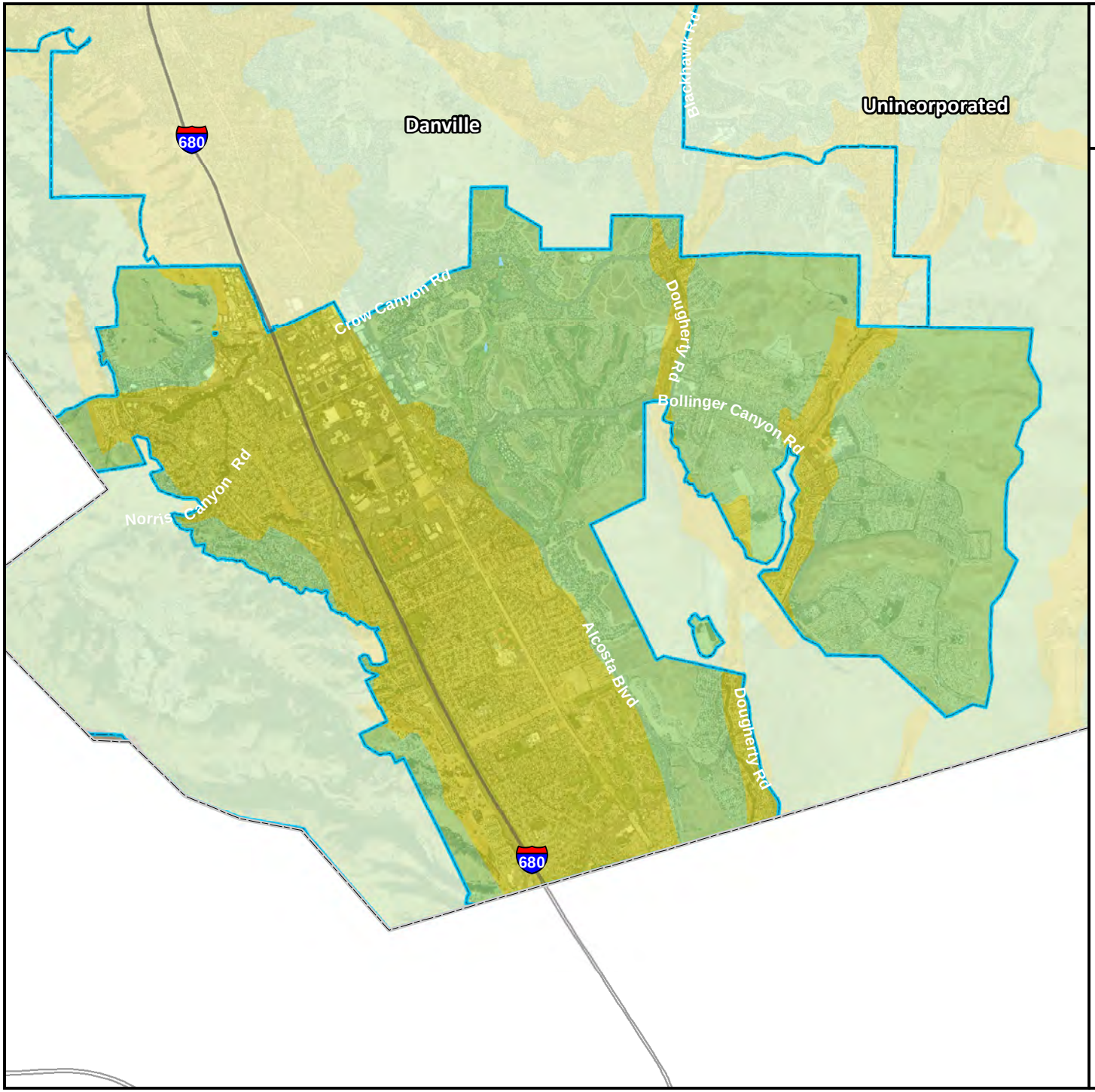
Very Low
Low
Medium
High
Very High
No Liquefaction Data Available

0 0.5 1 2
Miles

N
W E
S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The City of San Ramon

National Earthquake Hazard Reduction Program (NEHRP) Soil Class

Contra Costa County Boundary

City Boundaries

Water Bodies

NEHRP Site Class / Soil Profile

B / Rock

C / Very Dense Soil - Soft Rock

D / Stiff Soil

E / Soft Soil

No Soil Data Available

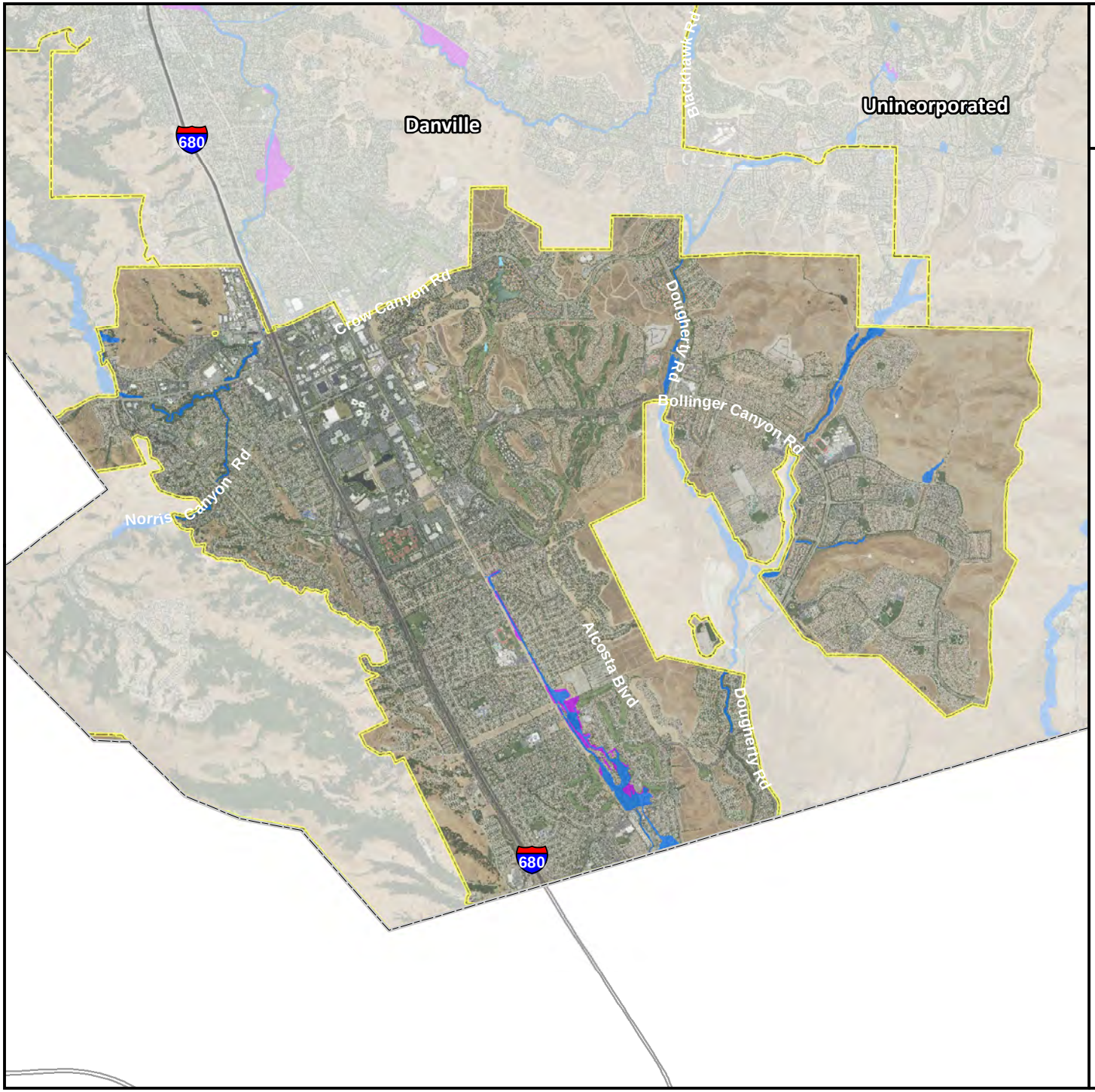
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Department of Conservation, USDA



The City of San Ramon

FEMA DFIRM Flood Hazard Areas

- 1% Annual Chance (100-Year) Flood Zone
- 0.2% Annual Chance (500-Year) Flood Zone
- Contra Costa County Boundary
- City Boundaries
- Water Bodies

Flood hazard areas as depicted on Effective FEMA Digital Flood Insurance Rate Maps (DFIRM)

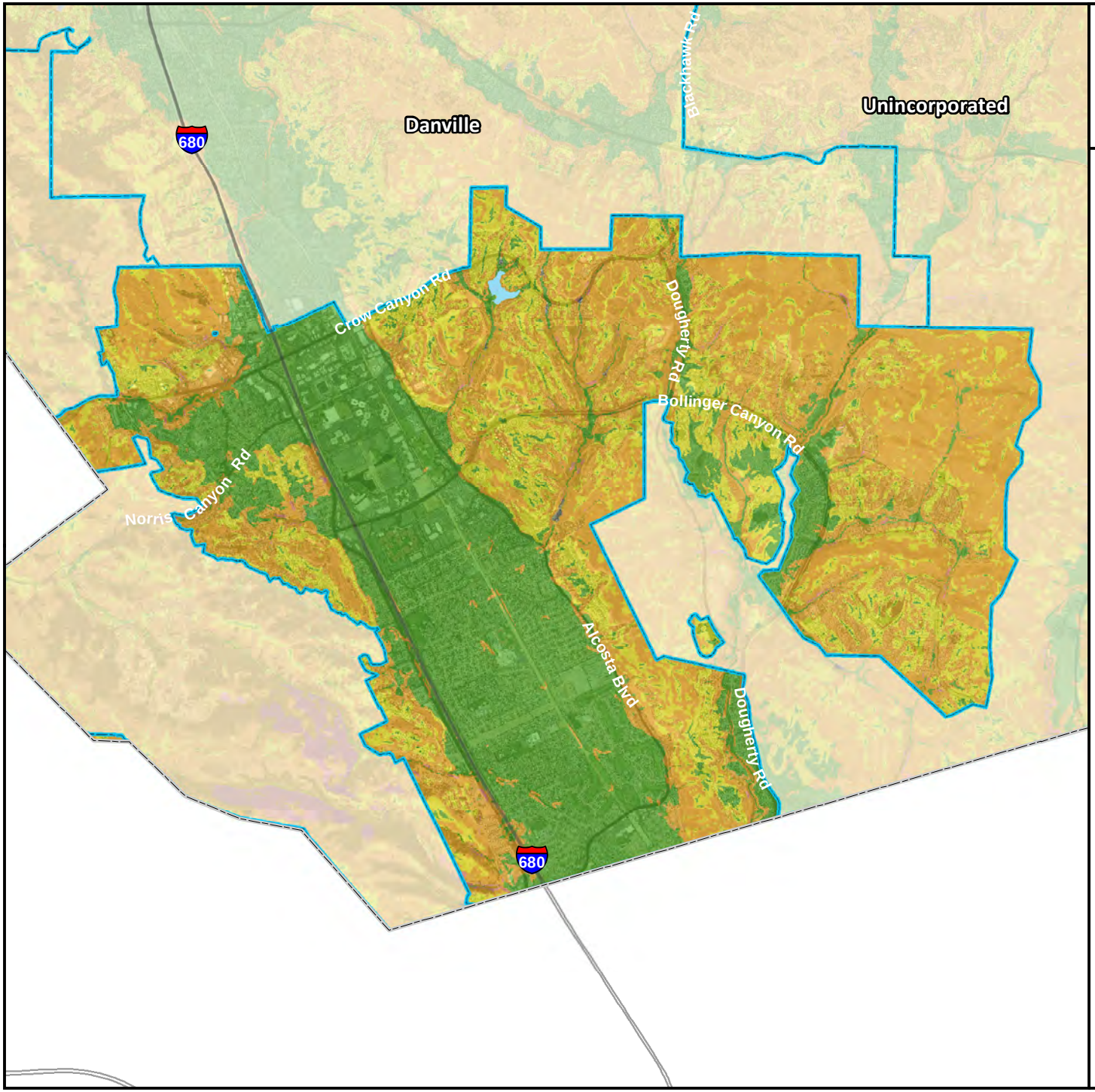
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, FEMA, USDA



The City of San Ramon

Landslide Susceptibility Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Type

Low

Moderate

High

Very High / Existing

Data Not Available

Source dataset created by Wills C.J., Perez, F., Gutierrez, C., 2011, Susceptibility to deep-seated landslides in California: California Geological Survey Map Sheet 58

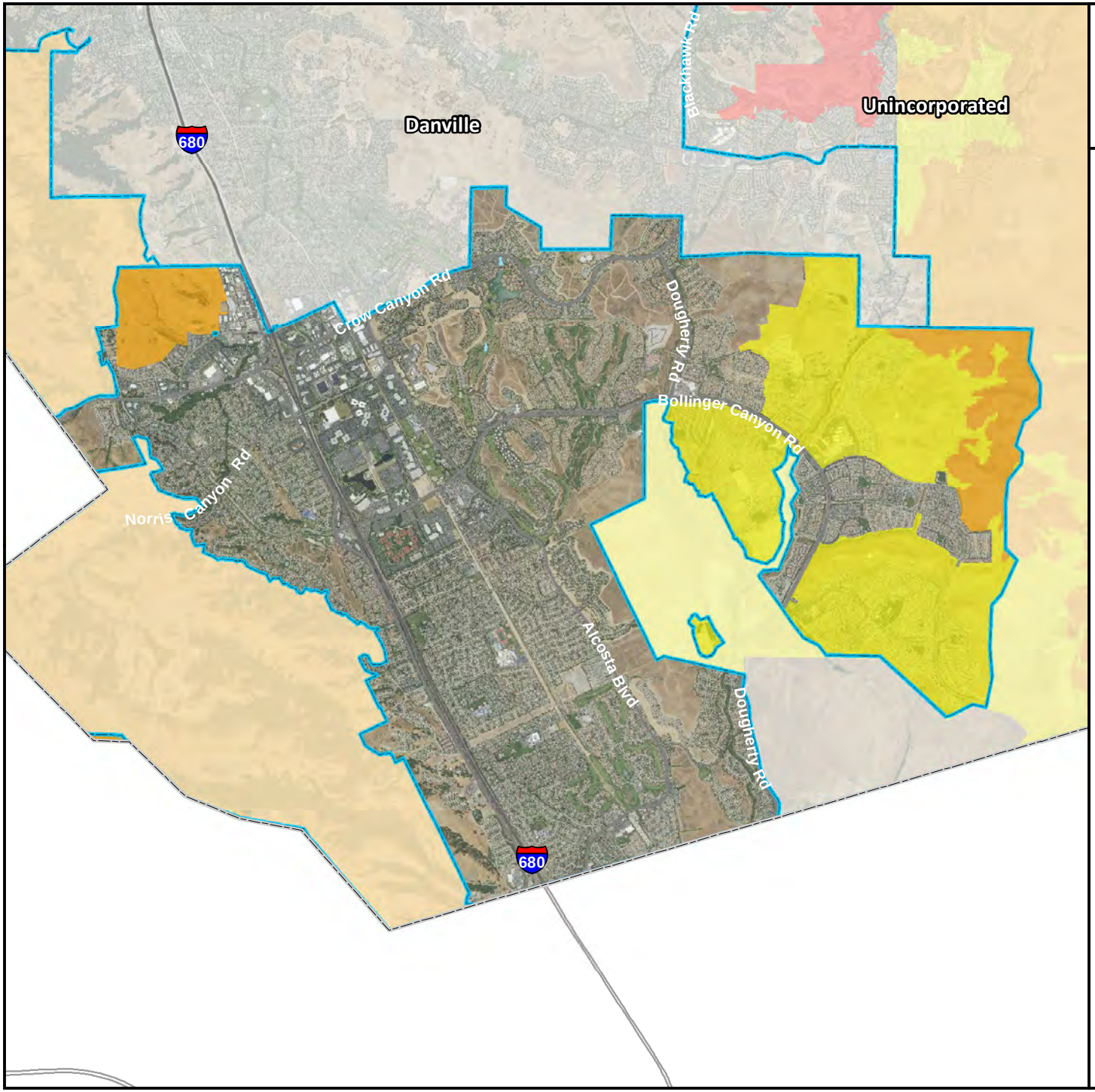
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The City of San Ramon

Wildfire Severity Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Wildfire Severity Zone

Moderate

High

Very High

0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, CalFIRE, USDA

15. CITY OF WALNUT CREEK

15.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Steve Waymire, City Engineer
1666 North Main Street
Walnut Creek, CA 94546
Telephone: 925-256-3507
e-mail Address: waymire@walnut-creek.org

Alternate Point of Contact

Heather Ballenger, Director of Public Services
1666 North Main Street
Walnut Creek, CA 94546
Telephone: 925-256-3593
e-mail Address: ballenger@walnut-creek.org

15.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation**—October 21, 1914
- **Current Population**—70,018 as of 2016 (California Department of Finance)
- **Population Growth**—Based on data from the California Department of Finance the US Census Bureau, Walnut Creek has grown from 64,244 in 2000 to 70,018 in 2016.
- **Location and Description**—The City of Walnut Creek, is located at the foot of Mt. Diablo, 23 miles east of San Francisco. Portions lie in both the San Ramon Valley and the Ygnacio Valley. While not as large as neighboring Concord, Walnut Creek serves as the business and entertainment hub for neighboring cities in central Contra Costa County, due in part to its location at the junction of the highways from Sacramento and San Jose (I-680) and San Francisco/Oakland (SR-24). The city has a total incorporated area of 19.45 square miles.
- **Brief History**—Walnut Creek is located amidst the earlier site of four Mexican land grants. One of these land grants, measuring 18,000 acres, belonged to Juana Sanchez de Pacheco, who deeded it to her two grandsons. Ygnacio Sibrian, one of the grandsons, created the first roofed home in the valley in about 1850. The grant was called Rancho Arroyo de Las Nueces y Bolbones, named after the principal waterway, Arroyo de las Nueces (Walnut Creek) as well as for the local group of indigenous Americans (Bolbones). The Arroyo de los Nueces was named for the occurrence in the valley of the California walnut tree.

  With the coming of American settlers following the US-Mexico War, a small settlement called “The Corners” emerged, named because it was the place where roads from Pacheco and Lafayette met. The site of this first American settlement is found today at the intersection of Mt. Diablo Boulevard and North Main Street. The first town settler was William Slusher, who built a dwelling on the bank of Walnut Creek, which was called “Nuts Creek” by the Americans in 1849. In the year 1855, Milo Hough of Lafayette built the hotel named “Walnut Creek House” in the corners. A blacksmith shop and a store soon joined the hotel, and a year later, Hiram Penniman (who built Shadelands Ranch) laid out the town site and realigned the Main Street of today. Two decades later, the community changed its name from The Corners to Walnut Creek.

Walnut Creek began to grow with the arrival of Southern Pacific Railroad service in 1891. On October 21, 1914, the town and the surrounding area of 500 acres were incorporated as the eighth city in Contra Costa County.

A branch line of the Southern Pacific railroad ran through Walnut Creek until the early 1960s. The current East Bay Regional Park Iron Horse Trail, used by walkers, runners and bikers, runs over what used to be portions of that branch line. The mainline of the Sacramento Northern Railway passed through Walnut Creek. Both railroads had stations here. Today, the Pittsburg/Bay Point - SFO Line of the Bay Area Rapid Transit (BART) serves Walnut Creek with a station adjacent to I-680.

With the opening of the Broadway Shopping Center, Contra Costa County's first major retail center, in 1951, the city took off in a new direction, and its population more than tripled from 2,460 in 1950 to 9,903 in 1960.

Today, Walnut Creek, the actual waterway, has been routed underneath downtown through a series of tunnels starting at the southwest end of Macy's and ending just southwest of Maria Restaurant. Slusher's dwelling was built in the area of modern-day Liberty Bell Plaza.

Walnut Creek owns more open space per capita than any other community in the state of California. In 1974, Walnut Creek voters approved a $6.7 million bond measure that allowed the City to purchase 1,800 acres of undeveloped hillsides, ridge lines, and park sites. Walnut Creek owns parts of Lime Ridge Open Space, Shell Ridge Open Space, Acalanes Ridge Open Space, and Sugarloaf Open Space. There is open space in the retirement community, Rossmoor. Walnut Creek's open space now totals 2,704 acres

- **Climate—**The area is characterized by a Mediterranean climate with cool, moist winters and warm to hot dry summers. Annual rainfall averages 20 inches, with slight microclimate variations based on elevation and topography. Winter daytime temperatures average in the mid-50s with little daily variation, while summer daytime temperatures average in the high 80s. 100-degree weather occurs numerous times during summer heat waves, and occasional light frosts occur during clear, calm winter nights. The climate allows for the cultivation of many plants and crops, being warm enough for citrus yet cold enough for apples.
- **Governing Body Format—**As a general law city, the City of Walnut Creek operates under a Council-Manager form of government with five City Council members elected at large, serving staggered four-year terms. The City employs approximately 363 regular employees and has a biennial operating budget of over $178 million for 2016-2018. Fire protection services are supplied by the Contra Costa Fire Protection District. Official City business is administered by the Office of the City Manager. The City Council assumes responsibility for adoption of this plan, the City Manager will oversee its implementation.

15.3 DEVELOPMENT TRENDS

There are 32,976 homes in Walnut Creek, with a 2017 average home price of $829,400. The majority of recent development has been in commercial development and infill housing with an emphasis on growth close to downtown and the BART stations. California law requires counties and cities to prepare and adopt a comprehensive long-range plan to guide community development. The plan must consist of an integrated and internally consistent set of goals, policies, and implementation measures and must focus on issues of the greatest concern to the community. City actions, such as those relating to land use allocations, annexations, zoning, subdivision and design review, redevelopment, and capital improvements, must be consistent with the plan. The City of Walnut Creek adopted its general plan under this law in July 2000. Future growth and development will be managed as identified in the general plan.

Table 15-1 summarizes development trends in the performance period since development of the previous hazard mitigation plan and expected future development trends.

Table 15-1. Recent and Expected Future Development Trends

Criterion	Response					
Has your jurisdiction annexed any land since the development of the previous hazard mitigation plan? • If yes, give the estimated area annexed and estimated number of parcels or structures.	No N/A					
Is your jurisdiction expected to annex any areas during the performance period of this plan?	No					
Are any areas targeted for development or major redevelopment in the next five years? • If yes, please briefly describe	Yes BART Transit Village					
How many new building permits were issued in your jurisdiction since the development of the previous hazard mitigation plan?		2012	2013	2014	2015	2016
	Single Family	37	18	8	29	51
	Multi-Family	10	10	4	1	13
	Other (commercial, mixed use, etc.)	0	2	0	0	0
Please provide the number of permits for each hazard area or provide a qualitative description of where development has occurred.	The City does not currently track the number of permits issued in various hazard zones. For those hazards with a clearly defined extent and location, the City cannot estimate specific development impacts. For those hazards with impacts city-wide, it is safe to assume that this new development could be subject to impacts from those hazards. However, it is important to note that all new development was consistent with General Plan policies and municipal code standards and as a result most development has occurred outside of identified hazard zones.					

15.4 CAPABILITY ASSESSMENT

The City of Walnut Creek performed an inventory and analysis of existing capabilities, plans, programs and policies that enhance its ability to implement mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of legal and regulatory capabilities is presented in Table 15-2.
- Development and permitting capabilities are presented in Table 15-3.
- An assessment of fiscal capabilities is presented in Table 15-4.
- An assessment of administrative and technical capabilities is presented in Table 15-5.
- An assessment of education and outreach capabilities is presented in Table 15-6.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 15-7.
- Classifications under various community mitigation programs are presented in Table 15-8.
- The community's adaptive capacity for the impacts of climate change is presented in Table 15-9.

Table 15-2. Legal and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code	Yes	No	Yes	No
Comment: Walnut Creek Municipal Code Ordinance 2087, passed February 16, 2010				
Zoning Code	Yes	No	Yes	No
Comment: Title-Chapter 10-2 Zoning				
Subdivisions	Yes	No	No	No
Comment: Title-Chapter 10-1 Subdivision				
Stormwater Management	Yes	Yes	No	No
Comment: Federal Clean Water Act Requirements; Walnut Creek Municipal Code, Title 19, Chapter 16				
Post-Disaster Recovery	No	No	No	No
Comment: None located				
Real Estate Disclosure	Yes	Yes	Yes	Yes
Comment: Ca. State Civil Code 1102 requires full disclosure on natural hazard exposure of the sale/re-sale of any and all real property				
Growth Management	Yes	No	Yes	Yes
Comment: Cal. Gov. Code §65300 et seq.				
Site Plan Review	Yes	No	No	Yes
Comment: Part of permitting process				
Environmental Protection	No	No	Yes	Yes
Comment: California Environmental Quality Act (Guideline: California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000–15387)				
Flood Damage Prevention	Yes	No	No	Yes
Comment: Title-Chapter 9-12 Flood Damage Prevention				
Emergency Management	No	No	No	No
Comment: None located				
Climate Change	No	No	Yes	No
Comment: California SB-379: Land Use: General Plan: Safety Element				
Other:	N/A	N/A	N/A	N/A
Comment: None identified				
Planning Documents				
General Plan	Yes	No	Yes	Yes
Is the plan compliant with Assembly Bill 2140? Yes				
Comment: General Plan 2025 (adopted April 4, 2006)				
Capital Improvement Plan	Yes	No	No	Yes
How often is the plan updated? Every two years				
Comment:				
Floodplain or Watershed Plan	Yes	No	No	Yes
Comment: In connection with Contra Costa County Flood Control				
Stormwater Plan	Yes	No	No	Yes
Comment: Title-Chapter 9-16 Stormwater Management				
Urban Water Management Plan	No	No	No	No
Comment: None located				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Habitat Conservation Plan	No	No	No	No
Comment: None located				
Economic Development Plan	Yes	No	No	No
Comment: Elements of the Econ. Dev. Plan can be found in the General Plan 2025 document that Council adopted in 2006.				
Shoreline Management Plan	No	No	No	No
Comment: None located				
Community Wildfire Protection Plan	No	Yes	Yes	Yes
Comment: Community Wildfire Protection Plan, Contra Costa County, CA				
Forest Management Plan	No	No	No	No
Comment: None located				
Climate Action Plan	Yes	Yes	Yes	Yes
Comment: City of Walnut Creek Climate Action Plan (April 2012)				
Comprehensive Emergency Management Plan	Yes	No	No	Yes
Comment: Includes Emergency Operations Plan and various hazard annexes. Currently being updated to include AFN requirements.				
Threat & Hazard Identification & Risk Assessment (THIRA)	Yes	No	No	No
Comment: Part of the Comprehensive Emergency Management Plan includes a THIRA based on UASI requirements. Currently being updated for approval.				
Post-Disaster Recovery Plan	No	No	No	No
Comment: None located				
Continuity of Operations Plan	Yes	No	No	No
Comment: Varies, certain departments like IT have developed their own CONOP plan.				
Public Health Plan	No	No	No	No
Comment: None located				
Other:	N/A	N/A	N/A	N/A
Comment: None identified				

Table 15-3. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? • If no, who does? If yes, which department?	Yes Community Economic Development (CED)
Does your jurisdiction have the ability to track permits by hazard area?	No
Does your jurisdiction have a buildable lands inventory? • If yes, please briefly describe. • If no, please quantitatively describe the level of buildout in the jurisdiction.	No N/A The City is basically built out. Most development is teardown and infill.

Table 15-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	N/A

Table 15-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Public Services Engineering Dept. and Community Development Planners
Engineers or professionals trained in building or infrastructure construction practices	Yes	Public Services Engineering Dept. and Community Development Building Engineers
Planners or engineers with an understanding of natural hazards	Yes	Public Services Engineering Dept.
Staff with training in benefit/cost analysis	Yes	Public Services Engineering Dept.
Surveyors	Yes	Public Services Engineering Dept. and Consultants
Personnel skilled or trained in GIS applications	Yes	IT Department
Scientist familiar with natural hazards in local area	No	
Emergency Manager	Yes	City Manager's Office
Grant writers	Yes	Public Services Engineering Dept. and Community Development Planners
Other		

Table 15-6. Education and Outreach Capability

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe.	No N/A
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe.	No N/A
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly describe.	No N/A
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe.	No N/A
Do you have any established warning systems for hazard events? • If yes, please briefly describe.	Yes We rely on Contra Costa County's Community Warning System, Nixle, Social media, and Everbridge

Table 15-7. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Public Works Engineering
Who is your floodplain administrator? (department/position)	Public Services Engineering Dept. – Senior Engineer
Are any certified floodplain managers on staff in your jurisdiction?	No
What is the date that your flood damage prevention ordinance was last amended?	October 31, 2002
Does your floodplain management program meet or exceed minimum requirements? • If exceeds, in what ways?	Meets Unknown at this time
When was the most recent Community Assistance Visit or Community Assistance Contact?	2016
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? • If so, please state what they are.	No N/A
Do your flood hazard maps adequately address the flood risk within your jurisdiction? • If no, please state why.	Yes N/A
Does your floodplain management staff need any assistance or training to support its floodplain management program? • If so, what type of assistance/training is needed?	No N/A
Does your jurisdiction participate in the Community Rating System (CRS)? • If yes, is your jurisdiction interested in improving CRS Classification? • Is your jurisdiction interested in joining the CRS program?	Yes Yes N/A
How many Flood Insurance policies are in force in your jurisdiction?[a] • What is the insurance in force? • What is the premium in force?	348 $96,357,800 $365,193
How many total loss claims have been filed in your jurisdiction?[a] • How many claims were closed without payment/are still open? • What were the total payments for losses?	106 41/0 $987,042

a. According to FEMA statistics as of December 31, 2016

Table 15-8. Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	Yes	8	05/1/11
Building Code Effectiveness Grading Schedule	Yes	4	7/1/2005
Public Protection	Yes	3/8	N/A
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A

Table 15-9. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: None provided*	Low
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: None provided*	Low
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: None provided*	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: We have some in-house capacity to track on a spreadsheet*	Medium
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: None provided*	Low
Participation in regional groups addressing climate risks *Comments/Additional Information: Staff participates in regional groups*	Medium
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: None provided*	Medium
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: Adopted a CAP in 2012*	Medium
Identified strategies for adaptation to impacts *Comments/Additional Information: None provided*	Low
Champions for climate action in local government departments *Comments/Additional Information: None provided*	Medium
Political support for implementing climate change adaptation strategies *Comments/Additional Information: None provided*	Medium
Financial resources devoted to climate change adaptation *Comments/Additional Information: None provided*	Low
Local authority over sectors likely to be negative impacted *Comments/Additional Information: None provided*	Low
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: None provided*	Low
Local residents support of adaptation efforts *Comments/Additional Information: None provided*	Low
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

15.5 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

15.5.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the City of Walnut Creek made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **General Plan**—The General Plan incorporates information on natural hazard risk and polices to reduce risk in its safety element.
- **CIP 2016-2026**—Provides flood mitigation for Walker Homestead area.
- **Building Code Adoption**—CBC adopted within City Building Code, which includes standards relevant for hazard mitigation.
- **Climate Action Plan 2012 –** Identifies risks posed due to effects of climate change (wildfire, wildlife, fresh water, floods, and unpredictable weather, and strategies to prevent them.

Resources listed in Section 15.11 were used to provide information for this annex on hazard events and local capabilities within the jurisdiction.

15.5.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the City of Walnut Creek will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan in actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Future General Plan Updates**—Information obtained in the risk assessment will be incorporated as appropriate.
- **Public Outreach**—Targeted outreach for flood zones will be conducted using information obtained in the development of the hazard mitigation plan.
- **CIP**—Will include mitigation of flood hazards and possible seismic upgrades of City facilities.
- **Climate Action Plan**—Continue to implement Climate Action Plan to reduce GHG emissions. Update will include information from the hazard mitigation plan, as appropriate; and also prepare a Climate Adaption Plan..

15.6 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 15-10 lists past occurrences of natural hazards for which specific damage was recorded in the City of Walnut Creek. Other hazard events that broadly affected the entire planning area, including the City of Walnut Creek, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 15-10. Past Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Severe Winter Storms	DR-4305	03/16/2017	Minimal Recorded Damage
Severe Winter Storms	DR-4301	02/14/17	$680,000
Flooding	FEMA-1628-DR	1/1/2006	Minimal recorded damage
Flooding	NA	12/16/2002	Minimal recorded damage
Flooding	NA	1/12/1993	Minimal recorded damage
Flooding/Landslide	FEMA-1203-DR	2/1998	$300,075
Flooding/Severe Weather	NA	1984	$350,000
Landslide	NA	1986	$150,500
Landslide	NA	1983	$250,000
Severe Weather	NA	1982	$348,000

15.7 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for the jurisdiction.

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 3
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: Unknown

Other noted vulnerabilities include the following:

- There are a number of flood control and drainage improvements needed throughout the City to enhance flood resilience.
- There are buildings with soft-story construction, which are vulnerable to the earthquake hazard, located within the City.

15.8 HAZARD RISK RANKING

Table 15-11 presents a local ranking for the City of Walnut Creek of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

15.9 STATUS OF PREVIOUS PLAN ACTIONS

Table 15-12 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 15-11. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake[b]	48	High
2	Landslide[e]	39	High
3	Severe weather	30	Medium
4	Flood[c]	18	Medium
5	Dam and levee failure[a]	11	Low
6	Drought	9	Low
7	Wildfire[f]	6	Low
8	Sea level rise[d]	0	None
8	Tsunami	0	None

a. Based on the level of detail conducted in the risk assessment, the risk ranking for this hazard is focused solely on dam failure impacts. See Chapter 6.4 of Volume 1 for combined dam inundation list on which this assessment is based.
b. Haywired M7.05 event was used to assign probability and impacts
c. 1-percent annual chance event was used to assign probability and impacts
d. 2100 upper range estimates and extreme tide are used to assign probability and impacts
e. Very High and High severity zones were used to assign probability and impacts
f. There is no mapped risk in the city, but a score was given due to potential smoke impacts on people and the economy

Table 15-12. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update: Check if Yes	Carried Over to Plan Update: Enter Action #
WC-1—Seismic upgrade/retrofit to corporation yard *Comment: If we could receive a grant, we would perform this work.*			X	WC-5
WC-2—Soft-story building inventory *Comment: We do not have the funding or staff to perform this.*			X	WC-6
WC-3—Determine ownership of ditches to determine responsibility of cleaning and then implement maintenance program to maintain conveyance *Comment: We have partially completed this task. We send letters to property owners telling them their responsibilities*			X	WC-7
WC-4—Construct Tice Creek By-Pass Project *Comment: Will need grant funding to build this project.*			X	WC-8
WC-5—Construct Walnut Boulevard Drainage Improvements *Comment: Will need grant funding to build this project.*			X	WC-9
WC-6—Pleasant Hill Flood Control Project – Partner with Pleasant Hill and County Flood Control Project *Comment: Project was rejected by Feds due to low benefit to cost ratio*			X	WC-10
WC-7—Lancaster Neighborhood Flood Improvements *Comment: Will need grant funding to build this project*			X	WC-11
WC-8—Upper Ygnacio Valley Road Slide Repair *Comment: We continue to monitor this. It seemed stable during our last storms.*			X	WC-12
WC-9—Continue to support and promote the CERT program within Walnut Creek *Comment: Our CERT program is very active and continues to grow (over 600 volunteers now)*			X	WC-13

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
WC-10—Overlook Landslide prevention repairs *Comment: We sealed large cracks and overlaid the road to minimize water intrusion*			X	WC-14
WC-11—Implement drought tolerant landscaping ordinance *Comment: Adopted a Water Efficient Landscape Ordinance on Oct. 2016*			X	WC-15
WC-12—Continue working with Fire Department to keep open space fire breaks *Comment: We continue to work with the fire department and utilize cattle and goats to keep weeds down*			X	WC-16
WC-13—Provide Grants and low cost permits to property owners to strengthen soft-story buildings *Comment: Our PACE program can be used for Seismic retrofit for commercial property owners*			X	WC-17
WC-14—Support County-wide initiatives identified in Volume 1. *Comment: Ongoing*	X		X	WC-18
WC-15—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Volume 1. *Comment: Ongoing*	X		X	WC-3
WC-16—Continue to maintain compliance and good standing under the National Flood Insurance Program. *Comment: Ongoing*	X		X	WC-4
WC-17—Continue participation in the Community Rating System (CRS). *Comment: Ongoing*	X		X	WC-18
WC-18—Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan *Comment: We will perform this next time we update the General Plan*			X	WC-2
WC-19—Where appropriate, support retrofitting, purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. *Comment:*			X	WC-1
WC-20—Develop and maintain a system of interoperable communications for First Responders from local, State and Federal agencies. *Comment: We are partners in the East Bay Emergency Communication System*			X	WC-20
WC-21—Maintain the City EOC in a fully functional state of readiness. *Comment: Ongoing*	X		X	WC-21
WC-22—Maintain and update as necessary the City's Comprehensive Emergency Management plan to meet SEMS standards. *Comment: Ongoing*	X		X	WC-22

15.10 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 15-13 lists the actions that make up the City of Walnut Creek hazard mitigation action plan. Table 15-14 identifies the priority for each action. Table 15-15 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 15-13. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
WC-1— Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	Planning and Public Works	High	HMGP, PDM, FMA	Short-term
WC-2— Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including the General Plan, Climate Action Plan and the Capital Improvement Plan.						
New and Existing	All Hazards	1, 4, 5, 7, 11, 12, 14, 17	Planning and Public Works	Low	Staff Time, General Funds	Ongoing
WC-3— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan						
New and Existing	All Hazards	3, 8, 16	City Engineer, Public Works	Low	Staff Time, General Funds	Short-term
WC-4—Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: • Enforce the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts.						
New and Existing	Flood, Severe Weather, Dam and Levee Failure	3, 5, 6, 9, 10, 11, 15	Public Works Engineering	Low	Staff Time, General Funds	Ongoing
WC-5 – Seismic upgrade/retrofit to corporation yard						
Existing	Earthquake	1,2,7,13	Public Works	High; $2,000,000	HMGP, PDM	Long-Term
WC-6- Soft-story building inventory						
Existing	Earthquake	1,2,6,7,15,16	Public Works	Medium; $120,000	General Fund	Short-term
WC-7-Determine ownership of ditches to determine responsibility of cleaning and then implement maintenance program to maintain conveyance						
New & Existing	Flooding/Severe Weather	1,3,10	Public Works	Low; $15,000	General Fund, Grant	Short-term
WC-8- Construct Tice Creek By-Pass project						
New & Existing	Flooding/Severe Weather	1,10	Public Works	High; $7,000,000	Grants, General Fund, Assessment District	Long-term
WC-9- Construct Walnut Boulevard Drainage Improvements						
New and Existing	Flooding/Severe Weather	1,10	Public Works	High; $15,000,000	Grants, General Fund, Assessment District	Long-term
WC-10—Pleasant Hill Flood Control Project – Partner with Pleasant Hill and County Flood Control Project						
New and Existing	Flooding/Severe Weather	1,10	County Flood Control District*, Pleasant Hill, Walnut Creek Public Works	High	Grants, General Fund, Assessment District	Long-term
WC-11—Lancaster Neighborhood Flood Improvements						
New and Existing	Flooding/Severe Weather	1, 10	Public Works	High; $6,000,000	Grants, General Fund, Assessment District, HMGP, PDM	Long-term

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
WC-12—Upper Ygnacio Valley Road Slide Repair						
Existing	Landslide	2,3,4,5	Public Works	High; $1,000,000	General Fund, Grants	Long-term
WC-13—Continue to support and promote the CERT program within Walnut Creek						
New and Existing	All Hazards	2,3,4,5	City Manager's Office	Low; $10,000	General Fund, EMPG	Short-term
WC-14—Overlook Landslide prevention repairs						
Existing	Landslide	1,2,13	Public Works	High; $3,000,000	General Fund, Grants	Long-term
WC-15—Implement drought tolerant landscaping ordinance						
New and Existing	Drought	1,2,3,11,12	Planning and Public Works	Low; $10,000	General Fund	Short-term
WC-16—Continue working with Fire Department to keep open space fire breaks						
New and Existing	Wildfire	1,2,16	Public Works	Low; $5,000	General Fund	Short-term
WC-17—Provide Grants and low cost permits to property owners to strengthen soft-story buildings						
Existing	Earthquake	1,3,4,7,15	Building	Medium	General Fund, Grants	Long-term
WC-18—Support County-wide initiatives identified in Volume 1						
New and Existing	All Hazards	All	Planning	Low	General Fund	Short-term, Ongoing
WC-19—Continue participation in the Community Rating System (CRS)						
New and Existing	Flood	3,4,5,7,9	Public Works	Low	General Fund	Short-term
WC-20—Develop and maintain a system of interoperable communications for First Responders from local, State and Federal agencies						
New and Existing	All Hazards	2,13,16	Walnut Creek PD	Medium	General Fund	Short-term, Ongoing
WC-21—Maintain the City EOC in a fully functional state of readiness						
New and Existing	All Hazards	2,13,16	City Emergency Manager	Low	General Fund	Short-term, Ongoing
WC-22—Maintain and update as necessary the City's Comprehensive Emergency Management plan to meet SEMS standards						
New and Existing	All Hazards	2,13,16	City Emergency Manager	Low	General Fund	Short-term, Ongoing

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 15-14. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
WC-1	8	High	High	Yes	Yes	No	Medium	High
WC-2	8	High	Low	Yes	No	Yes	High	Low
WC-3	3	High	Low	Yes	No	Yes	High	Low
WC-4	7	High	Low	Yes	No	Yes	High	Low
WC-5	4	High	High	Yes	Yes	No	Medium	High
WC-6	6	High	Medium	Yes	Yes	No	High	High
WC-7	3	High	Low	Yes	No	Yes	High	Low
WC-8	2	High	High	Yes	Yes	No	Low	Medium
WC-9	2	High	High	Yes	Yes	No	Medium	High
WC-10	2	High	High	Yes	Yes	No	Low	Medium
WC-11	2	High	High	Yes	Yes	No	Medium	High
WC-12	4	Medium	High	No	Yes	No	Low	Low
WC-13	4	High	Low	Yes	Yes	Yes	High	Low
WC-14	3	Medium	High	No	Yes	No	Low	Medium
WC-15	5	Low	Low	Yes	No	Yes	High	Low
WC-16	3	High	Low	Yes	No	Yes	High	Low
WC-17	5	High	Medium	Yes	Yes	No	Medium	High
WC-18	18	Medium	Low	Yes	No	Yes	High	Low
WC-19	5	Low	Low	Yes	No	Yes	High	Low
WC-20	3	High	Medium	Yes	No	Yes	High	Low
WC-21	3	High	Low	Yes	No	Yes	High	Low
WC-22	3	High	Low	Yes	No	Yes	High	Low

a. See the introduction to this volume for explanation of priorities.

Table 15-15. Analysis of Mitigation Actions

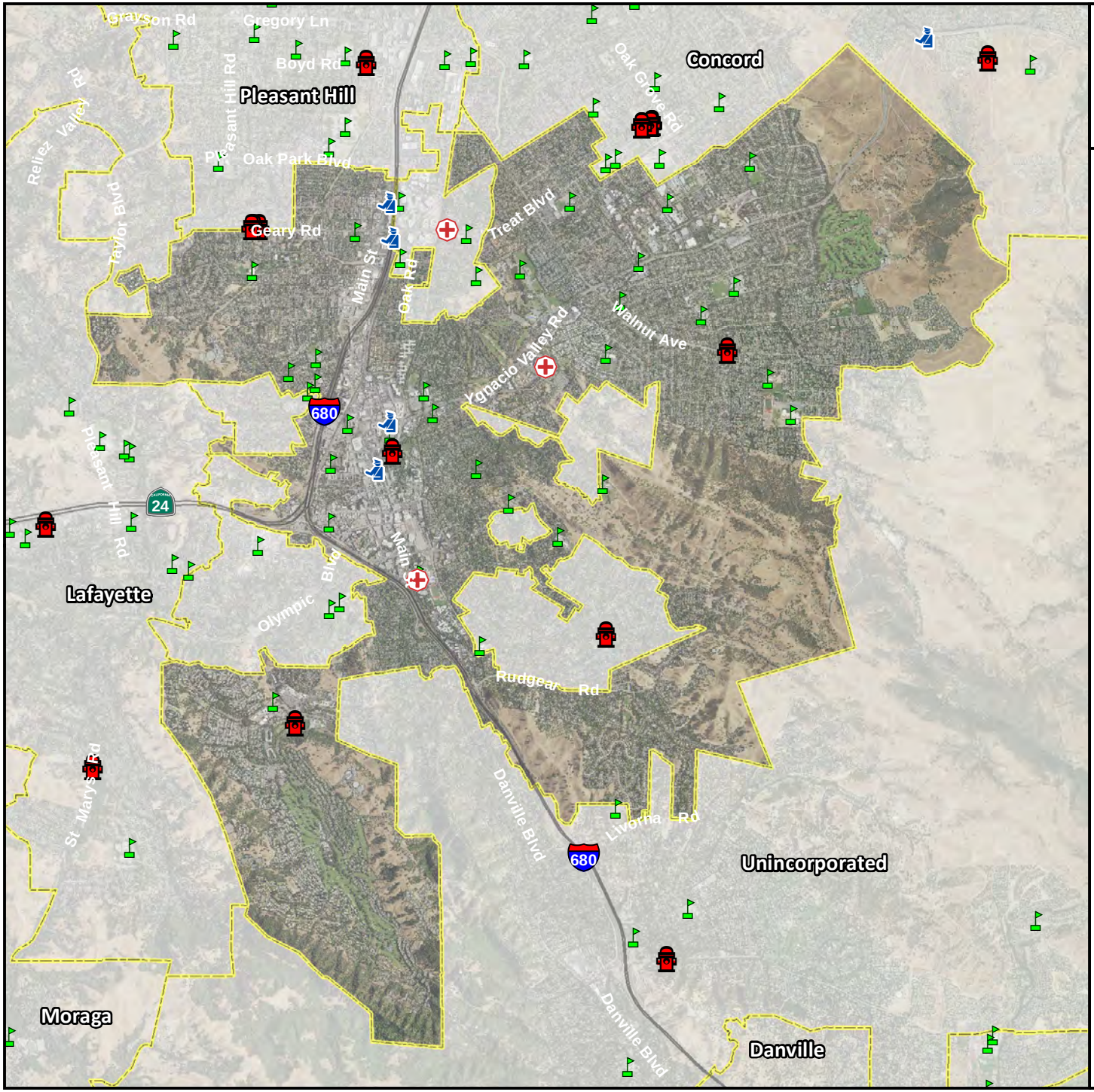
Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	WC-2, 18	WC-1, 18	WC-13, 18	WC-18	WC-18, 20, 21, 22	WC-18	WC-18	WC-2, 3, 13, 18
Dam and Levee failure	WC-4	WC-4	WC-4					WC-4
Drought	WC-15							
Earthquake	WC-17	WC-5, 17	WC-17					WC-6, 17
Flood	WC-4, 7, 19	WC-4, 7, 19	WC-4, 19	WC-19		WC-8, 9, 10, 11, 19		WC-4, 10, 19
Landslide		WC-12, 14						
Severe weather	WC-4	WC-4	WC-4			WC-8, 9, 10, 11		WC-4, 10
Tsunami								
Wildfire		WC-16		WC-16				

a. See the introduction to this volume for explanation of mitigation types.

15.11 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **City of Walnut Creek Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Walnut Creek Flood Damage Prevention Ordinance**—The flood damage prevention ordinance was reviewed for compliance with the National Flood Insurance Program.
- **City of Walnut Creek General Plan 2006—**The City of Walnut Creek General Plan was reviewed for information on development trends as well as community goals and policies.
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.



The City of Walnut Creek

Critical Facilities

- Emergency Operations Centers (Government)
- Fire Stations (Protective Functions)
- Hazardous Materials
- Medical Facilities
- Police Stations (Protective Functions)
- Schools & Educational Facilities
- Contra Costa County Boundary
- City Boundaries

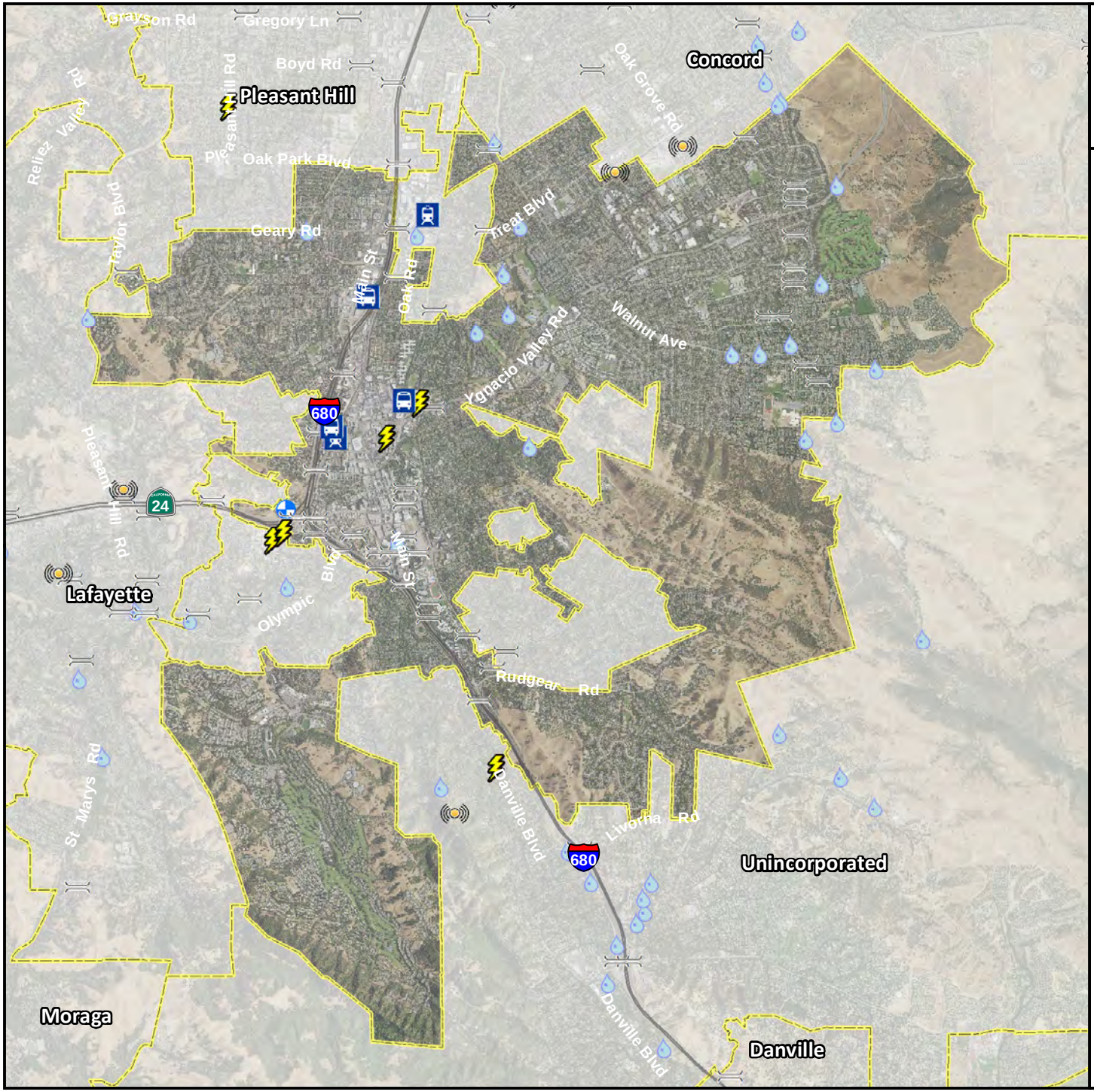
0 0.5 1 2

Miles

N
W E
S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of Walnut Creek

Critical Infrastructure

- Airports (Other Critical Functions)
- Bus Facilities (Other Infrastructure)
- Communication Facilities
- Electric Power Facilities
- Highway Bridges
- Highway Tunnels (Other Infrastructure)
- Light Rail (Other Infrastructure)
- Natural Gas (Other Infrastructure)
- Port Facilities (Other Critical Functions)
- Water Supply Facilities
- Rail Facilities (Other Infrastructure)
- Wastewater Facilities
- Contra Costa County Boundary
- City Boundaries

0 0.5 1 2

Miles

N
W E
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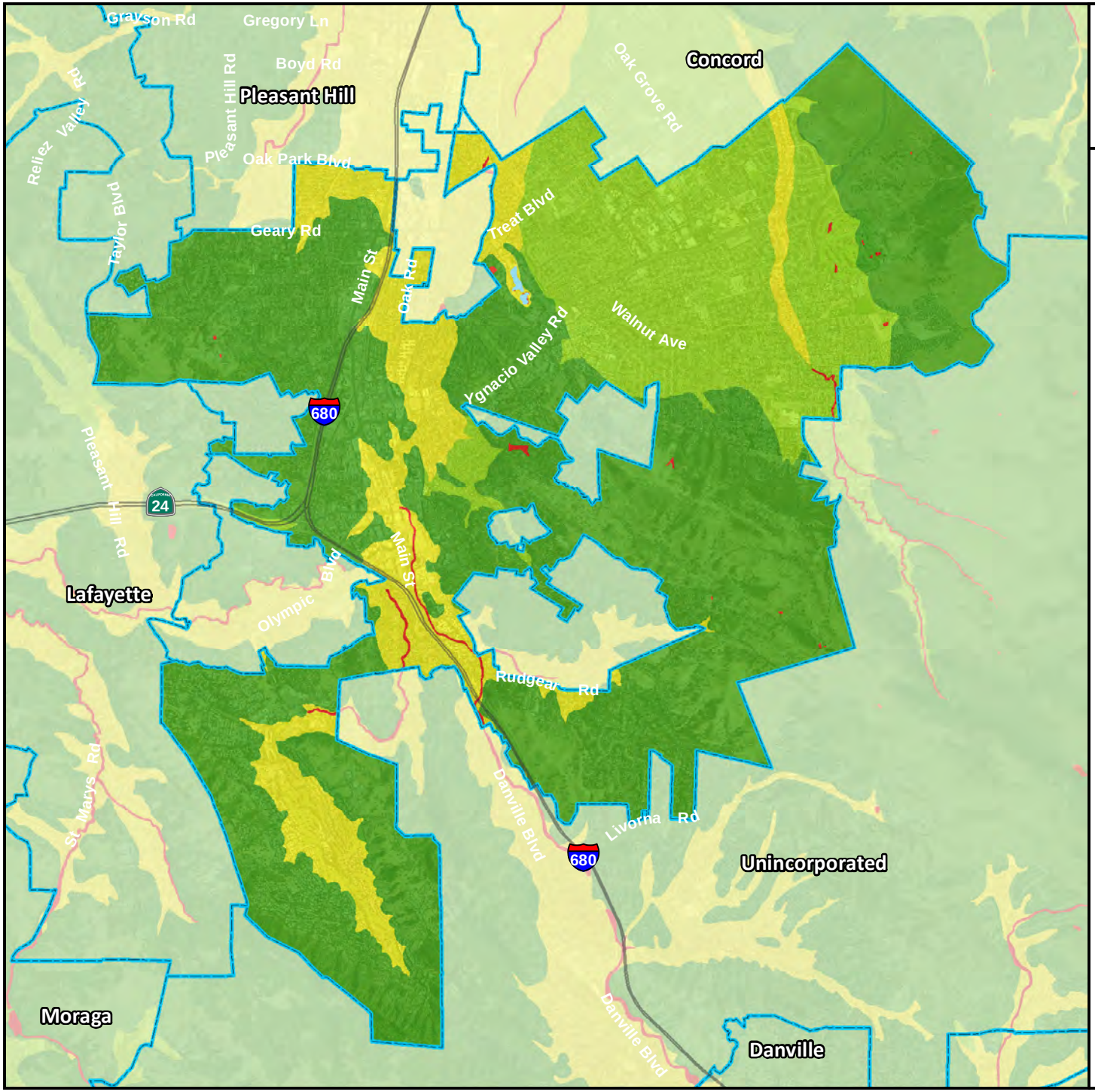
TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of Walnut Creek

Liquefaction Susceptibility

- Contra Costa County Boundary
- City Boundaries
- Water Bodies

Susceptibility to Liquefaction

- Very Low
- Low
- Medium
- High
- Very High
- No Liquefaction Data Available

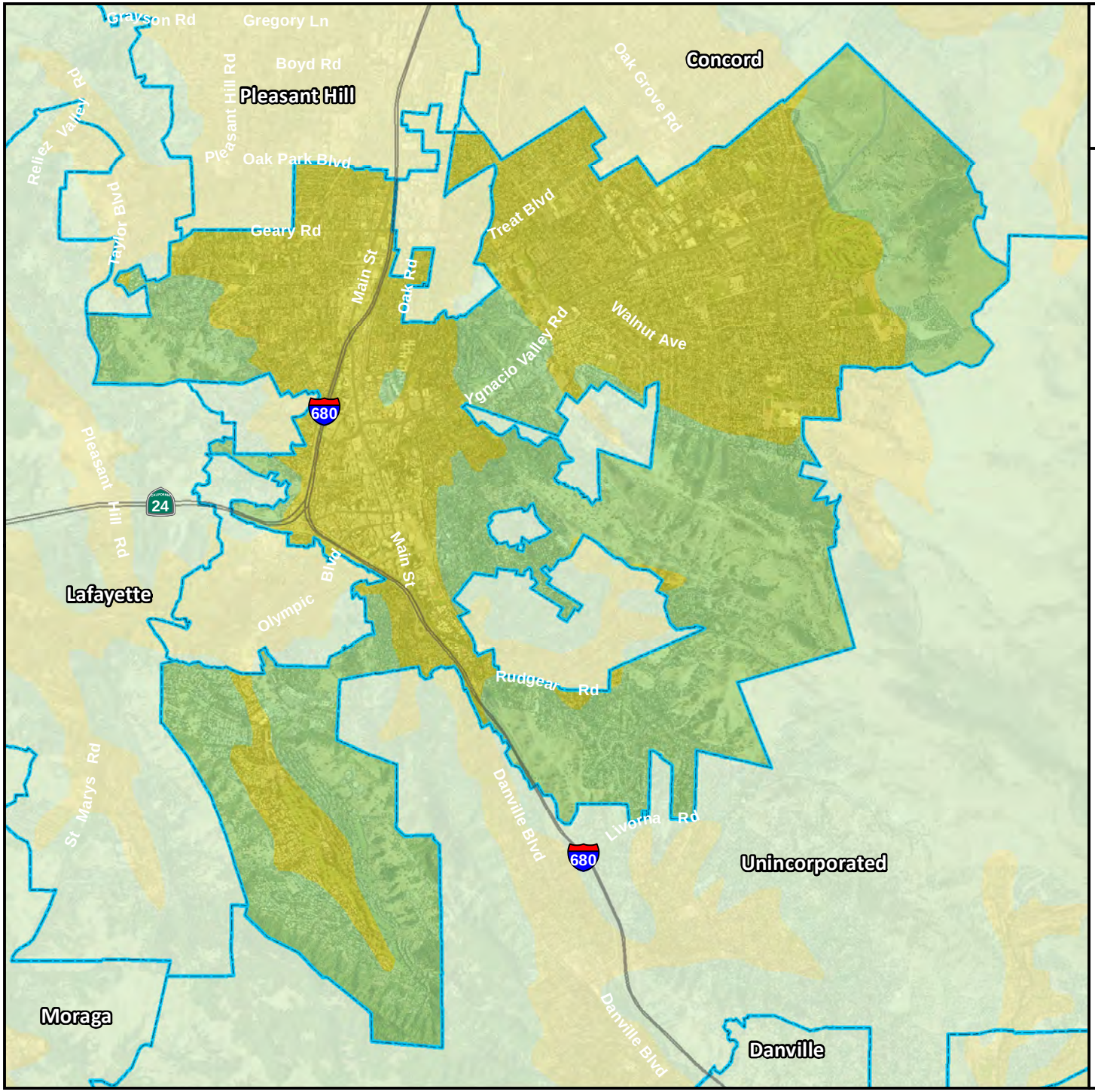
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The City of Walnut Creek

National Earthquake Hazard Reduction Program (NEHRP) Soil Class

Contra Costa County Boundary

City Boundaries

Water Bodies

NEHRP Site Class / Soil Profile

- B / Rock
- C / Very Dense Soil - Soft Rock
- D / Stiff Soil
- E / Soft Soil
- No Soil Data Available

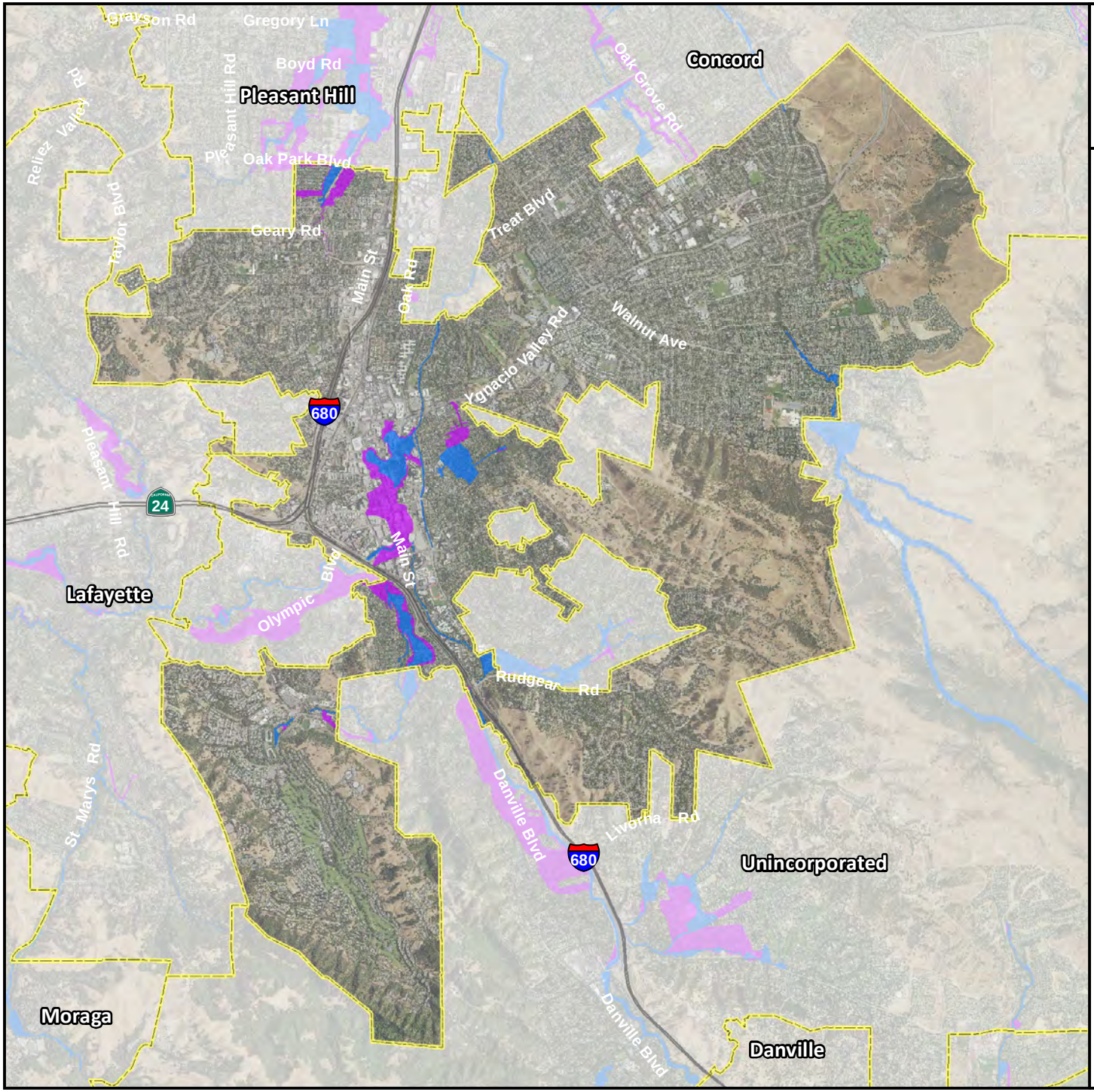
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Department of Conservation, USDA



The City of Walnut Creek

FEMA DFIRM Flood Hazard Areas

- 1% Annual Chance (100-Year) Flood Zone
- 0.2% Annual Chance (500-Year) Flood Zone
- Contra Costa County Boundary
- City Boundaries
- Water Bodies

Flood hazard areas as depicted on Effective FEMA Digital Flood Insurance Rate Maps (DFIRM)

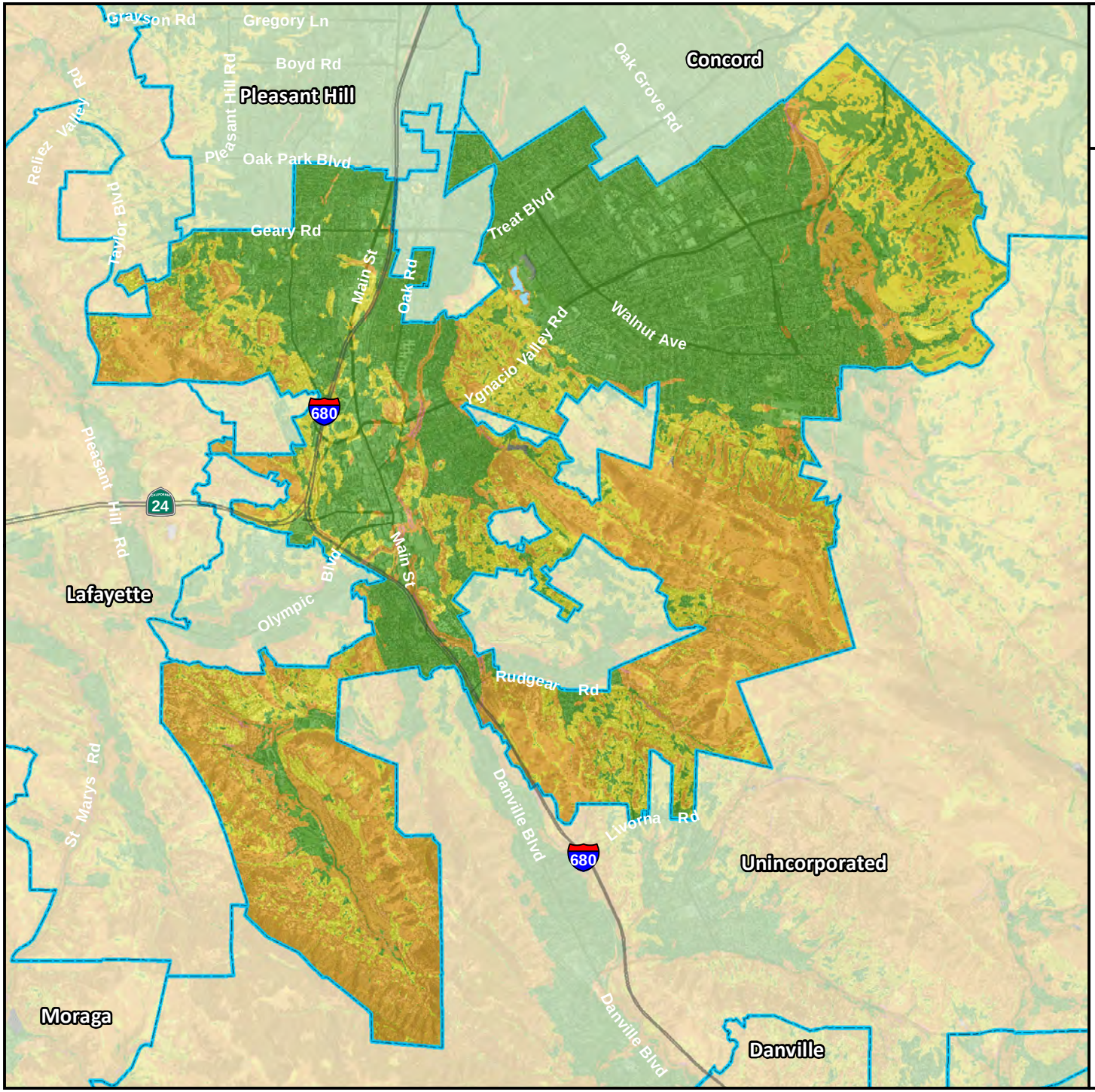
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, CalTrans, FEMA, USDA



The City of Walnut Creek

Landslide Susceptibility Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Type

Low

Moderate

High

Very High / Existing

Data Not Available

Source dataset created by Wills C.J., Perez, F., Gutierrez, C., 2011, Susceptibility to deep-seated landslides in California: California Geological Survey Map Sheet 58

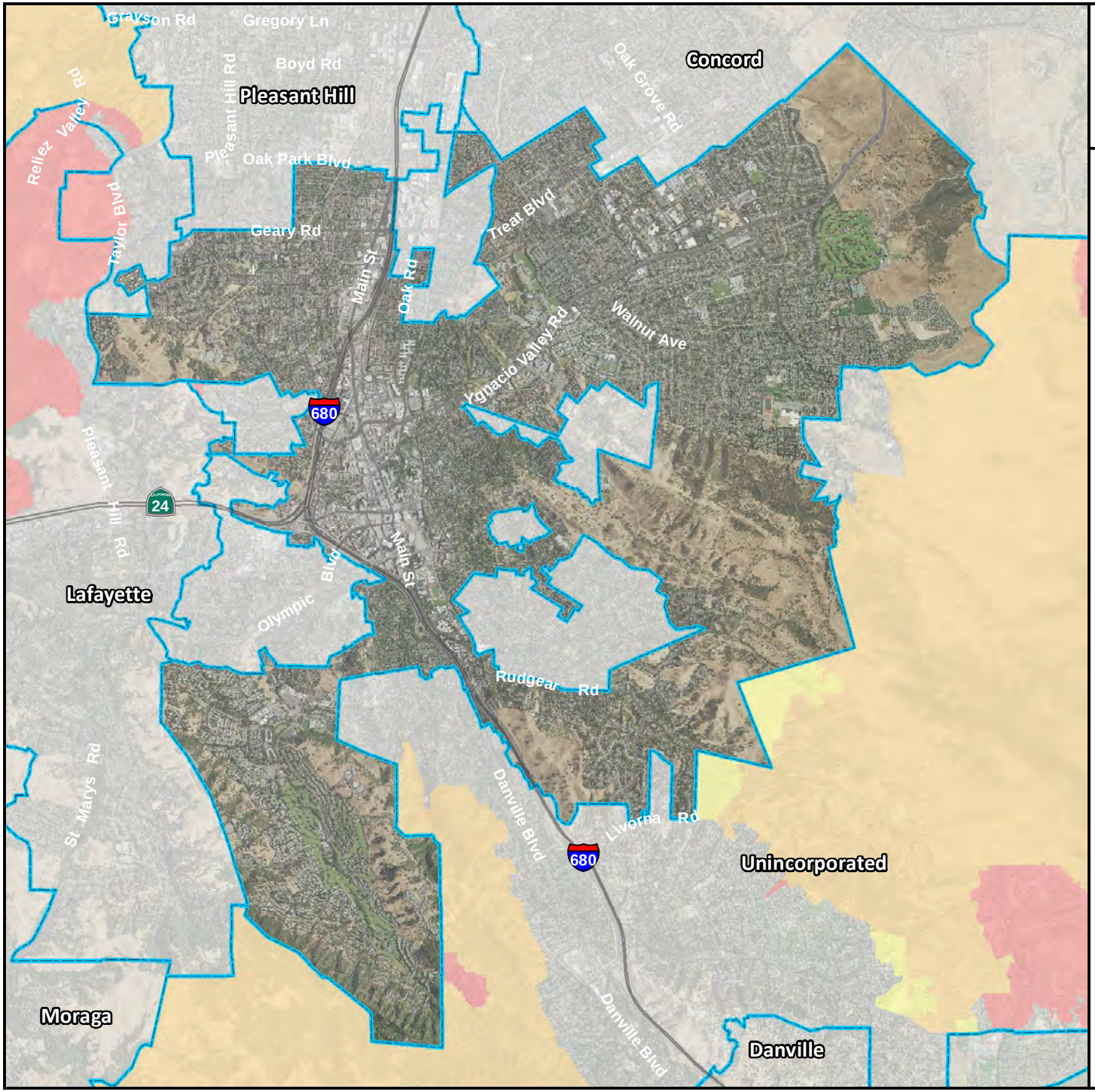
0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



The City of Walnut Creek

Wildfire Severity Zones

Contra Costa County Boundary

City Boundaries

Water Bodies

Wildfire Severity Zone

Moderate

High

Very High

0 0.5 1 2

Miles

N W E S

TETRA TECH

Map Data Sources: Contra Costa County, Caltrans, CalFIRE, USDA

16. Antioch Unified School District

16.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Jeff Collins, Director, MOT
510 G Street
Antioch, California 94509
Telephone: 925-779-7600
e-mail Address: jeffcollins@antioch.k12.ca.us

Alternate Point of Contact
Eileen Alterman, Risk Manager
510 G Street
Antioch, California 94509
Telephone: 925-779-7500
e-mail Address: eileenalterman@antioch.k12.ca.us

16.2 JURISDICTION PROFILE

16.2.1 Overview

Antioch Unified School District (AUSD) was established on July 7, 1925 and is located in Contra Costa County. The District provides educational services to the residents of the City of Antioch, plus a portion of the City of Oakley at the eastern boundary and a portion of the City of Pittsburg at the western boundary. The District consists of approximately 41 square miles, has an estimated population of 115,000, and is located approximately 35 miles northeast of Oakland, California. The District employs approximately 2,000 Certificated and Classified staff and is a political subdivision of the State of California. The District has a five member Board of Education that has adoptive authority. The majority of the District's funding is supplied by the State of California based on Student Average Daily Attendance. As of the time of this plan update, the District's enrollment is declining.

The Board of Education assumes responsibility for the adoption of this plan; Director/Maintenance, Operations and Transportation will oversee its implementation.

16.2.2 Assets

Table 16-1 summarizes the critical assets of the district and their value.

16.3 CAPABILITY ASSESSMENT

16.3.1 Planning and Regulatory Capabilities

Jurisdictions develop plans and programs and implement rules and regulations to protect and serve residents. When effectively prepared and administered, these plans, programs and regulations can support the implementation of mitigation actions.

Table 16-1. Special District Assets

Asset	Value
Property	
44 undeveloped acres	$14,000,000.00
Critical Infrastructure and Equipment	
Support Vehicles	$1,500,000.00
Yellow Buses	$4,500,000.00
Student Support Services Offices	$1,900,000.00
Student Support Services Annex(MOT, Warehouse, Fleet)	$3,000,000.00
Total:	$24,900,000.00
Critical Facilities	
Antioch High School	
Antioch Middle School	
Fremont Elementary School	
Kimball Elementary School	
Turner Elementary School	
Park Middle School	
Belshaw Elementary School	
Marsh Elementary School	
Mission Elementary School	
Sutter Elementary School	
Deer Valley High School	
Black Diamond Middle School	
Carmen Dragon Elementary School	
MNO Grant Elementary School	
London Elementary School	
Dallas Ranch Middle School	
Diablo Vista Elementary School	
Lone Tree Elementary School	
Muir Elementary School	
Orchard Park School	
Dozier-Libbey Medical High School	
Bidwell High School	
Bridges Programs	
Live Oak High School	
Prospects High School	
Antioch Charter School I	
School Services Building	
School Services Building Annex	
Apollo Court	
Deer Valley Meeting Center	
Total:	$508,910,370.00

The following existing codes, ordinances, policies, programs or plans are applicable to this hazard mitigation plan:

- California Department of Public Health
- California and US Environmental Protection Agencies
- California State Division of State Architects
- Federal Endangered Species Act
- City of Antioch Emergency Mitigation Plan
- City Of Oakley Emergency Mitigation Plan
- Antioch Unified School District Emergency Plan

16.3.2 Fiscal, Administrative and Technical Capabilities

Fiscal capability is an indicator of a jurisdiction's ability to fulfill the financial needs associated with hazard mitigation projects. An assessment of fiscal capabilities is presented in Table 16-2. Administrative and technical capabilities represent a jurisdiction's staffing resources for carrying out the mitigation strategy. An assessment of administrative and technical capabilities is presented in Table 16-3.

Table 16-2. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Federal Grant Programs	Yes
Other	No

Table 16-3. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Facilities Department
Engineers or professionals trained in building or infrastructure construction practices	Yes	Facilities Department
Planners or engineers with an understanding of natural hazards	No	NA
Staff with training in benefit/cost analysis	Yes	Facilities/Fiscal Services Departments
Surveyors	No	NA
Personnel skilled or trained in GIS applications	No	NA
Scientist familiar with natural hazards in local area	No	NA
Emergency manager	Yes	Student Support Services/MOT
Grant writers	Yes	Contracted
Other	No	NA

16.3.3 Education and Outreach Capabilities

Outreach and education capability identifies the connection between government and community members, which opens a dialogue needed for a more resilient community. An assessment of education and outreach capabilities is presented in Table 16-4.

Table 16-4. Education and Outreach

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe	No NA
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe	No NA
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly specify	Yes Board of Education
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe	No NA
Do you have any established warning systems for hazard events? • If yes, please briefly describe	No District Emergency Plan

16.3.4 Adaptive Capacity for Climate Change

Given the uncertainties associated with how hazard risk may change with a changing climate, a jurisdiction's ability to track such changes and adapt as needed is an important component of the mitigation strategy. Table 16-5 summarizes the District's adaptive capacity for climate change.

16.4 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

16.4.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the Antioch Unified School District made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **Measure B Bond Expenditure Planning**—Incorporated key mitigation strategies in the Measure B planning process

Resources listed in Section 16.10 were used to provide information on hazard events and local capabilities within the jurisdiction.

Table 16-5. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: None provided*	Low
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: None provided*	Low
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: None provided*	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: None provided*	Low
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: None provided*	Low
Participation in regional groups addressing climate risks *Comments/Additional Information: None provided*	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: None provided*	Low
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: None provided*	Low
Identified strategies for adaptation to impacts *Comments/Additional Information: None provided*	Low
Champions for climate action in local government departments *Comments/Additional Information: None provided*	Low
Political support for implementing climate change adaptation strategies *Comments/Additional Information: None provided*	Low
Financial resources devoted to climate change adaptation *Comments/Additional Information: None provided*	Low
Local authority over sectors likely to be negative impacted *Comments/Additional Information: None provided*	Low
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: None provided*	Low
Local residents support of adaptation efforts *Comments/Additional Information: None provided*	Low
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

16.4.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the Antioch Unified School District will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan include actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Measure B Bond Expenditure Planning**—Incorporate key mitigation strategies in the Measure B future planning process
- **Future Bond Planning—**Incorporate mitigation planning in all future Bond planning efforts.

16.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 16-6 lists past occurrences of natural hazards for which specific damage was recorded in the Antioch Unified School District. Other hazard events that broadly affected the entire planning area, including the Antioch Unified School District, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 16-6. Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Winter Strom, Flooding	NA	1/2007	$25.000
Winter Storm, Flooding	NA	12/2006	$100,000.00

16.6 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. Noted vulnerabilities within the district include the following:

- Some District facilities are in need of seismic retrofits.
- Large trees located near buildings and play areas may result in secondary hazards during hazard events such as severe weather.

16.7 HAZARD RISK RANKING

Table 16-7 presents a local ranking for the Antioch Unified School District of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

16.8 STATUS OF PREVIOUS PLAN ACTIONS

Table 16-8 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 16-7. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake	54	High
2	Severe weather	48	High
2	Drought	48	High
3	Landslide	12	Low
3	Flood	12	Low
4	Wildfire[a]	6	Low
5	Dam and levee failure	3	Low
6	Sea level rise	0	None
6	Tsunami	0	None

a. For jurisdictions with no mapped risk, a low score of 6 was given due to potential impacts to people and the economy from smoke.

Table 16-8. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
AUSD1—Earthquake retrofit District Facilities. *Comment:*			X	AUSD-3
AUSD2—Create & maintain a hazard mitigation web page on the District's website. *Comment: Available in written form upon request.*		X		
AUSD3—Partner with the City of Antioch Emergency Services Office for disaster response and preparedness, including updates to the Emergency Operations Plan, a post disaster action plan, training and support. *Comment:*			X	AUSD-4
AUSD4—Conduct public awareness education regarding hazards. *Comment:*			X	AUSD-5
AUSD5—Have Maintenance & Operations workers CERT trained. *Comment:*			X	AUSD-6
AUSD6—Remove large trees near buildings and play areas. *Comment:*			X	AUSD-7
AUSD7—Acquire emergency response equipment including portable fencing, sand bags, portable generators, portable pumps, other tools & equipment used for emergency response. *Comment:*			X	AUSD-8
AUSD8—Repair & replace gutters and downspouts at schools sites. *Comment:*			X	AUSD-9
AUSD9—Support County-wide initiatives identified in the 2011 Hazard Mitigation Plan. *Comment: Completed for 2011 plan and will continue for 2017 plan.*	X		X	AUSD-10
AUSD10—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in the 2011 Hazard Mitigation Plan. *Comment: Completed for 2011 plan and will continue for 2017 plan.*	X		X	AUSD-2
AUSD11—Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan *Comment: AUSD does not have a General Plan. This action is more appropriate for the City of Antioch.*		X		

16.9 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 16-9 lists the actions that make up the Antioch Unified School District hazard mitigation action plan. Table 16-10 identifies the priority for each action. Table 16-11 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 16-9. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
AUSD-1— Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	Maintenance, Operations and Transportation	High	HMGP, PDM, FMA	Short-term
AUSD-2— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 6	Maintenance, Operations and Transportation, Risk Management	Low	Staff Time, General Funds	Short-term
AUSD-3— Earthquake retrofit District Facilities.						
Existing	Earthquake	1, 7, 13, 15	Operations	High	HMGP, PDM	Long-term
AUSD-4— Partner with the City of Antioch Emergency Services Office for disaster response and preparedness, including updates to the Emergency Operations Plan, a post disaster action plan, training and support.						
Existing	All Hazards	2, 6, 16	Operations	Low; $10,000	District Funds	Long-term
AUSD-5—Conduct public awareness education regarding hazards.						
Existing	All Hazards	3	Operations/ Technology	Medium; $5,000	District Funds	Short-term
AUSD-6— Have Maintenance & Operations workers CERT trained.						
Existing	All Hazards	2, 3	Operations	Medium; $2,000	District Funds, EMPG	Long-term
AUSD-7— Remove large trees near buildings and play areas.						
Existing	Severe Weather, Earthquake	4, 5, 7	Maintenance and Operations	Medium; $200,000	HMGP, District Funds	Long-term
AUSD-8— Acquire emergency response equipment including portable fencing, sand bags, portable generators, portable pumps, other tools & equipment used for emergency response.						
Existing	All Hazards	2, 13	Operations	High; $150,000	HMGP, PDM, District Funds	Short-term
AUSD-9— Repair & replace gutters and downspouts at schools sites.						
Existing	Severe Weather	1, 5	Operations	Low; $100,000	HMGP, PDM, District Funds	Short-term
AUSD-10— Support County-wide initiatives identified in Volume 1 of the 2017 Hazard Mitigation Plan.						
New and Existing	All Hazards	All	Maintenance, Operations and Transportation, Risk Management	Low	District Funds	Ongoing

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 16-10. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
AUSD-1	8	High	High	Yes	Yes	No	Medium	High
AUSD-2	3	Low	Low	Yes	No	Yes	High	Low
AUSD-3	4	High	High	Yes	Yes	No	Medium	High
AUSD-4	3	High	Low	Yes	No	Yes	Medium	Low
AUSD-5	1	Medium	Medium	Yes	No	Yes	Low	Medium
AUSD-6	2	High	Medium	Yes	No	Yes	Low	Low
AUSD-7	3	Medium	Medium	Yes	Yes	No	Medium	Medium
AUSD-8	2	Medium	High	No	Yes	No	Low	Low
AUSD-9	2	Medium	Low	Yes	No	No	High	Low
AUSD-10	18	Medium	Low	Yes	No	Yes	High	Low

a. See the introduction to this volume for explanation of priorities.

Table 16-11. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	AUSD-2, 4, 10	AUSD-1	AUSD-5		AUSD-4, 8			AUSD-2, 4, 10
Dam and Levee failure								
Drought								
Earthquake		AUSD-3, 7						
Flood								
Landslide								
Severe weather		AUSD-7, 9						
Tsunami								
Wildfire								

a. See the introduction to this volume for explanation of mitigation types.

16.10 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed for this annex.

- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.
- **AUSD Emergency Plans—**Evaluation of areas of weakness in structural support for plan.
- **Healthy Schools Act**—Used to identify potential areas of concerns that could be mitigated.
- **City of Antioch Emergency Plans**—Reviewed for information on coordination of services

17. BETHEL ISLAND MUNICIPAL IMPROVEMENT DISTRICT

17.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
L. Jeff Butzlaff, Interim District Manager
PO Box 244 / 3085 Stone Road
Bethel Island, CA 94511
Telephone: 925-684-2210
e-mail Address: bimid@sbcglobal.net

Alternate Point of Contact
Denece Bixby, District Clerk
PO Box 244 / 3085 Stone Road
Bethel Island, CA 94511
Telephone: 925-684-2210
e-mail Address: bimid@sbcglobal.net

17.2 JURISDICTION PROFILE

17.2.1 Overview

Bethel Island Municipal Improvement District (BIMID) was formed in 1960 by the California State Legislature. The newly formed BIMID absorbed Reclamation District 1619. Bethel Island, California, is located in the unincorporated portion of East Contra Costa County; the only access to the island by road is across the Bethel Island Bridge, which is owned and maintained by Contra Costa County. The island is not a city and thus relies on a combination of private and county public services. BIMID is a special act district that has powers similar to, but somewhat less than, a city.

BIMID is responsible for the maintenance and rehabilitation of 14.5 miles of earthen levee of which 11.5 miles is surrounding Bethel Island and considered exterior levee system protecting the island from flooding. The interior elevation of Bethel Island is below the sea level; therefore, it relies on the levee system for flood protection. The remaining 3 miles is associated with the interior levee within the Delta Coves master plan subdivision. The levee on Bethel Island currently protects the island's 3,500 acres of agricultural land and nearly 2,300 residents. The 2010 census shows a population of 2,137 for Bethel Island; however, todays population has grown to about 2,300 when considering overall growth rate of 7.1 percent in the Contra Costa County. The year-round residents on Bethel Island fluctuate seasonally and can be increased to about twice as many as normal season during the summer months or a total of 4,600.

The bulk of residential developments on the Island are located and concentrated along the perimeter of the island, principally on the southwestern, southern, southeastern, eastern and northeastern perimeters. The new Delta Coves development will add over 550 new housing units (single family homes and condos) to the Bethel Island community, potentially increasing the year-round population by 1,265 residents assuming 2.3 residents per household (the County average residents per household is 2.8) for a total of 3,565 year-round residents. Again, during the summer months when there is a seasonal influx of visitors and transitory inhabitants, the population of the entire Bethel Island may grow two times resulting in a total of nearly 7,000 residents. The Delta Coves development will mainly consist of single-family residences, condos and commercial marina and other recreational facilities when fully built out. The Delta Coves project adds operation and maintenance responsibility over new facilities to this District; including 3 miles of levee, 4 drainage pump stations to collect storm water and a breach structure.

BIMID also provides habitat mitigation, park services, as well as storm drain maintenance and repair for Bethel Island. The existing BIMID drainage pump station is capable of discharging excess drainage back into the nearby channels. The pump station is an important element in keeping floodwater out of the Island. This facility is currently located below the 100-year flood elevation posing a threat to the area. BIMID is in the process of securing CDBG funding for the second phase of upgrades to its main pumping station increasing its reliability during a flood.

The majority of BIMID funding comes from ad valorem tax which is collected by Contra Costa County and is used to compete for State funding (in the form of cost share work agreements) from various sources including the California Department of Water Resources. Additionally, during FY 2015-16, the District began receiving Proposition 218 Assessment District funds (as approved by the Bethel Island property owners in August 2015). The new Assessment District authorized funds for a ten-year period beginning in 2015 and will provide a stabilized foundation for our financial future for the next eight years (at the very least, subject to voter renewal) by funding enhanced levee and drainage maintenance and administrative support, and will provide local cost share funds for major levee improvement and drainage projects.

Currently, BIMID has eight employees, consisting of legal counsel, a District Manager, a Financial Consultant, two full time field workers, one part time field worker/park maintenance, and two part time office workers. The District also has several sub-contractors which provide a variety of services for the District.

The Board of Directors for BIMID consists of five elected members, each director serving for a period of four years.

The Bethel Island Municipal Improvement District consists of unincorporated territory in Contra Costa County, bounded and described as follows: Beginning at the northwest corner of the bridge constructed originally around 1915, across the dredge cut at or near the head of what is commonly called Taylor Slough; then following the easterly bank of said Taylor Slough with its meanderings to the junction of said Taylor Slough with what is commonly called Piper Slough; then following the southerly and westerly back of said Piper Slough to its junction with Sand Mound Slough; then following the northerly bank of said Sand Mound Slough to its junction with the place of beginning.

BIMID owns and maintains approximately 107 acres located near the center of the island. 46 acres of this property are used as a mitigation site for levee projects and potential borrow site for future levee improvement work. BIMID also owns approximately 1.5 acres on Stone Road which serves as the location for the District′s administrative offices and equipment/maintenance yard.

The Bethel Island Municipal Improvement District Board of Directors assumes responsibility for the adoption of this plan; the District Manager will oversee its implementation.

17.2.2 Assets

Table 17-1 summarizes the critical assets of the district and their estimated value.

Table 17-1. Special District Assets

Asset	Value
Property	
Approximately 110 acres (park – 1 acre; District yard – 1.5 acres; Mitigation site and surrounding land – 107 acres	$647,000
Critical Infrastructure and Equipment	
One main pump station with three stationary pumps_	$7,500,000
One secondary pump station with one stationary pump	$150,000
19.1 miles of drainage ditch and canal easements	$3,500,000
11.5 miles of levee and easements	$64,400,000
3 miles of Delta Coves levee and easements	$16,800,000
4 Delta Coves pump stations	$3,800,000
Delta Coves breach structure	$8,200,000
3 Community Warning sirens	$30,000
Two dump trucks	$31,000
One water truck	$10,000
One equipment trailer	$500
Five pieces of earth-moving equipment	$325,000
One boat	$2,000
Two pickups and one service truck	$25,000
One flood fight service container	$5,000
Light Utility Vehicle (for Levee Patrols)	$21,000
One mobile flood fight enclosed trailer	$7,000
One archive storage container_	$5,000
Total:	$103,812,500
Critical Facilities	
Maintenance Shop	$30,000
BIMID Hall (containing the District's administrative offices and archived records	$150,000
Total:	$180,000

17.3 CAPABILITY ASSESSMENT

17.3.1 Planning and Regulatory Capabilities

Jurisdictions develop plans and programs and implement rules and regulations to protect and serve residents. When effectively prepared and administered, these plans, programs and regulations can support the implementation of mitigation actions. The following existing codes, ordinances, policies, programs or plans are applicable to this hazard mitigation plan:

- **HMP Standard**— The District performed a survey and completed construction in 2015 to bring all of its levee system up to the minimum HMP criteria.
- **PL84-99 Standard**—Continues to improve and raise the levee to PL84-99.
- **Contra Costa County Operational Area Hazard Mitigation Plan**—Completed January 2012.
- **Storm Water Drainage Plan and Improvement**— District is responsible for managing its storm and floodwater drainage to prevent flooding and degradation of water quality. District is planning to evaluate its existing pumping capacity and potential need for expansion of it.

17.3.2 Fiscal, Administrative and Technical Capabilities

Fiscal capability is an indicator of a jurisdiction's ability to fulfill the financial needs associated with hazard mitigation projects. An assessment of fiscal capabilities is presented in Table 17-2. Administrative and technical capabilities represent a jurisdiction's staffing resources for carrying out the mitigation strategy. An assessment of administrative and technical capabilities is presented in Table 17-3.

Table 17-2. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	No
Authority to Levy Taxes for Specific Purposes	No
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Federal Grant Programs	Yes
Other	No

Table 17-3. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	BIMID has hired a reputable engineering firm as District Engineer possessing multiple expertise including land development and management practices.
Engineers or professionals trained in building or infrastructure construction practices	Yes	The District engineer and his team have knowledge and experience in building or infrastructure construction practices.
Planners or engineers with an understanding of natural hazards	Yes	BIMID relies on its engineering team who has knowledge and understanding of natural hazards to provide services.
Staff with training in benefit/cost analysis	Yes	BIMID's District Engineer and his team have performed benefit/cost analysis and are available to address any issues.
Surveyors	Yes	BIMID's District Engineer is a licensed land surveyor and has access to surveyors and surveying equipment.
Personnel skilled or trained in GIS applications	Yes	BIMID's District Engineer and his team have access to GIS applications and skilled staff.
Scientist familiar with natural hazards in local area	Yes	BIMID's District Engineer and his team have expertise in natural hazards in the local area.
Emergency manager	Yes	BIMID's District Engineer and his team have several years of experience in emergency response, preparedness, and recovery.
Grant writers	Yes	BIMID's District Engineer and his team have formulated grant applications for various levee work and pump station retrofit and are very capable in obtaining grant funding approval from State and federal agencies.
Other	Yes	BIMID has hired a reputable engineering firm possessing multiple expertise in engineering, geotechnical, and environmental work.

17.3.3 Education and Outreach Capabilities

Outreach and education capability identifies the connection between government and community members, which opens a dialogue needed for a more resilient community. An assessment of education and outreach capabilities is presented in Table 17-4.

Table 17-4. Education and Outreach

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe	Yes Emergency Planning and Help can be found under the General Info tab on the BIMID web site (www.bimid.com)
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe	Yes BIMID uses Facebook to provide hazard mitigation education and education opportunities to the Bethel Island community on both the BIMID Facebook page and the Bethel Island Group page
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly specify	Yes BIMID has a 5-member board of directors
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe	Yes The District uses its web site and the local post office to disseminate hazard-related information. The District also maintains a Facebook page and posts important hazard-related information on the Bethel Island Community Facebook page. Additionally, BIMID's newly appointed Emergency Preparedness Coordinator is responsible for a variety of hazard preparation activities including community outreach and education.. BIMID has prepared a 5-year plan discussion for potential projects.
Do you have any established warning systems for hazard events? • If yes, please briefly describe	Yes Three sirens located in various locations around the island

17.3.4 Adaptive Capacity for Climate Change

Given the uncertainties associated with how hazard risk may change with a changing climate, a jurisdiction's ability to track such changes and adapt as needed is an important component of the mitigation strategy. The District's immediate goal is to be able to manage and respond to local flooding resulting from climate change and be prepared to protect its population. Table 17-5 summarizes the District's adaptive capacity for climate change.

Table 17-5. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts	High BIMID relies on its engineering and scientist team
Comments/Additional Information: *The District monitors planning efforts for climate change by the Delta Protection Commission and Delta Stewardship Council for sea level rise due to climate change.*	
Jurisdiction-level monitoring of climate change impacts	High BIMID relies on its engineering and scientist team
Comments/Additional Information: *The District monitors climate change by keeping up with studies and researches conducted by scientists, NGOs, and governmental entities such as the Delta Protection Commission and Delta Stewardship Council..*	
Technical resources to assess proposed strategies for feasibility and externalities	High BIMID relies on its engineering and scientist team
Comments/Additional Information: *The resources available to the District are the studies and researches conducted by NGOs, and governmental entities.*	
Jurisdiction-level capacity for development of greenhouse gas emissions inventory	Medium BIMID relies on its engineering and scientist team
Comments/Additional Information: *BIMID does not conduct its independent inventory and relies on NGOs and governmental entities.*	
Capital planning and land use decisions informed by potential climate impacts	High BIMID relies on its engineering and scientist team
Comments/Additional Information: *BIMID is located in the secondary zone of the Delta and does not make any land use decisions.*	
Participation in regional groups addressing climate risks	Medium BIMID relies on its engineering and scientist team
Comments/Additional Information: *BIMID participates in venues discussing climate change in order to stay up-to-date on the issue.*	
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes	High
Comments/Additional Information: *The District always considers climate change in planning projects.*	
Identified strategies for greenhouse gas mitigation efforts	Medium
Comments/Additional Information: *The District employs climate change policies in planning projects.*	
Identified strategies for adaptation to impacts	Medium
Comments/Additional Information: *BIMID proactively identifies climate change in planning projects.*	
Champions for climate action in local government departments	Medium
Comments/Additional Information: *BIMID leads its local projects by employing climate change policies to each project.*	
Political support for implementing climate change adaptation strategies	Medium
Comments/Additional Information: *The BIMID board of directors is very supportive of actions reducing the climate change impacts.*	
Financial resources devoted to climate change adaptation	Low
Comments/Additional Information: *The BIMID board of directors is very supportive of including the costs of reducing the climate change impacts in to the project costs.*	
Local authority over sectors likely to be negative impacted	Low
Comments/Additional Information: *This does not seem to apply to BIMID.*	

Criterion	Jurisdiction Rating[a]
Public Capacity	
Local residents knowledge of and understanding of climate risk	Low
Comments/Additional Information: *BIMID has about 2,400 residents however not certain about the overall understanding on climate change impacts. The district facilitates opportunities to educate the public.*	
Local residents support of adaptation efforts	Low
Comments/Additional Information: *BIMID has not received any objections from local residents.*	
Local residents' capacity to adapt to climate impacts	Low
Comments/Additional Information: *Most buildings are built at the same level as the top of the levee system.*	
Local economy current capacity to adapt to climate impacts	Low
Comments/Additional Information: *BIMID's budget predominantly depends on local assessment and is very steady. Projects are not feasible without grants from government.*	
Local ecosystems capacity to adapt to climate impacts	Low
Comments/Additional Information: *Ecosystem is also built in to each project.*	

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

17.4 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

17.4.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the Bethel Island Municipal Improvement District made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **Levee Improvement** — BIMID has worked on its levees bringing almost of its levee system to the Hazard Mitigation Plan standard (1.5 feet above 100-year). BIMID is also working to improve one mile of its levees to the California Bulletin 192-82 standard to not only increase flood protection, but also to alleviate seepage and scour.
- **Retrofits of the Main Pump Station** — BIMID has replaced one of its 3 pumps at its main pump station to increase efficiency in pumping storm and floodwater into the local channels.
- **Emergency Safety Plan** — Contra Costa County has initiated formulating emergency plans for BIMID and expect to finalize it in 2017. BIMID has participated in this effort through working with the County staff and its consultants team.
- **Environmental**—Plan complies with the California Environmental Quality Act guidelines and enhances and restores habitats when an opportunity presents itself.

Resources listed in Section 17.11 were used to provide information on hazard events and local capabilities within the jurisdiction.

17.4.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the Bethel Island Municipal Improvement District will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan include actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Levee Improvement** —BIMID has secured State grants to work on another 2.5 miles of its levee system to improve flood protection. This work will complete the improvement in the most vulnerable segment of the levee system on the northwest of the island.
- **Retrofits of the Main Pump Station** —BIMID has replaced one existing pump under CDBG program while awaiting for CDBG grant approval in the amount of $100,000 to replace the second pump and associated appurtenances. BIMID is also planning to replace the third drainage pump in the main station in 2017 if and when the funding is available.
- **Assessment of existing pumping capacity**—BIMID is planning to evaluate its existing storm and floodwater pumping capacity and potential need for expansion of it.
- **Encroachments** — BIMID has improved portions of its levees using the State Department of water Resources' grant in the amount of $5 million and is working with its engineering team to formulate a plan to minimize impacts of existing encroachments. The plan will be examining various methods including installing sheet piles as a barrier for floodwater, elevating homes, relocation, removal and possible buyout.

17.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 17-6 lists past occurrences of natural hazards for which specific damage was recorded in the Bethel Island Municipal Improvement District. Other hazard events that broadly affected the entire planning area, including the Bethel Island Municipal Improvement District, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 17-6. Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Severe Weather/Wind/Rain	DR-1628	1/1/2006	$542,000
Flooding	N/A	2/13/2000 – 2/14/2000	$27,000
Severe Weather/Wind/Rain	N/A	12/21/1999 – 12/22/1999	$10,000
Severe Weather/Wind/Rain	NA	12/1998	$90,000
Earthquake	DR-845	10/17/1989	$2,000
Severe Weather/Wind/Rain	N/A	2/17/1986 – 2/19/1986	$2,000
Severe Weather/Wind/Rain	N/A	12/3/1983	$4,000
Severe Weather/Wind/Rain	N/A	1/3/1982	$7,000
Severe Weather/Wind/Rain	N/A	1/20/1967 – 1/31/1967	$180,000

17.6 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. Noted vulnerabilities within the district include the following:

- Several residential buildings are located along the levee perimeter which gets inundated during heavy storms due to inadequate drainage system and levee seepage issues.

17.7 HAZARD RISK RANKING

Table 17-7 presents a local ranking for the Bethel Island Municipal Improvement District of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 17-7. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Dam and levee failure	54	High
1	Flood	54	High
1	Earthquake	54	High
2	Severe weather *(excluding extreme heat)*	48	High
3	Sea level rise[a]	30	Medium
4	Wildfire	27	Medium
5	Drought	9	Low
6	Landslide	0	None
6	Tsunami	0	None
6	Severe Weather (extreme heat)	0	None

a. The sea level rise data and resulting assessment used for in the risk assessment did not show exposure to the District's assets. However, the rate of sea level rise and resulting impacts are uncertain. Sea level rise will cause levee failure and flooding, although not as frequent as a flood, therefore, the ranking has adjusted to "medium" by district staff.

17.8 STATUS OF PREVIOUS PLAN ACTIONS

Table 17-8 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

17.9 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 17-9 lists the actions that make up the Bethel Island Municipal Improvement District hazard mitigation action plan. Table 17-10 identifies the priority for each action. Table 17-11 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 17-8. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update: Check if Yes	Carried Over to Plan Update: Enter Action #
1—Elevate Main and Secondary pump stations, and may add additional pumping capacity once an evaluation is completed.			X	BIMID-3
Comment: BIMID plans to secure funding to elevate the main pump station above the 100-year flood level and replace another pump. It also needs funding to evaluate existing pumping capacity and explore the need to add additional pumping capacity.				
2—Raise 2400 lf. of levee from HMP standards to PL84-99 standards	X 2015			
Comment: BIMID is raising about a mile of levee to DWR standards; This action is completed.				
3—Rip rap 10 miles of levee			X	BIMID-4
Comment: BIMID has repaired some rip-rap and will continue to place rip rap .				
4—Remove existing vegetation/clear line of sight, vegetation management	X Annually		X	BIMID-5
Comment: As part of routine, annual levee maintenance, BIMID is managing vegetation on the levee; This is an ongoing program				
5—Replace existing drainage culverts			X	BIMID-6
Comment: BIMID is securing funds through State grant to do this work in 2018.				
6—Support County-wide initiatives identified in the 2011 Hazard Mitigation Plan.			X	BIMID-7
Comment: Completed project to raise levee to meet the Delta HMP criteria				
7—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in the 2011 Hazard Mitigation Plan.	X As needed		X	BIMID-2
Comment: BIMID will continue to participate in plan maintenance				
8—Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan.		X		
Comment: BIMID does not have a General Plan. BIMID has prepared a 5-year plan addressing flood hazards and the work needed in the area.				

Table 17-9. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
BIMID-1— Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses and/or properties impacted by hazards ranked as "high" (dam and levee failure, flood, earthquake). This project increases resiliency of infrastructures and critical facilities.						
Existing	Dam/Levee Failure, Flood, Earthquake, Severe Weather (urban drainage flooding associated with severe weather hazards)	1, 4, 6, 7, 9, 10, 11, 15	BIMID	High	HMGP, PDM, FMA	Short-term
BIMID-2— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All hazards assessed by this plan	3, 6, 8, 10, 16, 17	BIMID	Low	Staff Time, General Funds	Short-term
BIMID-3—BIMID is planning to elevate the drainage pump station to above the 100-year flood elevation. This project enables the district and the residents to prepare for, respond to, and recover from the impact of flooding and urban drainage flooding associated with severe thunderstorms (severe weather) much more quickly by maintaining the main drainage pumps as operational during high water events. *BIMID also plans to evaluate existing pumping capacity and explore the need to add additional pumping capacity.*						
Existing	Flood; Dam and Levee Failure, Severe Weather	1, 2, 4, 10, 13	BIMID	High	HMGP, PDM, FMA	Short-term
BIMID-4—BIMID is planning to reinforce and install new rip rap to minimize or eliminate erosion on the waterside slope of the levee. Erosion can cause levee failure resulting in inundation and loss of lives and properties. This project allows for the development and implementation of long-term, cost-effective and environmentally sound mitigation project.						
Existing	Flood; Dam and Levee Failure	1, 4, 6, 12, 13	BIMID	Medium	HMGP, PDM, FMA	Short-term
BIMID-5—Implement vegetation control to prevent visual obstruction of levee damage that may cause potential levee failure during flood or earthquake events.						
Existing	Flood; Dam and Levee Failure; Earthquake	4, 10, 13	BIMID	Low	Staff Time, General Funds	Short-term
BIMID-6—Several culverts traverse under local roads and are key components of the local drainage system for the Island. These systems carry flood water to the local ditches and end at the existing local drainage pump station. Under this action, BIMID will evaluate the storm and floodwater drainage on the Island and identify needed additional pumping capacity to fully address its drainage deficiencies. Flood water from any source, if not transferred to the pump, will cause island flooding, resulting in loss of lives and properties. These culverts are aging and in need of maintenance or replacements.						
Existing	Flood; Severe Weather	2, 4, 6, 9, 10, 13	BIMID	High	HMGP, PDM, FMA	Short-term
BIMID-7—BIMID will allocate staff time to support County initiatives in the LHMP.						
Existing	All Hazards	12, 13, 16, 17, 18	BIMID	Low	Staff Time, General Funds	Short-term
BIMID-8—BIMID plans to address existing encroachments along the levees. There are many homes encroaching the levee system on the perimeter of the Island increasing flood hazard for all residents and property owners on Bethel Island. There is a need for a plan to address the best and most practical approach in minimizing the impacts of existing encroachments and reducing the risk of flooding. The plan will explore all possible options, including relocation, removal, acquisition, and flood proofing to meet FEMA guidelines. All encroachments will be examined closely and the potential flood risk will be evaluated prior to categorizing and prioritizing the implementation of this work.						
Existing	Flood; Dam and Levee Failure	1, 4, 6, 12, 13	BIMID	High	HMGP, PDM, FMA	Short-term

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 17-10. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
BIMID-1	8	High	High	Yes	Yes	No	Medium	High
BIMID-2	7	Medium	Low	Yes	No	Yes	High	Low
BIMID-3	5	High	High	Yes	Yes	No	Medium	High
BIMID-4	5	Medium	Medium	Yes	Yes	No	Medium	Medium
BIMID-5	3	Medium	Low	Yes	No	Yes	High	Low
BIMID-6	6	High	High	Yes	Yes	No	Medium	High
BIMID-7	6	Medium	Low	Yes	No	Yes	High	Low
BIMID-8	5	High	High	Yes	Yes	No	Low	High

a. See the introduction to this volume for explanation of priorities.

Table 17-11. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards			BIMID 2, 7	BIMID 2, 7				BIMID 2, 7
Dam and Levee failure	BIMID 1, 3, 4, 5, 6	BIMID 1, 3, 4, 5, 6			BIMID 1, 3, 6	BIMID 1, 3, 4, 6	BIMID 1, 3, 4, 6	
Drought								
Earthquake								
Flood	BIMID 1, 3, 4, 5, 6, 8	BIMID 1, 3, 4, 5, 6, 8			BIMID 1, 3, 6	BIMID 1, 3, 4, 6	BIMID 1, 3, 4, 6	
Landslide								
Severe weather	BIMID 1, 3, 4, 5, 6	BIMID 1, 3, 4, 5, 6			BIMID 1, 3, 6	BIMID 1, 3, 4, 6	BIMID 1, 3, 4, 6	
Tsunami								
Wildfire								

a. See the introduction to this volume for explanation of mitigation types.

17.10 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

Bethel Island is one of the urban communities in the Delta, Contra Costa County. There are many homes encroaching the levee system on the perimeter of the Island increasing flood hazard for all residents and property owners on Bethel Island. There is a need for a plan to address the best and most practical approach in minimizing the impacts of existing encroachments and reducing the risk of flooding. The plan will explore all possible options, including relocation, removal, acquisition, and flood proofing to meet FEMA guidelines. All encroachments will be examined closely and the potential flood risk will be evaluated prior to categorizing and prioritizing recommendations. The study will also include an outreach element.

17.11 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed for this annex.

- **Geotechnical reports prepared for BIMID levee system**—This report contains important information used in risk assessment and levee conditions, which was utilized to identify potential projects.
- **Geotechnical reports prepared for the Horseshoe Bend levee improvement project**—This report contains important information used in design and planning of the Horseshoe Bend levee.
- **Scope of work prepared for the Horseshoe Bend levee improvement project**—This report was utilized to support grants from the State of California.
- **Environmental documents and permit applications prepared for the Horseshoe Bend levee improvement project**—This effort is to support the Horseshoe Bend levee improvement project.
- **Grant applications for various levee improvements and pump station repair work**—BIMID is proactively seeking funds to pursue projects to reduce hazards.
- **Hazard Mitigation Plan Annex Development Tool-kit**— The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.

18. CENTRAL CONTRA COSTA SANITARY DISTRICT

18.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Shari Deutsch, Risk & Emergency Manager
5019 Imhoff Place
Martinez, CA 94553
Telephone: 925-229-7320
E-mail Address: sdeutsch@centralsan.org

Alternate Point of Contact
Ann Sasaki, Deputy General Manager
5019 Imhoff Place
Martinez, CA 94553
Telephone: 925-229-7131
E-mail Address: asasaki@centralsan.org

18.2 JURISDICTION PROFILE

18.2.1 Overview

The Central Contra Costa Sanitary District (CCCSD) receives its legal authority from the California Health and Safety Code, Division 6, Part 1. This statute is referred to as the Sanitary District Act of 1923. CCCSD is a Special District created in 1946 to provide wastewater collection and treatment to the residents and businesses in the central area of Contra Costa County. Over time, the District's service area has expanded to incorporate areas of new development and those areas where sewers have been constructed to replace septic systems. The District is governed by a five-member elected Board of Directors. The Board of Directors assumes responsibility for the adoption of this plan, while the General Manager will oversee its implementation.

The District currently serves approximately 463,000 residents and 3,000 businesses in 10 cities within the central county area.

The District's headquarters and treatment plant are based in Martinez. The treatment plant is capable of treating 54 million gallons of wastewater per day and has handled up to 240 million gallons per day in wet weather. The District's collections system operation is based in Walnut Creek which allows crews to respond to emergencies within the service area in less than one hour. The collections system operation is responsible for the cleaning, maintenance and repair of the District's 1,500 miles of underground pipeline and its 18 pumping stations.

The District also operates a household hazardous waste collection facility, provides recycled water to customers for irrigation and other industrial uses, and manages a source control program with enforcement authority to prevent pollution from entering area waters.

Funding comes primarily through annual sewer service charges, ad valorem taxes, and sewer connection permit fees. However, the District has occasionally issued revenue bonds to finance capital improvements.

According to County and City planners, the District's service area (see Figure 18-1) is comprised of high value land. As a result, development trends indicate higher residential densities and more compact commercial developments. Population growth will come from lot splits, infill development, construction of in-law units and a

rise in multi-generational households. As a result, the District is focused on increasing the capacity of its current collections and treatment systems rather than on construction of new pipe segments.

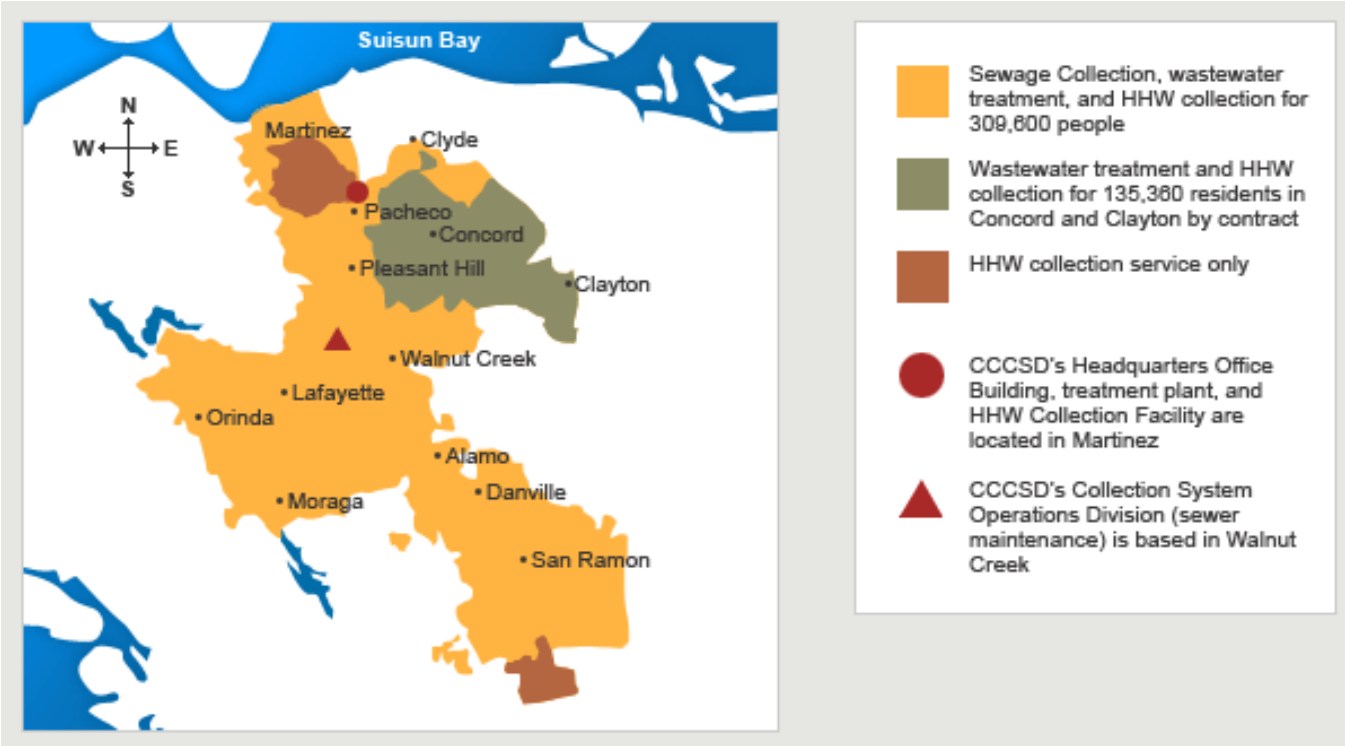


Figure 18-1. Central Contra Costa Sanitary District Service Area

18.2.2 Assets

Table 18-1 summarizes the critical assets of the district and their value.

Table 18-1. Special District Assets

Asset	Value
Property	
420 acres of land	$17,320,568
Critical Infrastructure and Equipment	
43 process structures	$133,730,462
Piping throughout plant	$30,345,675
1500 miles of pipe throughout the District	$690,240,720
18 pump stations	$32,367,843
25 tanks	$66,393,796
105 vehicles	$7,287,526
Total:	$960,366,022
Critical Facilities	
16 Process Buildings	$215,973,025
12 Power Buildings	$33,555,709
9 Other Buildings	$41,881,664
Total:	$291,410,398

18.3 CAPABILITY ASSESSMENT

18.3.1 Planning and Regulatory Capabilities

Jurisdictions develop plans and programs and implement rules and regulations to protect and serve residents. When effectively prepared and administered, these plans, programs and regulations can support the implementation of mitigation actions. The following existing codes, ordinances, policies, programs or plans are applicable to this hazard mitigation plan:

- **California Department of Public Health**
- **California and US Environmental Protection Agencies**
- **California Code of Regulations**
- **Federal Endangered Species Act**
- **Clean Air Act** – compliance with Title V Permit
- **California Environmental Quality Act (CEQA)** – statutory requirement
- **National Pollutant Discharge Elimination System (NPDES)** – permit issued by the Regional Water Quality Control Board, renewed 4/1/17
- **Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, Order #2006-003-DWQ**
- **Health and Safety Code** – Sections 5410-5416
- **Fish and Game Code** – Sections 5650-5656
- **Contra Costa County Operational Area Hazard Mitigation Plan**—April 2012
- **Capital Improvement Plan**—June 2016
- **Sewer System Management Plan** - October 2012
- **Comprehensive Wastewater Master Plan**—May 2017
- **Treatment Plant Seismic Vulnerability Assessment of Selected Facilities**—December 2009

18.3.2 Fiscal, Administrative and Technical Capabilities

Fiscal capability is an indicator of a jurisdiction's ability to fulfill the financial needs associated with hazard mitigation projects. An assessment of fiscal capabilities is presented in Table 18-2. Administrative and technical capabilities represent a jurisdiction's staffing resources for carrying out the mitigation strategy. An assessment of administrative and technical capabilities is presented in Table 18-3.

Table 18-2. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No
Federal Grant Programs	Yes
Other	No

Table 18-3. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Capital Projects Division, Planning Staff
Engineers or professionals trained in building or infrastructure construction practices	Yes	Engineering - Capital Projects Staff
Planners or engineers with an understanding of natural hazards	Yes	Capital Projects Division, Planning Staff
Staff with training in benefit/cost analysis	No	
Surveyors	Yes	Engineering – Survey Staff
Personnel skilled or trained in GIS applications	Yes	Engineering – Asset Management Staff
Scientist familiar with natural hazards in local area	No	
Emergency manager	Yes	Administration – Risk and Emergency Manager
Grant writers	No	
Other	No	

18.3.3 Education and Outreach Capabilities

Outreach and education capability identifies the connection between government and community members, which opens a dialogue needed for a more resilient community. An assessment of education and outreach capabilities is presented in Table 18-4.

Table 18-4. Education and Outreach

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	No
Do you have hazard mitigation information available on your website? • If yes, please briefly describe	Yes Link to County Plan Site
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe	No N/A
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly specify	No N/A
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe	Yes Website, Customer Newsletter, Public Meetings
Do you have any established warning systems for hazard events? • If yes, please briefly describe	Yes Public Address, Horns and Lights

18.3.4 Adaptive Capacity for Climate Change

Given the uncertainties associated with how hazard risk may change with a changing climate, a jurisdiction's ability to track such changes and adapt as needed is an important component of the mitigation strategy. Table 18-5 summarizes the District's adaptive capacity for climate change.

Table 18-5. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: Treatment Plant and some pump stations are in flood zones/coastal areas.*	High
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: Treatment Plant and some pump stations are in flood zones/coastal areas.*	High
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: Engineering and Planning groups consider climate change in their work.*	Medium
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: Agency is subject to the Clean Air Act, Title V permit.*	High
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: Considered in capital planning process.*	Medium
Participation in regional groups addressing climate risks *Comments/Additional Information: California Water Environment Federation, National Association of Clean Water Agencies.*	Medium
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: Environmental impacts are considered in all actions.*	High
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: As required to comply with Title V permit.*	High
Identified strategies for adaptation to impacts *Comments/Additional Information: Considered in capital improvement planning.*	High
Champions for climate action in local government departments *Comments/Additional Information: Throughout, as protecting the environment is part of the agency's mission.*	High
Political support for implementing climate change adaptation strategies *Comments/Additional Information: Throughout, as protecting the environment is part of the agency's mission.*	High
Financial resources devoted to climate change adaptation *Comments/Additional Information: Not separately funded, part of overall environmental planning process.*	Low
Local authority over sectors likely to be negative impacted *Comments/Additional Information: Authority limited to actions/programs within District operations.*	Low
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: Local residents are generally aware and concerned.*	Medium
Local residents support of adaptation efforts *Comments/Additional Information: Local residents are generally supportive.*	Medium
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: Residents increased use of recycled water during drought, reduce energy usage as needed.*	Medium
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: Varies over time.*	Medium
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: Delta and bay are sensitive, actions impacting them are highly regulated.*	Medium

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

18.4 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

18.4.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the Central Contra Costa Sanitary District made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **Capital Improvement Plan**—July 2016 edition; 10 year plan outlining intended capital improvements, focused on risk reduction and environmentally sustainable operations
- **Capital Improvement Budget**—Annual budget reflecting the highest priority items from the Capital Improvement Plan, includes operational optimization and reducing environmental impacts
- **Sewer System Management Plan**—State regulatory requirement to ensure efforts are made to reduce risks to public health, property and the environment
- **NPDES Permit**—State regulatory requirement, renewed 4/1/17, issued by the Regional Water Quality Control Board, specifies criteria for discharging treated wastewater
- **CCCSD Emergency Operations Plan—**September 2016, SEMS and NIMS compliant plan, reviewed annually and updated as needed
- **Treatment Plant Seismic Vulnerability Assessment of Selected Facilities**—December 2009, used as a planning tool for subsequent and ongoing capital needs, risk reduction and operational resilience.

Resources listed in Section 18.11 were used to provide information on hazard events and local capabilities within the jurisdiction.

18.4.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the Central Contra Costa Sanitary District will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan include actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Comprehensive Wastewater Master Plan**—20 year plan projecting long term capital needs, considers risk reduction, operational optimization, environmentally sustainable operations and regulatory compliance.
- **Physical and Natural Hazard Vulnerability Assessment**—A more detailed assessment of sites with recommendation to reduce exposure and maintain or return to normal operations after a hazard event.
- **Capital Improvement Plan**—Effective July 2017, 10 year plan outlining intended capital improvements, focused on risk reduction and environmentally sustainable operations.
- **CCCSD Continuity of Operations Plan** – Currently under development

18.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 18-6 lists past occurrences of natural hazards for which specific damage was recorded in the Central Contra Costa Sanitary District. Other hazard events that broadly affected the entire planning area, including the Central Contra Costa Sanitary District, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 18-6. Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Severe Weather	DR-4301	1/11/17	$450,000
Severe Weather	NA	2/2011	$9,324
Severe Weather	NA	3/2/2009	$1,600
Severe Weather	NA	2/17/2009	$1,600
Severe Weather	NA	10/23/2007	$1,600
Storm, Severe Weather, Landslides	NA	12/2005-1/2006	$648,900
Storm, Severe Weather, Landslides	NA	1/1997-12/1998	$621,000
Landslide	NA	3/2006	$185,000
Storm, Severe Weather, Landslides	NA	3/1/1995	$180,000
Storm, Severe Weather, Landslides	DR-979	1/20/1993	$248,000
Storm, Severe Weather, Landslides	NA	11/19/1991	$215,000
Storm, Severe Weather, Landslides	DR-758	2/17/1986	$260,500
Storm, Severe Weather, Landslides	NA	2/26/1983	$394,200
Storm, Severe Weather, Landslides	NA	1/25/1983	$629,200
Storm, Severe Weather, Landslides	NA	3/30/1982	$658,600

18.6 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. Noted vulnerabilities within the District include the following:

- The District is exposed to significant earthquake risk and has facilities, such as the District Building and Treatment Plant, that would benefit from seismic retrofits.
- The Walnut Creek/Grayson Creek levee is in need of rehabilitation.
- Critical facilities and infrastructure are exposed to impacts from earthquakes, severe weather, landslide and flood hazards.

18.7 HAZARD RISK RANKING

Table 18-7 presents a local ranking for the Central Contra Costa Sanitary District of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

18.8 STATUS OF PREVIOUS PLAN ACTIONS

Table 18-8 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 18-7. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake	54	High
2	Severe weather *(excluding extreme heat)*	36	High
2	Landslide	36	High
2	Flood	36	High
3	Sea level rise	14	Low
4	Drought	12	Low
4	Tsunami	12	Low
4	Wildfire	12	Low
5	Dam and levee failure	6	Low
6	Severe Weather (extreme heat)	0	None

Table 18-8. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
CCCSD-1—District Building Seismic Improvements *Comment: Two buildings retrofitted since 2011*			X	CCCSD-3
CCCSD-2—Collections System Renovations (Short Term) *Comment: Improved or replaced 25 miles of sewer mains since 2011*	Ongoing		X	CCCSD-4
CCCSD-3—Collections System Renovations (Long Term) *Comment: Priorities to be evaluated as part of Master Planning efforts*			X	CCCSD-5
CCCSD-4—Wet Weather Bypass Improvements *Comment: Completed Summer 2012*	X			
CCCSD-5—EBMUD Watershed Pump Stations and Force Main Improvements/Upgrades *Comment: Not implemented*			X	CCCSD-6
CCCSD-6—Treatment Plant Seismic Improvements *Comment: 1 structure completed and 1 structure in planning stages*	Ongoing		X	CCCSD-7
CCCSD-7—Primary Treatment Expansion *Comment: Completed in Spring 2016*	X			
CCCSD-8—Support County-wide initiatives identified in the 2011 Hazard Mitigation Plan *Comment:*	Ongoing		X	CCCSD-9
CCCSD-9—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in the 2011 Hazard Mitigation Plan *Comment: Staff continues to serve on Steering Committee*	Ongoing		X	CCCSD-2

18.9 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 18-9 lists the actions that make up the Central Contra Costa Sanitary District hazard mitigation action plan. Table 18-10 identifies the priority for each action. Table 18-11 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 18-9. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
CCCSD-1— Where appropriate (feasible and cost-effective), support retrofitting or relocation of District facilities in high hazard areas, prioritizing structures that have experienced repetitive losses and are impacted by hazards ranked as "high" (earthquake, severe weather excluding extreme heat, landslide, and flood).						
Existing	Earthquake, Severe Weather, Landslide and Flood	1, 4, 7, 9, 12, 14, 15, 17	CCCSD	High	HMGP, PDM, FMA	Short-term
CCCSD-2— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan						
New and Existing	All hazards assessed by this plan	3, 8, 16	CCCSD	Low	Staff Time, General Funds	Short-term
CCCSD-3— Implement District building seismic improvements/retrofits						
Existing	Earthquake	1, 2, 6, 12, 13, 17	CCCSD	High	Property Tax, Sewer Service Changes, Debt Financing, PDM Process	Short-term
CCCSD-4— Implement the collection system renovation/retrofit (short-term) projects identified and prioritized in the District's 10-year capital facilities plan. These projects are identified based on a needs assessment that takes into account risk reduction and environmentally sustainable operations.						
Existing	Earthquake, Severe Weather, Landslide, Flood	1, 2, 6, 12, 13, 17	CCCSD	Low	Property Tax, Sewer Service Changes, Debt Financing, PDM Process	Short-term
CCCSD-5— Implement the collection system renovation/retrofit (long-term) projects identified and prioritized in the District's 10-year capital facilities plan. These projects are identified based on a needs assessment that takes into account risk reduction and environmentally sustainable operations.						
Existing	Earthquake, Severe Weather, Landslide, Flood	1, 2, 6, 12, 13, 17	CCCSD	Medium	Property Tax, Sewer Service Changes, Debt Financing, PDM Process	Long-term
CCCSD-6— Implement the EBMUD watershed pump stations and force main improvements/upgrade projects identified and prioritized in the District's 10-year capital facilities plan. These projects are identified based on a needs assessment that takes into account risk reduction and environmentally sustainable operations.						
New and Existing	Earthquake, Severe Weather, Landslide, Flood	1, 2, 6, 13, 17	CCCSD	High	Property Tax, Sewer Service Changes, Debt Financing, PDM Process	Long-term
CCCSD-7— Implement treatment plant seismic improvements/retrofits						
New and Existing	Earthquake	6, 12, 13, 17	CCCSD	High	Property Tax, Sewer Service Changes, Debt Financing, PDM Process	Long-term

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
CCCSD-8—Implement the Walnut Creek / Grayson Creek Levee rehabilitation projects identified and prioritized in the District's 10-year capital facilities plan. These projects are identified based on a needs assessment that takes into account risk reduction and environmentally sustainable operations.						
New and Existing	Earthquake, Severe Weather, Landslide, Flood	1, 2, 6, 10, 12, 13, 17	Contra Costa County Flood Control District,* CCSD	Medium	Property Tax, Sewer Service Changes, Debt Financing, PDM Process	Short-term
CCCSD-9— Support County-wide initiatives identified in the 2017 Hazard Mitigation Plan						
New and Existing	Earthquake, Severe Weather, Landslide, Flood	2, 3, 6, 8, 16, 17, 18	Contra Costa County*, CCSD	Low	Property Tax, Sewer Service Changes	Short-term

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 18-10. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
CCCSD-1	8	High	High	Yes	Yes	No	Medium	High
CCCSD-2	3	Low	Low	Yes	No	Yes	High	Low
CCCSD-3	6	High	Medium	Yes	Yes	Yes	High	Medium
CCCSD-4	6	High	Medium	Yes	Yes	Yes	High	Medium
CCCSD-5	6	Medium	Medium	Yes	Yes	No	Medium	Medium
CCCSD-6	5	High	High	Yes	Yes	No	Low	High
CCCSD-7	4	High	High	Yes	Yes	Yes	High[b]	Medium
CCCSD-8	7	High	Medium	Yes	Yes	Yes	High	Low
CCCSD-9	7	High	Low	Yes	No	Yes	Medium	Low

a. See the introduction to this volume for explanation of priorities.
b. Action may take more than 5 years to complete, but will be initiated in the short-term.

Table 18-11. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	CCCSD-1	CCCSD-1	CCCSD-2	CCCSD-2	CCCSD-2	CCCSD-1	CCCSD-1, 2	CCCSD-2
Dam and Levee failure								
Drought								
Earthquake	CCCSD-3, 4, 5, 7, 9	CCCSD-3, 4, 5, 6, 7, 9	CCCSD-4, 5, 9	CCCSD-4, 5, 6, 7	CCCSD-3, 4, 7	CCCSD-3, 6, 7	CCCSD-6, 9	CCCSD-9

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
Flood	CCCSD-3, 6, 8, 9	CCCSD-3, 4, 6, 8, 9	CCCSD-8, 9	CCCSD-3, 4, 5, 6, 8	CCCSD-3, 4	CCCSD-3, 8	CCCSD-3, 8, 9	CCCSD-9
Landslide	CCCSD-3, 4, 5, 6, 9	CCCSD-3, 4, 5, 9	CCCSD-3, 4, 5, 6, 9	CCCSD-4, 5, 6	CCCSD-3, 4		CCCSD-4, 5, 9	CCCSD-9
Severe weather	CCCSD-3, 4, 5, 6, 7, 8, 9	CCCSD-3, 4, 5, 6, 7, 8, 9	CCCSD-8, 9	CCCSD-3, 4, 5, 6, 7, 8	CCCSD-4, 5, 7	CCCSD-3, 6, 7	CCCSD-6, 8, 9	CCCSD-9
Tsunami								
Wildfire								

a. See the introduction to this volume for explanation of mitigation types.

18.10 ADDITIONAL COMMENTS

The Central Contra Costa Sanitary District is an award winning agency with a mission to protect public health and the environment and a commitment to excellence and continuous improvement. Our commitment is evident in the District's violation-free operation, awards and recognition, expanded programs and services and its outreach and education programs.

Mission and Strategic Goals: The mission of the Central Contra Costa Sanitary District is to protect public health and the environment. The current Strategic Plan includes the following six goals:

- Provide Exceptional Customer Service
- Improve Interdepartmental Collaboration
- Be a Fiscally Sound and Effective Water Sector Utility
- Develop and Retain a Highly Trained and Innovative Workforce
- Maintain a Reliable Infrastructure
- Embrace Technology, Innovation and Environmental Sustainability

Awards: In recent years the District has received the following awards and recognitions:

National Association of Clean Water Agencies' (NACWA) Peak Performance Platinum Award for nineteen years of violation-free operations

California Water Environment Association (CWEA) awards:

- Large Treatment Plant of the Year (Regional Award in 2016, Statewide Award in 2017)
- Large Treatment Plant of the Year for Safety (Regional Award in 2016, Statewide Award in 2017)
- Statewide awards for Gadget of the Year and Amateur Video Production, both in 2017

Expanded Services and Programs: In addition to collecting and treating wastewater, the District also:

- Operates a Household Hazardous Waste Collection Facility
- Supports area pharmaceutical collections programs to keep drugs out of the water system
- Developed and maintains a recycled water distribution facility for the public and another facility for construction contractors

- Sponsors job training by offering college-level courses in Wastewater and Water Operator Training through a local community college

Community Education and Outreach: The District also sponsors a number of programs to educate and inform our community about our services, our goals and our environmental stewardship. These programs include:

- Sponsorship of "Sewer Science" classes in area high schools and "Water Wizards" classes in area elementary schools
- Sponsorship of the "Delta Discovery" program, a day cruise on the Delta that shows children how water ecosystems work. Over 2,000 children participate in this program every year.
- Production of numerous publications and information sheets on a variety of topics including a bi-annual newsletter sent to all households and businesses in the service area
- Speakers Bureau
- Plant Tours
- Support of the Integrated Pest Management program and Master Gardener program through the University of California Extension

18.11 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Capital Improvement Plan**—July 2017 Draft plan used to identify short- and long- term projects
- **Physical and Natural Hazard Vulnerability Assessment**—Draft plan used to identify short- and long-term projects
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.

19. Contra Costa County Fire Protection District

19.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Robert Marshall
Fire Marshal
2010 Geary Rd
Pleasant Hill, CA 94523
Telephone: 925-941-3300
e-mail Address: rmars@cccfpd.org

Alternate Point of Contact
Lewis Broschard
Deputy Fire Chief
2010 Geary Rd
Pleasant Hill, CA 94523
Telephone: 925-941-3300
e-mail Address: lbros@cccfpd.org

19.2 JURISDICTION PROFILE

19.2.1 Overview

Contra Costa County Fire Protection District (CCCFPD) provides fire prevention, suppression, and emergency medical response for advanced and basic life support to nine cities and much of the unincorporated area in the central and western portions of Contra Costa County. CCCFPD was formed on December 29, 1964 as a county-dependent district governed by the Contra Costa County Board of Supervisors. The principal act that governs the District is the Fire Protection District Law of 1987 (California). Since its inception, CCCFPD has consolidated with several other fire districts with the most recent significant consolidation occurring in 1994. There were some subsequent detachments of portions of CCCFPD between 1997 and 2001, but since 2001 CCCFPD's service area has remained the same.

The District currently serves a population of approximately 600,000 covering a land area of approximately 300 square miles. The Fire District boundaries encompass the western, central and northern portions of Contra Costa County, extending from the City of Antioch in the east to the eastern boundary of the City of Richmond in the west, and as far south as the northern boundary of the City of Moraga and the City of Danville.

As of 2016, the fire district experienced a 14 percent increase in call volume since 2010, and this trend is expected to continue. Approximately 66 percent of the calls are for Emergency Medical Services (EMS). According to the Association of Bay Area Governments (ABAG) the projected growth rate from 2008 to 2030 is 16 percent. The largest area (approximately 5,000 acres) of future growth will be in the central portion of the county that was once part of the Concord Naval Weapons Station (CNWS). The planned development of the CNWS site will result in a significant increase in population density that will require an expansion of fire and emergency medical service resources to accommodate the increase in call volume. Other planned developments in the eastern portion of the fire district will necessitate additional fire and emergency medical resources to handle population growth, as well as mitigate emergency response times.

The District participates in the Public Protection Class Rating System and currently has a rating of 3 in the urbanized areas, and an 8 in the more rural portions of the district.

The Fire District Board of Directors assumes responsibility for the adoption of this plan; Deputy Fire Chief will oversee its implementation.

19.2.2 Assets

Table 19-1 summarizes the critical assets of the district and their value.

Table 19-1. Special Purpose District Assets

Asset	Value
Property	
Vacant Land- 48 acres	$6,500,000
Critical Infrastructure and Equipment	
Fire Apparatus	$43,936,592
Response Equipment	$8,594,400
Total:	$52,530,992
Critical Facilities	
Fire Stations	$44,127,655
Dispatch Center	$2,288,667
Administration offices	$3,261,553
Total:	$49,677,875

19.3 CAPABILITY ASSESSMENT

19.3.1 Planning and Regulatory Capabilities

Jurisdictions develop plans and programs and implement rules and regulations to protect and serve residents. When effectively prepared and administered, these plans, programs and regulations can support the implementation of mitigation actions. The following existing codes, ordinances, policies, programs or plans are applicable to this hazard mitigation plan:

- **California and US Environmental Protection Agencies—**Develops regulations relative to pollution, and hazardous waste
- **California Code of Regulations—**Contains the regulations giving authority for the enforcement of State Fire Marshal (SFM) Regulations to the Fire District. The District enforces regulations from Title 19, division 1, and all parts of Title 24 as adopted by the SFM.
- **California Environmental Quality Act (CEQA)**—The District participates in the CEQA process as a reviewer of all development projects
- **California Building Code, Chapter 7a**—The regulation governing the building of structures in the Wildland-Urban Interface. Adopted as part of the State adoption of Title 24 CCR by the SFM and the California Building Standards Commission
- **Contra Costa County Ordinance 2016-23 (adopting of Fire Code)**—Adopted in October 2016 for the enforcement starting January 1, 2017.

19.3.2 Fiscal, Administrative and Technical Capabilities

Fiscal capability is an indicator of a jurisdiction's ability to fulfill the financial needs associated with hazard mitigation projects. An assessment of fiscal capabilities is presented in Table 19-2. Administrative and technical capabilities represent a jurisdiction's staffing resources for carrying out the mitigation strategy. An assessment of administrative and technical capabilities is presented in Table 19-3.

Table 19-2. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Federal Grant Programs	Yes
Other	Yes (Community Facilities Districts, Mitigation Fees)

Table 19-3. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Fire Prevention, Engineering Division
Engineers or professionals trained in building or infrastructure construction practices	Yes	Fire Prevention, Engineering Division
Planners or engineers with an understanding of natural hazards	Yes	Fire Prevention, Engineering and Code Enforcement Divisions
Staff with training in benefit/cost analysis	Yes	Fire Administration
Surveyors	No	
Personnel skilled or trained in GIS applications	Yes	IT
Scientist familiar with natural hazards in local area	No	
Emergency manager	Yes	Fire Operations
Grant writers	Yes	Fire Operations
Other	No	

19.3.3 Education and Outreach Capabilities

Outreach and education capability identifies the connection between government and community members, which opens a dialogue needed for a more resilient community. An assessment of education and outreach capabilities is presented in Table 19-4.

Table 19-4. Education and Outreach

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe	Yes Wildfire Mitigation, Fire Prevention
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe	Yes Posting information about risk reduction to several social media platforms
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly specify	No N/A
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe	Yes CCCFPD participates in the Diablo Fire Safe Council planning and outreach efforts primarily in the central and western portions of the fire district.
Do you have any established warning systems for hazard events? • If yes, please briefly describe	Yes Contra Costa County Community Warning System, Social Media, and Website

19.3.4 Adaptive Capacity for Climate Change

Given the uncertainties associated with how hazard risk may change with a changing climate, a jurisdiction's ability to track such changes and adapt as needed is an important component of the mitigation strategy. Table 19-5 summarizes the District's adaptive capacity for climate change.

19.4 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

19.4.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the District made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **California Building Code, Chapter 7a**—Standards intended to prevent ignition of structures from wildland fire exposure. These building standards relate to roof assemblies and materials, windows, siding, decks and eave vents all of which are prone to ignition from burning embers.
- **Contra Costa County Ordinance 2016-23**—Under Chapter 3 (General Precautions Against Fires), it provides for landscaping/vegetation management requirements to reduce and/or prevent the spread of wildland fires.
- **CCCFPD Capital Improvement Plan**—Provides the plan for improvement and construction of stations and other district facilities.

Resources listed in Section 19.10 were used to provide information on hazards and the jurisdiction's capabilities.

Table 19-5. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts	High
Comments/Additional Information: Specifically related to drought impacts, and resulting wildfire hazards	
Jurisdiction-level monitoring of climate change impacts	Medium
Comments/Additional Information: By utilization of National, State and Local resources for drought and wildfire hazards	
Technical resources to assess proposed strategies for feasibility and externalities	High
Comments/Additional Information: Wildfire Prevention is a well-established program within the district	
Jurisdiction-level capacity for development of greenhouse gas emissions inventory	Low
Comments/Additional Information: No regulatory ability to affect carbon emissions.	
Capital planning and land use decisions informed by potential climate impacts	Low
Comments/Additional Information: Generally handled by cities, not the district	
Participation in regional groups addressing climate risks	Low
Comments/Additional Information: Indirectly through groups dealing with drought and wildfire issues	
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes	Low
Comments/Additional Information: No authority	
Identified strategies for greenhouse gas mitigation efforts	Low
Comments/Additional Information: No authority	
Identified strategies for adaptation to impacts	Medium
Comments/Additional Information: Response changes based on potential impacts for specific hazard increases	
Champions for climate action in local government departments	Low
Comments/Additional Information: Little ability exists for response agencies	
Political support for implementing climate change adaptation strategies	Medium
Comments/Additional Information: None provided	
Financial resources devoted to climate change adaptation	Low
Comments/Additional Information: Impacts are to response and fire prevention, no funding is specifically allocated for climate change adaptation as those are already existing programs	
Local authority over sectors likely to be negative impacted	Medium
Comments/Additional Information: Authority over building in areas subject to climate impacts	
Public Capacity	
Local residents knowledge of and understanding of climate risk	Low
Comments/Additional Information: None provided	
Local residents support of adaptation efforts	Low
Comments/Additional Information: None provided	
Local residents' capacity to adapt to climate impacts	Low
Comments/Additional Information: None provided	
Local economy current capacity to adapt to climate impacts	Low
Comments/Additional Information: None provided	
Local ecosystems capacity to adapt to climate impacts	Low
Comments/Additional Information: None provided	

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

19.4.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the Contra Costa County Fire Protection District will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan include actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Hazardous Materials Response Team—**The district has received a grant to fund equipment and response capability/education to staff a hazardous materials response team. This will address needs related to hazardous materials releases, as well as terrorism response.

19.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 19-6 lists past occurrences of natural hazards for which specific damage was recorded in the Contra Costa County Fire Protection District. Other hazard events that broadly affected the entire planning area, including the Contra Costa County Fire Protection District, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

19.6 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. Noted vulnerabilities within the district include the following:

- All fire stations and urbanized areas are within an active seismic zone. Because of the size of the district, a severe earthquake may prolong response times from other areas within the district due to transportation infrastructure disruptions.
- The hills throughout the district are subject to severe wildfire risk, particularly on the west side of the central part of the district. Drought has exacerbated the problem, and will continue to do so with the effects of climate change.
- Several hilly areas within the district are subject to landslides.

19.7 HAZARD RISK RANKING

Table 19-7 presents a local ranking for the Contra Costa County Fire Protection District of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

19.8 STATUS OF PREVIOUS PLAN ACTIONS

Table 19-8 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 19-6. Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Wildfire	NA	6/9/16	$300,000
Wildfire	NA	3/20/14	200,000
Wildfire	NA	7/7/15	100,000
Wildfire	NA	6/24/15	$400,000
Wildfire	NA	7/1/13	$350,000
Wildfire	NA	7/12/16	$200,000
Wildfire	NA	6/25/16	600,000
Wildfire	NA	6/11/2010	$100,000
Wildfire	NA	9/14/2011	$15,000
Wildfire	NA	6/27/2012	$40,000
Wildfire	NA	8/16/12	$60,000
Wildfire	NA	8/5/2009	$10,000
Wind	NA	12/25/2008	$13,500
Wind	NA	12/15/2008	$3,000
Flood	NA	1/1/2006	$22,000,000
Flood	FEMA-1628	12/31/2005	$22,000,000
Wildfire	NA	6/20/2004	$500,000
Wind	NA	11/7/2002	$200,000
Wind	NA	12/18/2000	$550,000
Wind	NA	11/24/2000	$700,000
Flood	NA	2/14/2000	$100,000
Wind	NA	12/22/1999	$62,500
Wind	NA	2/9/1999	$200,000
Severe Weather	NA	12/12/1995	$6,000,000
Wind	NA	11/14/1993	$62,500
Wind	NA	2/19/1993	$50,000
Severe Weather	NA	12/25/1990	$86,206
Flood	NA	5/28/1990	$500,000
Severe Weather	NA	12/3/1983	$312,500
Wind	NA	12/22/1982	$1,041,666
Flood, Severe Weather	NA	1/3/1982	$7,142,857

Note: CCCFPD responds to an average of approximately 285 wildland fires per year and many of those threaten residential structures

Table 19-7. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake	54	High
2	Severe weather	18	Medium
3	Wildfire	6	Low
3	Flood	6	Low
3	Drought	6	Low
4	Landslide	2	Low
5	Dam and levee failure	1	Low
6	Sea level rise	0	None
6	Tsunami	0	None

Table 19-8. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
CCCFPD-1—Continue with installation of emergency generators at fire stations			X	CCCFPD-8
Comment: Most stations have been outfitted. There are new stations that will be constructed in the next 5years that will likely be outfitted with generators				
CCCFPD-2—Structural seismic retrofit of fire facilities			X	CCCFPD-9
Comment: Retrofit will occur as stations are remodeled as per Title 24 CCR. All new facilities will meet current standards.				
CCCFPD—Adoption of Fire Hazard Maps – "Very High Fire Hazard Severity Zone" (VHFHSZ) maps currently under development	X			
Comment: Maps adopted for Lafayette. The State maps have not been updated since the original plan. If those maps are updated, we may pursue adoption of those maps for areas served by CCCFPD.				
CCCFPD-4—Enhance/Improve County Code language and enforcement including: County Building Codes to increase compliance with SB 1369 Defensible Space and Other Fire Safe Requirements in the unincorporated county areas	X			
Comment: Adopted by reference in ordinance 2016-23, and are contained in Title 24 parts 2, 2.5, and 9.				
CCCFPD-5—Improve, expand and develop new programs that increase awareness of and reduce risk to wildfires including: Support of Diablo Fire Safe Council vegetation management workshops and chipper program	X		X	CCCFPD-3
Comment: Ongoing support of DFSC and their initiatives				
CCCFPD-6—Implementation of projects listed in the Community Wildfire Protection Plan (CWFPP)			X	CCCFPD-4
Comment: As projects come up within the jurisdictional boundaries, or in adjacent jurisdictions with an impact to CCCFPD jurisdiction, CCCFPD supports them.				
CCCFPD-7—Participate in annual multi-agency Wildland Fire Training	X		X	CCCFPD-5
Comment: Training held annually in June. The current location is being developed, and attempts are being made to find a new location				
CCCFPD-8—Pursue implementation of projects listed in CCCFPD Capital Improvement Plan			X	CCCFPD-6
Comment: The plan is in the process of being revised.				
CCCFPD-9—Educate the public on the risks associated with natural hazards and methods to prepare for and mitigate those risks	X		X	CCCFPD-7
Comment: CCCFPD has maintained an all risk public educator position, and continues to support prevention of all risks faced in the county through these programs.				
CCCFPD-10—Support County-wide initiatives identified in the 2011 Hazard Mitigation Plan.	X		X	CCCFPD-1
Comment: We will continue to support the initiatives in the new plan				
CCCFPD-11—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in the 2011 Hazard Mitigation Plan.	X		X	CCCFPD-2
Comment: Ongoing support				

19.9 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 19-9 lists the actions that make up the Contra Costa County Fire Protection District hazard mitigation action plan. Table 19-10 identifies the priority for each action. Table 19-11 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 19-9. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
CCCFPD-1— Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	CCCFPD	High	HMGP, PDM, FMA	Short-term
CCCFPD-2— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 16	CCC OES*, Fire Marshall	Low	Staff Time, General Funds	Short-term
CCCFPD-3—Improve, expand and develop new programs that increase awareness of and reduce risk to wildfires including: Support of Diablo Fire Safe Council vegetation management workshops and chipper program						
New and Existing	Wildfire	2, 3, 11, 16,	DFSC*, CCCFPD	Low	Staff Time, General Funds	Short Term
CCCFPD-4—Implementation of projects listed in the Community Wildfire Protection Plan (CWFPP)						
New and existing	Wildfire	2, 3, 17	DFSC-CCCFPD	Low	Staff Time, Federal Grants	Ongoing
CCCFPD-5—Participate in annual multi-agency Wildland Fire Training						
New and Existing	Wildfire	2, 16	CCCFPD	Low	Staff Time, General Funds	Short-term
CCCFPD-6—Pursue implementation of projects listed in CCCFPD Capital Improvement Plan						
New and Existing	All Hazards	1, 2	CCCFPD	Medium	Staff Time, General Funds, Mitigation Fees	Ongoing
CCCFPD-7—Educate the public on the risks associated with natural hazards and methods to prepare for and mitigate those risks through ongoing public education campaigns						
New and Existing	All Hazards	3, 5	CCCFPD	Low	Staff Time, General Funds, AFG Funds	Ongoing
CCCFPD-8—Continue with installation of emergency generators at fire stations						
New	All Hazards	1, 2, 13	CCCFPD	Medium	General Funds	Long-term
CCCFPD-9—Structural seismic retrofit of fire facilities						
New and Existing	Earthquake	1, 2	CCCFPD	Medium	General funds	Ongoing

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 19-10. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
CCCFPD-1	8	High	High	Yes	Yes	No	Medium	High
CCCFPD-2	3	Low	Low	Yes	No	Yes	High	Low
CCCFPD-3	2	High	Low	Yes	No	Yes	High	Low
CCCFPD-4	2	High	Low	Yes	No	Yes	High	Low
CCCFPD-5	2	High	Low	Yes	No	Yes	High	Low
CCCFPD-6	2	High	High	Yes	No	Yes	Medium	Medium
CCCFPD-7	8	High	Low	Yes	Yes	Yes	High	Medium
CCCFPD-8	3	High	Low	Yes	No	Yes	High	Low
CCCFPD-9	2	High	Low	Yes	No	Yes	High	Low

a. See the introduction to this volume for explanation of priorities.

Table 19-11. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	CCCFPD-3, 4, 5, 7, 8, 9		CCCFPD-7		CCCFPD-1, 2, 3, 4, 5, 6, 7, 8, 9			CCFPD-2
Dam and Levee failure			CCCFPD-7					
Drought			CCCFPD-7	CCCFPD-7				
Earthquake	CCCFPD-7, 8, 9	CCCFPD-8, 9	CCCFPD-7			CCCFPD-8, 9		
Flood			CCCFPD-7					
Landslide			CCCFPD-7					
Severe weather			CCCFPD-7					
Tsunami			CCCFPD-7					
Wildfire	CCCFPD-3, 4, 5		CCCFPD-7	CCCFPD-7				CCCFPD-3

a. See the introduction to this volume for explanation of mitigation types.

19.10 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed for this annex.

- **Title 24 CCR**—Utilized in the development of all fire code and building code adoptions
- **Fire Data (FireRMS)**—Used in the determination of previous incidents
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.

20. Contra Costa County Flood Control and Water Conservation District

20.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Paul R. Detjens
Senior Civil Engineer
255 Glacier Drive, Martinez, CA 94553
Telephone: 925-313-2394
E-mail Address: paul.detjens@pw.cccounty.us

Alternate Point of Contact
Mike Carlson
Deputy Chief Engineer
255 Glacier Drive, Martinez, CA 94553
Telephone Number: 925-313-2321
E-mail Address: mike.carlson@pw.cccouny.us

20.2 JURISDICTION PROFILE

20.2.1 Overview

The Contra Costa County Flood Control and Water Conservation District (District) is a dependent Special District, first formed by an act of the State legislature in 1951. Its governing document is the *Contra Costa County Flood Control and Water Conservation District Act*, last amended in 1992, which grants the District various powers such as the ability to acquire and hold property; sue and be sued; conserve, store and import water; control flood waters; issue bonds; levy taxes and assessments and use eminent domain. The governing board of the District is the County's five-member Board of Supervisors, which are elected to four year terms. Each Supervisor represents a specific area of the County.

The District plans, constructs and maintains major flood protection infrastructure to reduce flooding risk. The District's jurisdiction encompasses all of Contra Costa County, including all nineteen incorporated cities.

The District's funding comes from a combination of ad-valorem taxes and fees paid by developers upon creation of impervious surfaces. The District has approximately 20 staff, and relies on other specialists from the Contra Costa County Public Works Department, with whom they share office space.

The District currently serves a population of approximately 1,123,429 residents as of January 1, 2016 (California Department of Finance estimate) covering a land area of approximately 720 square miles. The District's service area is broken up into three distinct regions of the County: west, central and east. The west and central portions of the county are nearing their full development potential. Service demands are expected to increase in these areas not because of added population, but primarily because of increased customer demands for more ecologically sensitive flood protection, including potential removal of concrete lining of channels and restoration of the resulting streams. Other factors expected to increase demands for District services include the effect of global climate change on low-lying areas, increased regulatory requirements on operation and maintenance of existing facilities, and new clean water requirements on trash and other pollutants.

The eastern portion of the District's service area includes the fast-growing cities of Pittsburg, Antioch, Oakley and Brentwood. Here, population growth means significantly increased runoff and customer demands for improved levels of protection as agricultural lands are converted to residential and commercial uses. Additionally, this eastern portion of the County has the same issues noted for central and west portions noted above.

The Deputy Chief Engineer of the Flood Control District assumes responsibility for the adoption of this plan by the County Board of Supervisors; the Deputy Chief Engineer of the Flood Control District will oversee its implementation.

20.2.2 Assets

Table 20-1 summarizes the critical assets of the district and their value.

Table 20-1. Special Purpose District Assets

Asset	Value
Property	
2,600 acres in fee, 1450 acre easement	$100M
Critical Infrastructure and Equipment	
47 Drop Structures	$66M
13.2 miles Concrete Channels	$209M
5 Dams	$122M
34,600 LF Levees	$35M
24 Detention Basins	$36M
Various specialized equipment and trucks	$1M
Total:	$469M
Critical Facilities	
Glacier Drive (District main office)	$8M
Waterbird Maintenance Yard	$2M
Total:	$10M

20.3 CAPABILITY ASSESSMENT

20.3.1 Planning and Regulatory Capabilities

Jurisdictions develop plans and programs and implement rules and regulations to protect and serve residents. When effectively prepared and administered, these plans, programs and regulations can support the implementation of mitigation actions. The following existing codes, ordinances, policies, programs or plans are applicable to this hazard mitigation plan:

- Regulatory permitting from:
  - US Army Corps of Engineers
  - California Natural Diversity Database
  - California Department of Public Health
  - California and US Environmental Protection Agencies
  - California Code of Regulations
  - Federal Endangered Species Act
  - California Environmental Quality Act (CEQA)

- Expenditure Policy, June 2005
- Infrastructure Report: Status of Flood Protection Infrastructure, November 2013
- Contra Costa County Code, Title 8—Zoning; originally adopted March 17, 1947; last updated July 11, 2017.
- Contra Costa County Code, Title 9—Subdivisions; originally adopted October 2, 1933; last updated 2015.
- Contra Costa County Code, Title 10—Public Works and Flood Control; last updated in 2005.

20.3.2 Fiscal, Administrative and Technical Capabilities

Fiscal capability is an indicator of a jurisdiction's ability to fulfill the financial needs associated with hazard mitigation projects. An assessment of fiscal capabilities is presented in Table 20-2. Administrative and technical capabilities represent a jurisdiction's staffing resources for carrying out the mitigation strategy. An assessment of administrative and technical capabilities is presented in Table 20-3.

Table 20-2. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Federal Grant Programs	Yes
Other	No

Table 20-3. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Flood Control District/Engineers
Engineers or professionals trained in building or infrastructure construction practices	Yes	Flood Control District/Engineers
Planners or engineers with an understanding of natural hazards	Yes	Flood Control District/Engineers
Staff with training in benefit/cost analysis	Yes	Flood Control District/Engineers
Surveyors	Yes	Flood Control District/Surveyors
Personnel skilled or trained in GIS applications	Yes	Flood Control District/Technicians
Scientist familiar with natural hazards in local area	Yes	Flood Control District/Engineers and Hydrologists
Emergency manager	Yes	County Public Works and OES/Various
Grant writers	Yes	Flood Control District/Engineers
Other	No	

20.3.3 Education and Outreach Capabilities

Outreach and education capability identifies the connection between government and community members, which opens a dialogue needed for a more resilient community. An assessment of education and outreach capabilities is presented in Table 20-4.

Table 20-4. Education and Outreach

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe	Yes Information on hazard mitigation plan (http://www.contracosta.ca.gov/6415/Local-Hazard-Mitigation-Plan)
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe	No N/A
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly describe	No N/A
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe	Yes Flood Forecast Information (http://www.cccounty.us/1578/Flood-Forecast-Information)
Do you have any established warning systems for hazard events? • If yes, please briefly describe	No – warnings would be issued by County OES N/A

20.3.4 Adaptive Capacity for Climate Change

Given the uncertainties associated with how hazard risk may change with a changing climate, a jurisdiction's ability to track such changes and adapt as needed is an important component of the mitigation strategy. Table 20-5 summarizes the District's adaptive capacity for climate change.

20.4 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

Table 20-5. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: None provided*	Medium
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: None provided*	Medium
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: None provided*	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: None provided*	Low
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: None provided*	Medium
Participation in regional groups addressing climate risks *Comments/Additional Information: Participate in the Adapting to Rising Tides Program of the San Francisco Bay Conservation and Development Commission, and in CHARG, Coastal Hazards Adaptation Resiliency Group of San Francisco Bay Area planners, scientists, engineers, and policy makers from local, state, and federal agencies.*	High
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: None provided*	Medium
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: None provided*	Low
Identified strategies for adaptation to impacts *Comments/Additional Information: None provided*	Medium
Champions for climate action in local government departments *Comments/Additional Information: None provided*	Low
Political support for implementing climate change adaptation strategies *Comments/Additional Information: None provided*	Medium
Financial resources devoted to climate change adaptation *Comments/Additional Information: None provided*	Low
Local authority over sectors likely to be negative impacted *Comments/Additional Information: None provided*	Low
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: None provided*	Low
Local residents support of adaptation efforts *Comments/Additional Information: None provided*	Low
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

20.4.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the Contra Costa County Flood Control and Water Conservation District made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **Expenditure Policy**—The expenditure policy sets the following order of priorities: system preservation, public safety, and system expansion. This relates to the hazard mitigation plan because it emphasizes repair and rehabilitation of existing facilities to ensure they remain able to reduce flood risk and minimize the risk of dam failure.

Resources listed in Section 20.11 were used for information on hazards and local jurisdiction capabilities.

20.4.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the Contra Costa County Flood Control and Water Conservation District will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan include actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Public Works Emergency Response Plan—**Risk assessment information will be incorporated as appropriate.
- **Capital Improvement Plan (Draft)—**Funding for mitigation activities will be considered and incorporated as appropriate.

20.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 20-6 lists past occurrences of natural hazards for which specific damage was recorded in the Contra Costa County Flood Control and Water Conservation District. Other hazard events that broadly affected the entire planning area, including the Contra Costa County Flood Control and Water Conservation District, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 20-6. Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Severe Weather, Flood	DR-4308	2/1/2017-2/23/2017	$800,000
Severe Weather, Flood	DR-4301	1/3/2017-1/12/2017	$250,000
Severe Weather, Flood, Landslides	FEMA-1628	12/31/2005	$1,900,000
Severe Weather, Flood	FHWA	12/16/2002	No data
Severe Weather, Flood, Landslides	FEMA-1203	2/2/1998	$1,200,00
El Nino Storm, Flood, Landslides	FEMA-1155	1/1/1997	$973,000
Severe Weather, Flood	FEMA-1046	3/1995	$753,000
Severe Weather, Flood	FEMA-1044	1/1995	$1,100,000
Severe Weather, Flood	FEMA-979	1/1993	$911,000
Severe Weather, Flood, Landslides	FEMA-758	2/17/1986	$63,000
Severe Weather, Flood	NA	3/1980	$150,000
Severe Weather, Flood, Landslides	NA	11/21/1977	No data

20.6 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. Noted vulnerabilities within the district include the following:

- There is a significant risk for flood damage in the County, with approximately 8 percent of the total replacement value located within the 0.2 percent annual chance floodplain.
- In many areas, the FEMA flood insurance rate maps do not accurately show current flood risk
- There is a low community understanding of flood risks, and a general feeling that flood risks are lower than they actually are.
- Creek bank erosion is a concern, especially in unlined earthen channels throughout the county.
- Dam failures due to seismic activity may impact the County.
- Funding shortfalls
- Many of the District's facilities are nearing the end of their useful life, and may need significant rehabilitation or replacement.
- Most District reservoirs are nearing 50 years old, and will likely need rehabilitation including a seismic vulnerability analysis.
- District funding sources are insufficient to meet new or expected clean water mandates, such as trash and mercury total maximum daily loads (TMDL). This reduces available local funds for flood risk reduction and structure analysis and rehabilitation.
- Some District levees no longer enjoy FEMA accreditation, and the District lacks the resources to study and potentially improve these levees for re-accreditation.
- Many District facilities lack instrumentation that would allow timely notification and emergency response to address flood hazards.

20.7 HAZARD RISK RANKING

Table 20-7 presents a local ranking for the Contra Costa County Flood Control and Water Conservation District of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 20-7. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Severe weather *(excluding extreme heat)*	45	High
2	Flood	39	High
3	Landslide	36	High
3	Drought	36	High
4	Earthquake	32	High
5	Sea level rise	14	Low
6	Dam and levee failure	12	Low
7	Tsunami	6	Low
7	Wildfire	6	Low
8	Severe Weather (extreme heat)	0	None

20.8 STATUS OF PREVIOUS PLAN ACTIONS

Table 20-8 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 20-8. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
FCD1—Repair bank erosion, various sites countywide. (i.e.: Green Valley Creek, Grayson Creek at County Quarry, San Ramon Creek, etc.). *Comment:*			X	CCCFCWCD-4
FCD2—Construct / expand detention basins (implement basin construction as identified in FCD CIP: Lower Sand Creek Basin, Oakley / Trembath, etc.). *Comment:*			X	CCCFCWCD-5
FCD3—Expand Upper Sand Creek detention basin to significantly reduce flood risk for downstream communities. Construct Upper Sand Creek dam to state Division of Dam Safety requirements. *Comment:* Completed 2014	X			
FCD4—Repair bank erosion, various sites countywide. (i.e.: Green Valley Creek, Grayson Creek at County Quarry, San Ramon Creek, etc.). *Comment:*			X	CCCFCWCD-4
FCD5—Widen creeks / channels and raise / rehabilitate levees (implement projects as identified in FCD CIP: Marsh Creek, East and West Antioch Creeks, etc.) *Comment:*			X	CCCFCWCD-6
FCD6—Assess condition of Wildcat and San Pablo Creek levees to determine/seek levee re-accreditation. *Comment:* Completed 2017	X			
FCD7—Remove sediment from channels and detention basins (implement projects as identified in FCD CIP. i.e.: Kubicek Basin, Walnut Creek, Grayson Creek, etc.). *Comment:*			X	CCCFCWCD-7
FCD8—Seismic assessment of existing dams. *Comment:*			X	CCCFCWCD-8
FCD9—Seismic rehabilitation/retrofitting of existing dams (may combine with FCD5 above). *Comment:*			X	CCCFCWCD-9
FCD10—Acquire floodplain easements over privately held parcels at various sites District-wide (i.e.: Trembath floodplain on East Antioch Creek, floodplains on Marsh Creek, Walnut Creek overflow area at Pacheco Creek, etc.). *Comment:*			X	CCCFCWCD-10
FCD11—Support County-wide initiatives identified in the 2011 Hazard Mitigation Plan. *Comment:*			X	CCCFCWCD-31
FCD12—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in the 2011 Hazard Mitigation Plan. *Comment:*			X	CCCFCWCD-2

20.9 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 20-9 lists the actions that make up the Contra Costa County Flood Control and Water Conservation District hazard mitigation action plan. Table 20-10 identifies the priority for each action. Table 20-11 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 20-9. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
CCCFCWCD-1— Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 10	County	High	HMGP, PDM, FMA	Short-term
CCCFCWCD-2—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	All	FCD	Low	Staff Time, General Funds	Short-term
CCCFCWCD-3—Analyze and reconstruct (as needed) spillway structures at DSOD regulated dams to ensure continued safe passage of releases (i.e.: Marsh Creek Reservoir Emergency Spillway armoring at downstream toe)						
Existing	Flood, Dam and Levee Failure, Earthquake, Severe Weather	1, 10	FCD	High	FCD Funds, FMA	Short-term
CCCFCWCD-4—Repair bank erosion, various sites countywide. (i.e.: Green Valley Creek, Grayson Creek at County Quarry, San Ramon Creek, Rodeo Creek, etc.).						
Existing	Flood, Landslide, Severe Weather, Earthquake	1, 10	FCD	Low	FCD Funds, FMA, HMGP, Possible EPA	Short-term
CCCFCWCD-5—Construct / expand detention basins (implement basin construction as identified in FCD CIP: Lower Sand Creek Basin, Deer Creek, Oakley / Trembath, etc.).						
New and Existing	Flood, Dam and Levee Failure, Severe Weather, Drought	1, 10	FCD	Medium	FCD Funds, FMA, HMGP, Possible EPA	Short-term
CCCFCWCD-6—Widen creeks / channels and raise / rehabilitate levees (implement projects as identified in FCD CIP: Marsh Creek, East and West Antioch Creeks, etc.)						
Existing	Flood, Dam and Levee Failure, Severe Weather	1, 10	FCD	Medium	FCD Funds, FMA, HMGP, Possible EPA	Short-term
CCCFCWCD-7—Remove sediment from channels and detention basins (implement projects as identified in FCD CIP. i.e.: Kubicek Basin, Walnut Creek, Grayson Creek, Wildcat Creek, Rodeo Creek, San Pablo Creek, Pine Creek, San Ramon Creek, etc.).						
Existing	Flood	1, 10	FCD	Medium	FCD Funds, FMA, HMGP, Possible EPA	Short-term
CCCFCWCD-8—Conduct seismic assessment of flood control facilities and structures, various sites countywide (dams, channels, structures, etc.)						
Existing	Flood, Earthquake, Dam and Levee Failure	1, 10	FCD	Medium	FCD Funds, Possible Grants	Long-term
CCCFCWCD-9—Seismic rehabilitation/retrofitting of existing dams (may combine with CCFCWCD8 above).						
Existing	Flood; Dam and Levee Failure, Earthquake	1, 10	FCD	High	FCD Funds, HMGP, FMA	Long-term

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
CCCFCWCD-10—Acquire floodplain easements over privately held parcels at various sites District-wide (i.e.: Trembath floodplain on East Antioch Creek, floodplains on Marsh Creek, Walnut Creek overflow area at Pacheco Creek, etc.).						
New and Existing	Flood, Dam and Levee Failure, Landslide	1, 5, 10	FCD	Medium	FCD Funds, FMA	Long-term
CCCFCWCD-11—Habitat Improvements, various sites countywide (Wildcat Creek, Pinole Creek, Pacheco Creek, East Antioch Creek Marsh, Marsh Creek, etc.)						
New and Existing	Flood, Dam and Levee Failure	1, 10	FCD	Medium	FCD Funds, FMA, HMGP, Possible EPA	Short-term
CCCFCWCD-12—Creek channel improvements, various sites countywide (Galindo Creek, Wildcat Creek, San Pablo Creek, etc.)						
Existing	Flood	1, 10	FCD	Medium	FCD Funds, FMA, HMGP, Possible EPA	Short-term
CCCFCWCD-13—Conduct silt surveys in creeks and sediment basins, various sites countywide (Grayson Creek, Walnut Creek, San Pablo Creek, Rheem Creek, Wild Cat Creek, Rodeo Creek, etc.)						
Existing	Flood	1, 10	FCD	Medium	FCD Funds, Possible Grants	Short-term
CCCFCWCD-14—Conduct condition assessment of flood control facilities and structures, various sites countywide (Shadow Creek, West Alamo Creek, Canyon Lakes Creek, Rossmoor Creek, Bogue Creek, Rassier Creek, San Pablo Creek, Rheem Creek, Wild Cat Creek, Rodeo Creek, etc.)						
Existing	Flood, Landslide, Earthquake	1, 10	FCD	Medium	FCD Funds, Possible Grants	Short-term
CCCFCWCD-15—Conduct functional assessment of flood control facilities, various sites countywide						
Existing	Flood	1, 10	FCD	Medium	FCD Funds, Possible Grants	Short-term
CCCFCWCD-16—Conduct geotechnical investigation of flood control facilities and structures, various sites countywide						
Existing	Flood, Dam and Levee Failure, Earthquake, Landslide	1, 10	FCD	Medium	FCD Funds, Possible Grants	Short-term
CCCFCWCD-17—Marsh Creek Reservoir Capacity and Habitat Restoration						
Existing	Flood, Dam and Levee Failure, Drought	1, 10	FCD	Low	FCD Funds, Possible Grants	Short-term
CCCFCWCD-18—North Richmond Stormwater Pump Station Retrofit						
Existing	Flood	1, 10	FCD/County	Low	FCD/County Funds, FMA, HMGP	Short-term
CCCFCWCD-19—DA46 Grayson and Murderer's Creek local drainage (Subregional) Capacity Improvements						
New and Existing	Flood	1, 10	FCD	Low	FCD Funds, Possible Grants	Short-term
CCCFCWCD-20—Grayson Creek Levee Rehabilitation at CCCSD Treatment Plant						
Existing	Flood, Dam and Levee Failure	1, 10	FCD	Medium	FCD Funds, FMA, HMGP	Short-term
CCCFCWCD-21—Grayson Creek Channel Fence Rehabilitation						
Existing	Flood	1, 10	FCD	Medium	FCD Funds, Possible Grants	Short-term
CCCFCWCD-22—Lower Walnut Creek Restoration Project						
New and Existing	Flood, Dam and Levee Failure, Drought	1, 10	FCD	High	FCD Funds, , Possible Grants	Short-term

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
CCCFCWCD-23—Sustainable Capacity Improvement at Rodeo Creek						
Existing	Flood, Landslide, Earthquake	1, 10	FCD	Low	FCD Funds, , Possible Grants	Short-term
CCCFCWCD-24—DA 67 - Tice Creek Bypass						
New	Flood	1, 10	FCD	Low	FCD Funds, , Possible Grants	Short-term
CCCFCWCD-25—Walnut Creek Levee Rehabilitation at Buchanan Field Airport						
Existing	Flood, Dam and Levee Failure	1, 10, 13	FCD/County	Low	FCD Funds, FMA, HMGP	Short-term
CCCFCWCD-26—DA 33A Concord Boulevard Culvert Replacement						
Existing	Flood, Severe Weather	1, 10	FCD/City of Concord	Low	FCD Funds, FMA, HMGP	Short-term
CCCFCWCD-27—DA 48B Line A storm Drainage Improvements at Port Chicago Highway						
New and Existing	Flood, Severe Weather	1, 10	FCD	Low	FCD Funds, FMA. HMGP	Short-term
CCCFCWCD-28—West Antioch Creek Improvements - L Street to 10th Street						
New and Existing	Flood	1, 10	FCD/City of Antioch	Low	FCD Funds, FMA	Short-term
CCCFCWCD-29—West Antioch Creek Improvements at Highway 4						
New and Existing	Flood	1, 10	FCD/City of Antioch	Low	FCD Funds, FMA	Short-term
CCCFCWCD-30—Marsh Creek Supplemental Capacity						
New	Flood	1, 10	FCD	Medium	FCD Funds, Possible Grants	Short-term
CCCFCWCD-31—Support County-wide initiatives identified in the 2017 Hazard Mitigation Plan.						
New and Existing	All Hazards	All	County*, FCD	Low	FCD Funds	Short-term, ongoing
CCCFCWCD-32—Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan						
Existing	All Hazards	All	County*, FCD	Low	County Funds	Short-term, ongoing

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 20-10. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
CCCFCWCD-1	8	High	High	Yes	Yes	No	Medium	High
CCCFCWCD-2	3	Low	Low	Yes	No	Yes	High	Low
CCCFCWCD-3	2	Medium	Medium	Yes	Yes	Yes	Medium	Medium
CCCFCWCD-4	2	High	Low	Yes	Yes	Yes	Medium	High
CCCFCWCD-5	2	High	Medium	Yes	Yes	Yes	Medium	High
CCCFCWCD-6	2	High	Medium	Yes	Yes	Yes	Medium	Medium
CCCFCWCD-7	2	High	Low	Yes	Yes	Yes	Medium	High
CCCFCWCD-8	2	Medium	Low	Yes	Yes	Yes	Medium	High
CCCFCWCD-9	2	High	High	Yes	Yes	Yes	Medium	Medium
CCCFCWCD-10	3	Medium	Low	Yes	Yes	Yes	Low	High
CCCFCWCD-11	2	Medium	Medium	Yes	Yes	Yes	Low	Medium
CCCFCWCD-12	2	Medium	Medium	Yes	Yes	Yes	Medium	High
CCCFCWCD-13	2	Medium	Medium	Yes	Yes	Yes	Medium	High
CCCFCWCD-14	2	Medium	Medium	Yes	Yes	Yes	Medium	High
CCCFCWCD-15	2	Medium	Medium	Yes	Yes	Yes	Medium	High
CCCFCWCD-16	2	Medium	Medium	Yes	Yes	Yes	Medium	High
CCCFCWCD-17	2	High	Low	Yes	Yes	Yes	Medium	High
CCCFCWCD-18	2	Medium	Low	Yes	Yes	Yes	Medium	High
CCCFCWCD-19	2	Medium	Low	Yes	Yes	Yes	Medium	High
CCCFCWCD-20	2	Medium	Medium	Yes	Yes	Yes	Medium	High
CCCFCWCD-21	2	Medium	Medium	Yes	Yes	Yes	Medium	High
CCCFCWCD-22	2	High	High	Yes	Yes	Yes	High	High
CCCFCWCD-23	2	Medium	Low	Yes	Yes	Yes	Low	Medium
CCCFCWCD-24	2	Medium	Low	Yes	Yes	Yes	Low	Medium
CCCFCWCD-25	3	Medium	Low	Yes	Yes	Yes	Medium	High
CCCFCWCD-26	2	Medium	Low	Yes	Yes	Yes	Medium	High
CCCFCWCD-27	2	Medium	Low	Yes	Yes	Yes	Medium	High
CCCFCWCD-28	2	Medium	Low	Yes	Yes	Yes	Medium	High
CCCFCWCD-29	2	Medium	Low	Yes	Yes	Yes	Medium	High
CCCFCWCD-30	2	Medium	Medium	Yes	Yes	Yes	Medium	High
CCCFCWCD-31	18	Medium	Low	Yes	No	Yes	Medium	High
CCCFCWCD-32	18	Medium	Low	Yes	No	Yes	Medium	High

a. See the introduction to this volume for explanation of priorities.

Table 20-11. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	2, 31, 32	1	2, 10, 32		2, 9, 32			
Dam and Levee Failure	8, 9, 16	5, 9		5, 11, 17, 22, 31		3, 5, 9		8, 16
Drought								
Earthquake	8, 9, 16	4, 9, 14, 16, 23				3, 9		8, 16
Flood	8, 9, 14, 16, 23	3, 4, 5, 6		3, 4, 5, 6	25, 26. 27, 28, 29	1, 3, 4, 5, 18		8, 16
Landslide	14, 16, 23	4, 16, 23		4		4		16
Severe weather		4, 5, 6		4, 5, 6		3, 4, 5		
Tsunami								
Wildfire								

a. See the introduction to this volume for explanation of mitigation types.

20.10 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

- District facilities generally lack instrumentation that would allow timely notification and emergency response to address flood hazards. Additional instrumentation would help inform our understanding of risk.
- District reservoirs are nearing 50 years old, and the seismic risk is poorly understood. A seismic vulnerability analysis is needed to better understand risk and keep probability of dam failure low.
- Some District levees no longer enjoy FEMA accreditation, and the District lacks the resources to study and potentially improve these levees for re-accreditation. Lacking a specific assessment, actual risk is poorly understood.
- Many District facilities are nearing or over 50 years old, and need facility condition assessment to help prioritize needed repairs, rehabilitation, or replacement.

20.11 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed for this annex.

- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.
- **Contra Costa County Flood Control and Water Conservation District Capital Improvement Plan (DRAFT) June 2017**—This CIP was used to determine which upcoming projects would help inform or reduce flood risk, and thus should be included in this annex.

21. Contra Costa County Office of Education

21.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
John F. Hild
Director, General Services
77 Santa Barbara Rd
Pleasant Hill, CA 94523
Telephone: 925-942-3333
E-mail Address: jhild@cccoe.k12.ca.us

Alternate Point of Contact
Terry Koehne
Chief Communications Officer
77 Santa Barbara Rd
Pleasant Hill, CA 94523
Telephone Number: 925-942-3420
E-mail Address: tkoehne@cccoe.k12.ca.us

21.2 JURISDICTION PROFILE

21.2.1 Overview

The County Office of Education is an essential part of Contra Costa's outstanding public school system. Overall, Contra Costa County's students rank high on virtually every measure of achievement, from test scores to college entrance rates. Within the County, the Office of Education's purpose is to support the success of Contra Costa's 18 school districts, schools and over 174,000 students. The agency has approximately 450 employees.

The Office of Education provides the support that is needed by operating like a business. Customers in school districts can choose whether to use, or not use, most County Office services. Superintendents and other district staff choose these services and are highly satisfied with them because the Office of Education:

- Provides quality countywide programs for children with special needs.
- Saves school districts money.
- Monitors budgets and provides financial services to districts.
- Supports districts in meeting state and federal mandates.

By working effectively and efficiently with Contra Costa's school districts, the County Office of Education strengthens the entire education system while saving dollars that can be used in local classrooms. The County Office of Education is funded via State dollars.

The County Office of Education currently serves a population of approximately 174,000 kindergarten through adult students and covers a land area of approximately 720 square miles, the entire County. The agency was established in 1932 and is jointly governed by an elected Superintendent and five member elected Board of Education. The Board of Education will assume responsibility for adoption of this plan; the Director II, General Services will oversee its implementation.

21.2.2 Assets

Table 21-1 summarizes the critical assets of the district and their value.

Table 21-1. Special Purpose District Assets

Asset	Value
Property	
23.07 Acres	Undetermined
Critical Infrastructure and Equipment	
Stewart Building (Central Office)	$1,000,000
Total:	*$1,000,000*
Critical Facilities	
Stewart Building (Central Office)	$12,000,000
Total:	*$12,000,000*

21.3 CAPABILITY ASSESSMENT

21.3.1 Planning and Regulatory Capabilities

Jurisdictions develop plans and programs and implement rules and regulations to protect and serve residents. When effectively prepared and administered, these plans, programs and regulations can support the implementation of mitigation actions. The following existing codes, ordinances, policies, programs or plans are applicable to this hazard mitigation plan:

- California Department of Public Health
- California and US Environmental Protection Agencies
- Federal Endangered Species Act
- California Code of Regulations
- Contra Costa County Operational Area Hazard Mitigation Plan

21.3.2 Fiscal, Administrative and Technical Capabilities

Fiscal capability is an indicator of a jurisdiction's ability to fulfill the financial needs associated with hazard mitigation projects. An assessment of fiscal capabilities is presented in Table 21-2. Administrative and technical capabilities represent a jurisdiction's staffing resources for carrying out the mitigation strategy. An assessment of administrative and technical capabilities is presented in Table 21-3.

21.3.3 Education and Outreach Capabilities

Outreach and education capability identifies the connection between government and community members, which opens a dialogue needed for a more resilient community. An assessment of education and outreach capabilities is presented in Table 21-4.

21.3.4 Adaptive Capacity for Climate Change

Given the uncertainties associated with how hazard risk may change with a changing climate, a jurisdiction's ability to track such changes and adapt as needed is an important component of the mitigation strategy. Table 21-5 summarizes the District's adaptive capacity for climate change.

Table 21-2. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	No
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	Yes
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No
Federal Grant Programs	Yes
Other	No

Table 21-3. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	No	
Engineers or professionals trained in building or infrastructure construction practices	No	
Planners or engineers with an understanding of natural hazards	No	
Staff with training in benefit/cost analysis	No	
Surveyors	No	
Personnel skilled or trained in GIS applications	No	
Scientist familiar with natural hazards in local area	No	
Emergency manager	No	
Grant writers	No	
Other	No	

Table 21-4. Education and Outreach

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe	No
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe	No N/A
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly specify	No N/A
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe	No N/A
Do you have any established warning systems for hazard events? • If yes, please briefly describe	Yes Site based warning/evacuation procedures

Table 21-5. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: None provided*	Medium
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: None provided*	Low
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: None provided*	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: None provided*	Low
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: None provided*	Low
Participation in regional groups addressing climate risks *Comments/Additional Information: None provided*	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: None provided*	Medium
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: None provided*	Low
Identified strategies for adaptation to impacts *Comments/Additional Information: None provided*	Low
Champions for climate action in local government departments *Comments/Additional Information: None provided*	Low
Political support for implementing climate change adaptation strategies *Comments/Additional Information: None provided*	Low
Financial resources devoted to climate change adaptation *Comments/Additional Information: None provided*	Low
Local authority over sectors likely to be negative impacted *Comments/Additional Information: None provided*	Low
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: None provided*	Medium
Local residents support of adaptation efforts *Comments/Additional Information: None provided*	Medium
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Medium
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Medium
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Medium

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

21.4 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

21.4.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the Contra Costa County Office of Education did not make progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The County Office of Education is recommitted to integrating hazard mitigation into applicable plans and programs and has identified future opportunities for such integration below.

Resources listed in Section 21.10 were used to provide information on hazard events and local capabilities within the jurisdiction.

21.4.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the Contra Costa County Office of Education will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan include actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Capital Improvement Program**—Capital improvement project proposals may take into consideration hazard mitigation potential as a means of evaluating project prioritization.

21.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 21-6 lists past occurrences of natural hazards for which specific damage was recorded in the Contra Costa County Office of Education service area. Other hazard events that broadly affected the entire planning area, including the Contra Costa County Office of Education service area, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 21-6. Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Earthquake	DR-845	10/17/1989	$2,000

21.6 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. Noted vulnerabilities within the district include the following:

- The agency central office is more likely than not to be extensively damaged during a major earthquake.

21.7 HAZARD RISK RANKING

Table 21-7 presents a local ranking for the Contra Costa County Office of Education of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 21-7. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake	54	High
2	Severe weather	30	Medium
3	Landslide	24	Medium
4	Flood	18	Medium
5	Wildfire	14	Low
6	Drought	12	Low
7	Dam and levee failure	8	Low
8	Sea level rise	6	Low
9	Tsunami	6	Low

21.8 STATUS OF PREVIOUS PLAN ACTIONS

Table 21-8 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 21-8. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
#1—Earthquake retrofit District Facility (Stewart Building).			X	CCCOE-3
Comment: No action to date.				
#2—Support County-wide initiatives identified in the 2011 Hazard Mitigation Plan.	X			
Comment: County-wide initiatives were supported through the performance period of the plan. Updated initiatives will continue to be supported.				
#3—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in the 2011 Hazard Mitigation Plan.	X		X	CCCOE-2
Comment: The County Office of Education will continue to support and participate in plan maintenance.				
#4—Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan		X		
Comment: The County Office of Education does not have a General Plan.				

21.9 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 21-9 lists the actions that make up the Contra Costa County Office of Education hazard mitigation action plan. Table 21-10 identifies the priority for each action. Table 21-11 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 21-9. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
CCCOE-1— Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	General Services	High	HMGP, PDM, FMA	Short-term
CCCOE-2— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 16	General Services	Low	Staff Time, General Funds	Short-term
CCCOE-3— Earthquake retrofit District Facility (Stewart Building).						
Existing	Earthquake	1, 5	General Services	High	HMGP, PDM	Short-term

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 21-10. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
CCCOE-1	8	High	High	Yes	Yes	No	Medium	High
CCCOE-2	3	Low	Low	Yes	No	Yes	High	Low
CCCOE-3	2	High	High	Yes	Yes	No	Medium	High

a. See the introduction to this volume for explanation of priorities.

Table 21-11. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	CCCOE-2	CCCOE-1	CCCOE-2					CCCOE-2
Dam and Levee failure								
Drought								
Earthquake		CCCOE-3						
Flood								
Landslide								
Severe weather								
Tsunami								
Wildfire								

a. See the introduction to this volume for explanation of mitigation types.

21.10 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- The Contra Costa County Office of Education Human Resources Department provided information used in the development of the jurisdictional profile and capability assessment.
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.

22. CONTRA COSTA WATER DISTRICT

22.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Jeff Quimby, Director of Planning
1330 Concord Ave
Concord, CA 94520
Telephone: 925-688-8310
e-mail Address: jquimby@ccwater.com

Alternate Point of Contact
Jill Chamberlain, Senior Engineer
1330 Concord Ave
Concord, CA 94520
Telephone: 925-688-8127
e-mail Address: jchamberlain@ccwater.com

22.2 JURISDICTION PROFILE

22.2.1 Overview

Contra Costa Water District (CCWD/District) provides water to approximately 500,000 people in Contra Costa County. In performing this service, CCWD operates and maintains a complex system of water transmission, treatment, and storage facilities to supply both treated and untreated (raw) water to its customers. CCWD is governed by a five-member elected Board of Directors, and employs approximately 300 people primarily based in Concord and Oakley. The Board of Directors assumes responsibility for the adoption of this plan, and the District will oversee its implementation. Funding for the District comes primarily through rates and revenue bonds.

The Contra Costa County Water District was approved by voters in 1936 as the legal entity to contract, purchase, and distribute water provided by Reclamation through the Contra Costa Canal (in 1981, "County" was removed from the name, leaving Contra Costa Water District as the official name). The 48-mile canal conveys water from the Sacramento-San Joaquin Delta from intakes at Rock Slough, Old River, Middle River and Mallard Slough to CCWD retail and wholesale customers. For the first 25 years of its existence, CCWD's main responsibility was the purchase and distribution of untreated water through the Contra Costa Canal. In the late 1950s, CCWD purchased the California Water Service Company's Concord-area treatment, pumping, storage, and distribution facilities. Today CCWD's service area encompasses most of central and northeastern Contra Costa County, a total area of more than 140,000 acres, including the Los Vaqueros watershed area of approximately 19,100 acres. Water is provided to a combination of municipal, residential, commercial, industrial, landscape irrigation, and agricultural customers. Municipal customers include the Diablo Water District (Oakley) and the Cities of Antioch, Pittsburg, Golden State Water Company (Bay Point) and Martinez, each of which distribute water to their retail customers. Treated water is distributed to individual customers in Clayton, Clyde, Concord, Pacheco, Port Costa, and parts of Martinez, Pleasant Hill, and Walnut Creek. In addition, CCWD delivers treated water to the Diablo Water District, City of Brentwood, Golden State Water Company (Bay Point), and the City of Antioch. Antioch, Pittsburg and Martinez have their own treatment plants.

In 1968, CCWD replaced the old treatment facilities with the construction of its own Ralph D. Bollman Water Treatment Plant (BWTP) in Concord. The Bollman WTP and the Randall-Bold Water Treatment Plant (RBWTP), completed in 1992 in Oakley and jointly owned with the Diablo Water District (DWD), provide treated water to approximately 360,000 people in the central and east areas of the County. The RBWTP provides treated water to

DWD, and by contract, to the Cities of Brentwood and Antioch and the Golden State Water Company (Bay Point). Additionally, the Multi-Purpose Pipeline, constructed in 2003, allows CCWD to serve customers in the central County from the RBWTP. In 2004, CCWD entered into an agreement with the City of Brentwood to construct and operate the Brentwood WTP, a facility adjacent to the RBWTP, to serve Brentwood.

In addition to the treated water service CCWD provides, the District also serves untreated water to the Cities of Antioch, Martinez, and Pittsburg as well as a large industrial base that includes oil refineries, steel mills, and chemical manufacturing facilities. Large industrial water use accounts for approximately one-third of total water use within CCWD.

22.2.2 Assets

Table 22-1 summarizes the critical assets of the district and their value.

Table 22-1. Special Purpose District Assets

Asset	Value[a]
Property	
District Center Campus and Antioch Operations Center Facilities	$46,200,000
Critical Infrastructure and Equipment	
Treated Water Transmission Pipe (≥12-inch diameter) 245 miles	$527,900,000
Treated Water Distribution Pipe (<12-inch diameter) 555 miles	$438,000,000
Untreated Water Transmission Pipe 21 miles	$219,400,000
Untreated Water Canal	$161,900,000
Total:	$1,347,200,000
Critical Facilities	
Treated Water Reservoirs (40 total)	$157,600,000
Treated Water Pump Stations (36 total)	$106,300,000
Water Treatment Facilities (3 total)	$316,100,000
Untreated Water Reservoirs (4 total)	$647,900,000
Untreated Water Pump Stations and Intakes (4 total)	$211,200,000
Total:	$1,439,100,000
Total:	$2,832,500,000

a. Replacement values provided are an approximation for the facilities shown in this table. Actual replacement values are likely to be +50%/-30% than the values shown in this table.

22.3 CAPABILITY ASSESSMENT

22.3.1 Planning and Regulatory Capabilities

Jurisdictions develop plans and programs and implement rules and regulations to protect and serve residents. When effectively prepared and administered, these plans, programs and regulations can support the implementation of mitigation actions. The following existing codes, ordinances, policies, programs or plans are applicable to this hazard mitigation plan:

- **Disaster Mitigation Act of 2000**—Provides the legal basis for FEMA mitigation planning requirements for State, local and Indian Tribal governments as a condition of mitigation grant assistance, and emphasizes the need for State, local, and Indian Tribal entities to closely coordinate mitigation planning and implementation efforts.

- **CCWD Emergency Operations Plan**—The EOP outlines standards for District operations during disasters, including the delegation of authority and responsibilities of the Board of Directors, General Manager, and designated EOT staff.
- **CCWD Dam Emergency Action Plans**—updated annually
- **Emergency Preparedness and Response Program**—ongoing updating
- **California Water Agency Response Network (CalWARN)**—The District is an active member of CalWARN, which provides mutual aid resources and information from other water agencies in regards to emergency response.
- **Urban Water Management Plan**—2015; This Plan identifies and projects water use demands throughout the service area; as well as encompasses the District's Water Shortage Contingency Plan, which identifies action items for specific levels of water shortage due to emergency events, climate change impacts, etc.
- **California Accidental Release (CalARP) Program (Title 19 CA Code of Regulations, Division 2, Chapter 4.5)**—ongoing updating

22.3.2 Fiscal, Administrative and Technical Capabilities

Fiscal capability is an indicator of a jurisdiction's ability to fulfill the financial needs associated with hazard mitigation projects. An assessment of fiscal capabilities is presented in Table 22-2. Administrative and technical capabilities represent a jurisdiction's staffing resources for carrying out the mitigation strategy. An assessment of administrative and technical capabilities is presented in Table 22-3.

22.3.3 Education and Outreach Capabilities

Outreach and education capability identifies the connection between government and community members, which opens a dialogue needed for a more resilient community. An assessment of education and outreach capabilities is presented in Table 22-4.

22.3.4 Adaptive Capacity for Climate Change

Given the uncertainties associated with how hazard risk may change with a changing climate, a jurisdiction's ability to track such changes and adapt as needed is an important component of the mitigation strategy. Table 22-5 summarizes the District's adaptive capacity for climate change.

Table 22-2. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes, for water service
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Federal Grant Programs	Yes
Other	No

Table 22-3. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Planning: Environmental Planner, Planning Engineer, Real Property Agent
Engineers or professionals trained in building or infrastructure construction practices	Yes	Engineering: Engineer
Planners or engineers with an understanding of natural hazards	Yes	Engineering/Planning: Engineer
Staff with training in benefit/cost analysis	Yes	Engineering/Planning: Engineer
Surveyors	Yes	The District does not have this capability on staff; however, utilizes As-Needed Contracts to support this need.
Personnel skilled or trained in GIS applications	Yes	Engineering: GIS Specialist
Scientist familiar with natural hazards in local area	Yes	The District does not have this capability on staff; however, utilizes As-Needed Contracts to support this need.
Emergency manager	Yes	Operations & Maintenance: Engineer
Grant writers	Yes	Planning: Grants Specialist
Other	No	NA

Table 22-4. Education and Outreach

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe	Yes CCWD has a webpage dedicated to Emergency Preparedness focused on water service in emergencies. Additional links are provided to information from the American Red Cross and FEMA.
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe	Yes CCWD has existing accounts with Facebook, Twitter, Instagram, and Next Door to get messages out for the public in an emergency situation.
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly specify	No N/A
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe	Yes CCWD has an emergency call phone number that customers can contact to hear a pre-recorded message if a live person is unavailable to answer their call.
Do you have any established warning systems for hazard events? • If yes, please briefly describe	Yes CCWD's website is equipped with an emergency alert option to post messages on all or specific pages – visitors can sign up to receive updates during the emergency. CCWD is working on evaluating other systems that could be used to provide direct alerts to customers through email, text or phone messages. Additionally, CCWD has existing accounts with Facebook, Twitter, Instagram, and Next Door to get messages out for the public in an emergency situation.

Table 22-5. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts	Medium
Comments/Additional Information: *Climate change is considered explicitly in water supply planning. Staff time is dedicated to remaining informed about advances in climate change science and participating in local, regional, state, and federal climate change initiatives. The District could improve and expand its consideration of climate change beyond water supply planning context.*	
Jurisdiction-level monitoring of climate change impacts	High
Comments/Additional Information: *The District performs extensive monitoring of water levels and water quality at our facilities in the Delta. District staff also incorporate other state and federal monitoring data in long term planning and daily operational decisions.*	
Technical resources to assess proposed strategies for feasibility and externalities	Medium
Comments/Additional Information: *Limited strategies have been proposed in the past to assess feasibility or externalities but staff are capable of making an appropriate assessment.*	
Jurisdiction-level capacity for development of greenhouse gas emissions inventory	High
Comments/Additional Information: *The District prepares a Greenhouse Gas Emissions inventory on a bi-annual basis.*	
Capital planning and land use decisions informed by potential climate impacts	Medium
Comments/Additional Information: *Climate change is considered in water supply planning and capital projects. Staff has assessed impacts to water supply availability as a result of climate and evaluated potential projects for the resiliency to potential climate change impacts. Climate change is also considered in future capital projects such as the expansion of Los Vaqueros Reservoir and the Bay Area Regional Reliability effort.*	
Participation in regional groups addressing climate risks	Medium
Comments/Additional Information: *The District participates in regional groups that include other water agencies to discuss water supply conditions and the potential impacts from climate change. Additionally, the District participates in regional efforts that examine potential projects that would increase reliability in the water supply as a result of many factors including potential climate change impacts.*	
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes	Low
Comments/Additional Information: *There currently are no mandates related to climate change. Climate change impacts are considered as part of the project implementation process.*	
Identified strategies for greenhouse gas mitigation efforts	Medium
Comments/Additional Information: *The District has identified and implemented projects to reduce greenhouse gas emissions, but has not identified an overall reduction strategy or goal. Projects are evaluated on a case-by case basis. The District has installed four solar panel projects. The District also has an energy recovery turbine which generates hydropower when water is released from Los Vaqueros Reservoir. The District's fleet replacement program considers fuel efficiency and currently has many hybrid vehicles as part of the fleet.*	
Identified strategies for adaptation to impacts	Low
Comments/Additional Information: *The District has implemented projects that provide resiliency to climate change impacts (off-stream reservoir storage, multiple Delta intakes) but has not currently identified long term strategies, beyond those relating to water supply, for climate change adaptation.*	
Champions for climate action in local government departments	Low
Comments/Additional Information: *The District dedicates staff time to participate in climate change activities on a regional, state, and federal level; however, the District has not identified a champion for climate action in local government.*	
Political support for implementing climate change adaptation strategies	Medium
Comments/Additional Information: *The District does have political support for implementing cost-effective climate change adaption strategies.*	

Criterion	Jurisdiction Rating[a]
Financial resources devoted to climate change adaptation	Low
Comments/Additional Information: *The District does not currently have resources dedicated to climate change adaptation. Projects that improve adaption capabilities are funded on a case-by case basis. Projects funded within the region include off-stream storage, relocation of Delta intakes, and recycled water.*	
Local authority over sectors likely to be negatively impacted	High
Comments/Additional Information: *The District has the authority over water supply and use within the service area. For example, the District adopted an ordinance regarding water waste and fines during the recent drought.*	
Public Capacity	
Local residents knowledge of and understanding of climate risk	Medium
Comments/Additional Information: *The District provides customers with information regarding changes in water supply as a result of various impacts including climate impacts and droughts. The general public within the service area have a basic understanding of climate risk.*	
Local residents support of adaptation efforts	Medium
Comments/Additional Information: *Based on the response by customers to the water reduction mandates in the most recent drought and participation in District programs aimed at reducing water use and increasing water efficiency (e.g. lawn rebate program) local residents are supportive of efforts to reduce water use in times of need and in support of long-term conservation measures.*	
Local residents' capacity to adapt to climate impacts	Medium
Comments/Additional Information: *As noted above, customers were responsive to measures to conserve in response to the recent drought and some amount of conservation appears to be generally sustained by customers since restrictions have been lifted. This indicates there is a capacity for local residents to adapt to climate change impacts.*	
Local economy current capacity to adapt to climate impacts	Unknown
Comments/Additional Information: *It is unknown at this time what the local economy current capacity to adapt to climate impacts will be.*	
Local ecosystems capacity to adapt to climate impacts	Unknown
Comments/Additional Information: *It is unknown at this time what the local ecosystems capacity to adapt to climate impacts will be.*	

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

22.4 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

22.4.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the Contra Costa Water District made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **Emergency Operations Plan**—The EOP outlines standards for District operations during disasters, including the delegation of authority and responsibilities of the Board of Directors, General Manager, and designated EOT staff.

- **Canal Modernization Studies—**Several studies have been completed, starting with the 2013 Untreated Water Facility Improvement Plan, that have identified and evaluated alternatives to the replacement of the Main Canal. This nearly 80-year old facility requires costly repairs and maintenance and needs replacement or significant improvement to ensure continued service following a seismic event as well as increase capacity to meet future demands.
- **CCWD Dam Emergency Action Plans—**These action plans identity District operations during emergencies.
- **Seismic Evaluation of the Randall Bold Water Treatment Plan, 2009**—This Study performed a seismic assessment and identified improvements for the Randall Bold Water Treatment Plan to reduce damage and disruption of operations resulting from a significant seismic event.
- **Seismic and Reliability Improvement Project, 1997—**This Project identifies improvements to the District's untreated and treated water systems to provide reliable water supply following an emergency or natural disaster. Projects identified include capacity improvements in the untreated water conveyance and treatment facilities to mitigate capacity constraints as well as seismic improvements to the untreated water system to mitigate vulnerabilities as a result of seismic activity.
- **Stormwater Remediation Study, 2006—**This Study identifies projects to improve conditions of potential water quality hazards as a result of stormwater runoff into the Contra Costa Canal.
- **Treated Water Master Plan Update, 2015—**This Plan identifies treated water system improvements and projects needed to satisfy current and future water demands within a defined performance criteria including the necessary improvements to ensure water supply reliability in an emergency.
- **Urban Water Management Plan Update, 2016**—This Plan identifies and projects water use demands throughout the service area; as well as encompasses the District's Water Shortage Contingency Plan, which identifies action items for specific levels of water shortage due to emergency events, climate change impacts, etc.
- **Ten Year Capital Improvement Program and Financial Plan (updated annually)—**This Plan identifies and prioritizes the capital assets and financial tools required over the following ten year period for the District to successfully carry out the mission to provide to "[…] strategically provide a reliable supply of high quality water at the lowest cost possible, in an environmentally responsible manner." Projects in the CIP are, or include, improvements to mitigate hazards.
- **Treated Water Renewal/Replacement Study, 2011 (currently being updated)—**This Study identifies improvement projects needed to maintain treated water pump stations and storage facilities to a defined performance criteria. Projects were identified through a risk assessment which prioritized projects for inclusion in the Capital Improvement Plan based on criticality .
- **Untreated Water Facility Improvement Plan Update, 2013 (to be updated in 2019)**—This Study identifies improvement projects needed to maintain untreated water facilities to a defined performance criteria. Project identified are included in the Capital Improvement Plan for a planned timeframe and programmed into the Untreated Water Facility Improvement Program.
- **Water System Vulnerability Assessment, 2003—**This Study assesses and identifies deficiencies in the water system based on potential defined vulnerabilities.
- **Water Treatment Plant Master Plan, 2011—**This Plan identifies improvement projects needed to maintain water treatment facilities to a defined performance criteria, including improvements to mitigate potential hazards (e.g. earthquakes) to maintain treatment plant reliability.

Resources listed in Section 22.10 were used to provide information on hazard events and local capabilities within the jurisdiction.

22.4.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the Contra Costa Water District will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex

identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan include actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The plans and programs listed in Section 1.4.1 cover the majority of District operations where the hazard mitigation goals are addressed. However, the capability assessment identified the opportunity for future integration of recommendations of the hazard mitigation plan for all the plans and programs listed as they are updated periodically.

22.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 22-6 lists past occurrences of natural hazards for which specific damage was recorded in the Contra Costa Water District. Other hazard events that broadly affected the entire planning area, including the Contra Costa Water District, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 22-6. Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Storms (flooding/landslides) 2017	4301-DR-CA, 4305-DR-CA, 4308-DR-CA	Jan. 2017	Heavy rains and flooding during storm events caused damage resulting in the need for emergency repairs to facilities including the Contra Costa Canal.
2014-2017 Drought		2014-2017	The drought did not affect locally owned facilities directly, but CCWD experienced operational impacts, as well as mandatory conservation regulations due to drought conditions.
San Joaquin (Jones Tract) Levee Break		6/2/2004	The levee break resulted in salt water from the San Francisco Bay intruding further and reaching CCWD water supply intakes. Diversions from intakes near the break were halted.
Storms (flooding)		1995-1998	Heavy rains and flooding during storm events caused damage resulting in emergency repairs to facilities including the Contra Costa Canal.
Earthquake (Loma Prieta)	DR-845	10/17/1989	A significant leak occurred in the Shortcut Pipeline (a United States Bureau of Reclamation owned facility operated by CCWD) that coveys untreated water from the Contra Costa Canal to the City of Martinez. Additionally, a significant number of other service mains were damaged and required immediate repair.
Storms (flooding)		1982-1983	Heavy rains and flooding during storm events caused damage resulting in emergency repairs to facilities including the Contra Costa Canal.
Urban/Wildland Fires		Fire Seasons in 1999, 2002, 2004, 2005, 2008, 2009, 2011, 2012, 2013, 2015, and 2017	Minor structure damage to fences and ancillary structures (multiple), windmill damage (2005)

22.6 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. Noted vulnerabilities within the district include the following:

- **Earthquakes**—The Concord Green Valley, Mt Diablo, and the Greenville faults lie within the CCWD service area. The Concord Green Valley fault intersects the northern and western portion of CCWD's service area in Concord, Pleasant Hill, Walnut Creek, and Martinez, while the Greenville Fault lies west

of Los Vaqueros Reservoir in the eastern portion of the CCWD service area. There are other potential seismic sources such as the Coastal Range Sierra Block Zone, as well as the Calaveras, Hayward, and San Andreas faults. District facilities within the Treated Water Service Area (TWSA) include a pipelines (transmission and distribution), pump stations, and storage facilities which would experience a range of strong to sever shaking from the simulated earthquakes, as further discussed below. Untreated water facilities in the eastern portions of the District's service area include water treatment plants, untreated water conveyance facilities (Canal, pipeline, and pump stations), intakes and Contra Loma and Los Vaqueros Reservoirs.

- The majority of the District's service area would experience very strong shaking during a magnitude 6.7 earthquake on the Mt. Diablo fault with portions of the District's the Treated Water Service Area (TWSA) in Concord and Clayton experiencing severe shaking, including Los Vaqueros Reservoir and the Canal which is the only conveyance facility for untreated water in some areas.
- A magnitude 7.05 earthquake on the Hayward fault would result in very strong shaking within the District's TWSA and strong to very strong shaking in the eastern portions of the District's service area (Antioch, Pittsburg, Oakley, and Brentwood).
- The majority of the District's service area would experience very strong shaking during a magnitude 7.0 earthquake on the Greenville fault with portions of the District's the Treated Water Service Area (TWSA) in Concord, Pleasant Hill, and Martinez experiencing strong shaking. Severe shaking would be experienced at the Los Vaqueros Reservoir.
- A magnitude 6.8 earthquake on the Concord Green Valley fault would result in severe shaking within the District's TWSA with some portions of Concord and Clayton experiencing very strong shaking. The eastern portions of the District's service area (Antioch, Pittsburg, Oakley, and Brentwood) would experience very strong to strong shaking and Los Vaqueros Reservoir would experience strong shaking.
- The majority of the District's TWSA would experience very strong shaking during a magnitude 7.0 earthquake on the Calaveras fault and strong shaking in the rest of the District's service area to the east, including the Los Vaqueros Reservoir.
- Liquefaction susceptibility within the District service area ranges but is primarily low to very low. Areas medium susceptibility are in portions of the TWSA in Walnut Creek, Pleasant Hill, Concord and Clayton and very high along waterways (e.g. Walnut Creek). The eastern portion of the service area has a higher percentage of land in medium susceptible area and the intakes are located in highly susceptible areas. Additionally, portions of the Canal, the only conveyance facility for untreated water in some areas, is located in medium susceptible areas.
- Earthquake Induced Floods—U.S. Geological Survey and other independent scientific investigations estimate the probability of a significant seismic event that would affect the levees in the Sacramento-San Joaquin Delta at about 2.5% in any year (over 50% in the next 30 years). Such an event may cause a simultaneous failure of levees on multiple Delta islands. If such an event were to occur during lower flow periods (i.e., any below normal year or any year in the summer or fall), significant salinity intrusion would likely occur in the Delta.

- **Flooding**—Portions of the CCWD service area lie within the FEMA 100-year floodplain and 500-year floodplain generally along the northern and eastern edges of the District. In particular, the untreated water intakes are located in the 500-year floodplain and flooding along Mallard Slough, Walnut Creek, Pacheco Creek, and Galindo Creek could cause damage to water transmission lines and impinge on Mallard Reservoir. The Old River and Middle River Pumping Plants, both intakes for the Los Vaqueros Reservoir and the Contra Costa Canal, are protected by levees. Localized flooding has also been experienced at District facilities in the past. Additionally, areas along or downstream of the Canal are susceptible to flooding if there was a failure.

- **Wildfires**—Large portions of land surrounding Martinez, Pleasant Hill, northeastern Walnut Creek, Clayton, Pittsburg, Antioch, Oakley, and Brentwood in CCWD Service Area are considered to have high to very high severity fire threat. CCWD is committed to providing an adequate supply of water for fire-fighting; therefore, the wildfire hazard is a major consideration for making necessary improvements to the reliability of the District's system. CCWD maintains a comprehensive fire prevention program for the Los Vaqueros Watershed, located in a high severity zone, including maintaining firebreaks, conducting controlled burns, and controlling residual dry matter.
- **Dam and Levee Failure**—CCWD has prepared Emergency Action Plans (EAPs) for the four reservoirs in compliance with USBR, California Division of Safety of Dams, and OES requirements to address dam failure during the Probable Maximum Flood (PMF) and the sunny day failure. The EAPs show the inundation boundaries downstream of the dams for these two conditions. Additionally, the potential for loss of life for the USBR-owned dams, Contra Loma and Martinez, have been assessed. The reservoirs are all off-channel reservoirs resulting in a reduced probability and lower risk of flooding during the PMF. CCWD dams have all been analyzed for the maximum credible earthquake to assess earthquake loading. Instrumentation and monitoring at all reservoirs are in place to monitor the safety of the dams under normal, unusual (flooding), and extreme (earthquake) operating conditions.
- **Drought**—The 2015 Urban Water Management Plan includes a water shortage contingency plan which includes management strategies for water supply and demand during water supply shortage conditions, including drought. An evaluation of water demands, conservation, water shortage contingencies and existing and potential supplies was completed for this analysis, which utilized analysis completed as part of the Future Water Supply Study. As demonstrated through the most recent drought, the District was able to exercise these options through the use of stored water in Los Vaqueros, conservation, water use restrictions, and other measures to address the impacts of the drought on water supply.
- **Landslide**—Based on the review of the landslide susceptibility zone, and the recent experience with the 2017 heavy storm events, District facilities are located in areas of low to high susceptibility to landslides. The majority of the service area is located in low susceptibility zones; however, moderate to high susceptibility zones are present in the Baypoint area and Los Vaqueros Watershed. Several landslides were recently experienced in the Los Vaqueros Watershed and along the Canal during the 2017 storm events illustrating the high susceptibility of these facilities.
- **Sea Level Rise**—CCWD's service area is adjacent to the Sacramento-San Joaquin Delta which includes shoreline areas vulnerable to sea level rise exist along the northern service area boundary. District staff consider sea level rise impacts to the water supply as part of the Future Water Supply Studies and other efforts that consider water supply and quality.
- **Tsunami**—Though District facilities are not located within a projected tsunami inundation zone, anticipated impacts on water quality in the Sacramento-San Joaquin Delta, the source of water for the District, may be experienced as a result of increased salt water inundation.

22.7 HAZARD RISK RANKING

Table 22-7 presents a local ranking for the Contra Costa Water District of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

22.8 STATUS OF PREVIOUS PLAN ACTIONS

Table 22-8 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 22-7. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake	54	High
2	Wildfire	27	Medium
3	Flood	27	Medium
4	Landslide[a]	27	Medium
5	Drought	27	Medium
6	Severe weather	18	Medium
7	Dam and levee failure	16	Medium
8	Sea level rise	10	Low
9	Tsunami[b]	2	Low

a. District increased operation impact score because untreated water facilities (Los Vaqueros, Canal) are in moderate to high zones.
b. District staff Increased score slightly, as a result of potential impacts to water quality and untreated water intakes.

Table 22-8. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update: Check if Yes	Carried Over to Plan Update: Enter Action #
1—District Center Seismic Improvements	X			
Comment: The Project was completed in 2016 to address concerns with the health and safety of employees and customers at the District's main administrative building, and to reduce consumption of energy and associated greenhouse gas emissions. Improvements included retrofits to the building to ensure it performs to a life and safety level during a seismic event.				
2—Contra Costa Canal Replacement Project			X	CCWD-8
Comment: This project will decrease vulnerabilities to the Canal due to significant seismic events, vulnerabilities in flood protection in the event of elevated water stages in the Delta, as well as improve water quality. Segments 1 and 2 of this Project have been completed. Segments 3 and 4 are scheduled for completion by 2019, and Segment 5 will be completed as funding becomes available.				
3—Shortcut Pipeline Rehabilitation			X	CCWD-8
Comment: This pipeline conveys water from the Contra Costa Canal to Martinez reservoir and major industrial users, including refineries. Improvements to replace inoperable valves and increase access are currently in progress and anticipated to be complete in 2018. A condition assessment of the pipeline will be completed in 2018 to determine the condition of the pipeline and identify additional improvements to maintain the reliability of this critical facility.				
4—Bollman Water Treatment Plant Seismic Improvements			X	CCWD-9
Comment: This project included seismic retrofit of the clearwell and sedimentation basin to improve reliability during a seismic event as well as safety improvements.				
5—Port Chicago Pipeline Phase II			X	CCWD-7
Comment: This project includes installing a new backbone transmission main.				
6—Randall-Bold Seismic Improvements	X			
Comment: This project was completed in 2014 and included improvements to address seismic deficiencies and improve the facilities ability to withstand seismic events and provide continued operation post seismic disaster.				
7—Treated Water Emergency Service Connections			X	CCWD-7
Comment: This project includes design and installation of emergency connections between the District and other municipal water districts to allow agencies to share water resources in emergency events. Some interties were completed since the last Plan; however, not all have been.				
8—Treated Water Emergency Storage			X	CCWD-7
Comment: This project includes construction of a new reservoir and interconnections between subzones to address emergency and operational deficiencies				

22.9 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 22-9 lists the actions that make up the Contra Costa Water District hazard mitigation action plan. Table 22-10 identifies the priority for each action. Table 22-11 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 22-9. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Department	Estimated Cost	Sources of Funding	Timeline
CCWD-1—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All hazards assessed by this plan	1 thru 18	Planning	Low	Staff Time, General Funds	Short-term
CCWD-2—Los Vaqueros Reservoir Expansion Implementation: This project purpose is to improve the District's water supply reliability and water quality through expansion of the existing reservoir. The District completed an expansion from 100 to 160 TAF and is in the process of evaluating a further expansion along with other Bay Area water agencies. The maintenance of a reliable water supply is mission critical when responding to and recovering from the hazards assessed by this plan. This is a planning (preventive) action that will take into account the impacts from all hazards assessed by this plan on district facilities.						
Existing	Dam/Levee Failure, Drought, Earthquake, Flood, Landslide, Severe Weather, Sea Level Rise, and Wildfire	1, 2	Water Resources	Low	Staff Time, General Funds, HMGP, PDM, FMA	Short-term
CCWD-3—Replacement/Upgrade of Radio System Equipment: This project will ensure effective and reliable communications among District personnel that could interface with other local agencies, such as police and fire departments.						
New and Existing	All Hazards	2, 8, 16	Operations & Maintenance	Low	Staff Time, General Funds, HMGP, PDM, FMA	Short-term
CCWD-4—Replacement of Fleet Vehicles, Heavy Equipment: This project purpose is to allow for the continual safe and reliable operation of the District through replacement of vehicles and heavy equipment used to maintain District operations as well as respond to emergencies.						
New	All Hazards	2, 8	Operations & Maintenance	Medium	Staff Time, General Funds, HMGP	Ongoing
CCWD-5—Future Water Supplies Program: The purpose of the projects included in this program are to enable the District to implement economically and environmentally sound options to ensure high water quality and reliable water supply for the next fifty years.						
New and Existing	All Hazards	2, 6, 8, 17, 18	Planning	Medium	Staff Time, General Funds, HMGP, PDM, FMA	Short-term
CCWD-6— Los Vaqueros Watershed and Conservation Land Improvements: Projects completed under this program are to ensure the District's capability to protect, manage, and maintain the watershed to continue to reliably serve high quality water. Mitigation projects targeted for this program include stormwater management improvements, fire prevention, public safety, and other facility improvements/retrofits						
Existing	Dam/Levee Failure, Drought, Earthquake, Flood, Landslide, Severe Weather, Sea Level Rise, and Wildfire	1, 2, 8, 10, 17, 18	Watershed & Lands	Medium	Staff Time, General Funds, HMGP, PDM, FMA	Ongoing

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Department	Estimated Cost	Sources of Funding	Timeline
CCWD-7—Treated Water Distribution and Storage Facilities Program: Mitigation projects targeted for this program include: pipeline replacements/retrofits and new installations, pump station and reservoir improvements to ensure reliable service which meets needs of the District, including improving the emergency response capabilities (e.g. fire suppression needs). Projects include replacement of aging pipe, new transmission mains to increase reliability(e. Port Chicago Pipeline Phase II), pump station improvements, seismic improvements to facilities and pipelines, as well as interties to adjacent municipal water districts to enhance reliability and provide continued service post disaster. Specific projects are identified in the District Master Plans as well as Renewal and Replacement Studies, many of which are in the process of being updated, and are prioritized based on the criticality of the facility or pipeline.						
New and Existing	Dam/Levee Failure, Drought, Earthquake, Flood, Landslide, Severe Weather, Sea Level Rise, and Wildfire	1, 2, 3, 7, 8, 10, 15, 17, 18	Engineering, Planning	Medium	Staff Time, General Funds, HMGP, PDM, FMA	Ongoing
CCWD-8— Untreated Water Supply and Transport Program: The purpose of this program is to ensure long term, reliable delivery of water for the entire service area. Mitigation projects targeted for this program include studies to identify improvements for the nearly 80-year-old canal and associated facilities; followed by the replacement/retrofit of portions of the canal to decrease vulnerabilities to hazards, increase reliability and improve water quality; Shortcut Pipeline improvements; and several other projects aimed at increasing reliability of these critical untreated water facilities.						
New and Existing	Dam/Levee Failure, Drought, Earthquake, Flood, Landslide, Severe Weather, Sea Level Rise and Wildfire	1, 2, 7, 8, 10, 15, 17, 18	Engineering, Planning	High	Staff Time, General Funds, HMGP, PDM, FMA	Ongoing
CCWD-9—Water Treatment Facility Improvements Program: The purpose of projects in this program are to ensure continued reliable delivery of high quality water with periodic improvements or replacement/retrofit of facilities and equipment at the water treatment plants. Specific projects included are detailed in the Water Treatment Plant Master Plan.						
Existing	All Hazards	1, 2, 7, 8, 10, 15, 17, 18	Engineering, Planning	Medium	Staff Time, General Funds, HMGP, PDM, FMA	Ongoing

a. Where multiple responsible departments are listed, an asterisk (*) identifies the lead department.

Table 22-10. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a, b]	Grant Pursuit Priority[a]
CCWD-1	18	Medium	Low	Yes	No	Yes	Medium	Low
CCWD-2	2	Low	Low	Yes	Yes	Yes	Low	Low
CCWD-3	3	Medium	Low	Yes	Yes	Yes	High	Low
CCWD-4	2	Medium	Medium	Yes	Yes	Yes	High	Low
CCWD-5	5	Medium	Medium	Yes	Yes	Yes	High	Medium
CCWD-6	6	Medium	Medium	Yes	Yes	Yes	High	Medium
CCWD-7	9	High	Medium	Yes	Yes	Yes	High	High
CCWD-8	8	High	High	Yes	Yes	Yes	Medium	High
CCWD-9	8	Medium	Medium	Yes	Yes	Yes	Medium	Medium

a. See the introduction to this volume for explanation of priorities.
b. Actions listed as priority 1 or 2 in the District CIP are listed as high implementation priority.

Table 22-11. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards				CCWD-5 & 6	CCWD-3 & 4		CCWD-5	CCWD-1
Dam and Levee failure	CCWD-2	CCWD-8				CCWD-8		
Drought	CCWD-2							
Earthquake	CCWD-2	CCWD-7, 8 & 9				CCWD-7, 8, & 9		
Flood	CCWD-2	CCWD-7, 8 & 9				CCWD-7, 8 & 9		
Landslide	CCWD-2	CCWD-7 & 8				CCWD-7, 8 & 9		
Severe weather	CCWD-2	CCWD-7, 8 & 9						
Tsunami	CCWD-2	CCWD-8						
Wildfire	CCWD-2	CCWD-7, 8 & 9						

a. See the introduction to this volume for explanation of mitigation types.

22.10 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **CCWD Dam Emergency Action Plans** (**updated annually)—**Reviewed to confirm what types of hazards are considered.
- **Untreated Water Facility Improvement Plan Update (2013)—**Plan reviewed to determine projects within the Untreated Water Supply and Transport Program suitable for inclusion in this Annex.
- **Treated Water Master Plan Update (2015)—**Master Plan reviewed to determine projects within the Treated Water Distribution and Storage Facilities Program suitable for inclusion in this Annex.
- **Urban Water Master Plan Update (2015)**—The District's Water Shortage Contingency Plan included in this plan was reviewed to inform the completion of this annex.
- **Ten Year Capital Improvement Program and Financial Plan (updated annually)—**This Plan was reviewed to obtain cost and priority of programs and projects information included in this annex.
- **Treated Water Renewal/Replacement Study (2011, currently being updated)—**This Study was reviewed to determine projects within the Treated Water Distribution and Storage Facilities Program suitable for inclusion in this Annex..
- **Water Treatment Plant Master Plan (2011)—**This Plan was reviewed to identifies improvement projects needed to maintain water treatment facilities to a defined performance criteria, including improvements to mitigate potential hazards (e.g. earthquakes) for including within this annex.
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.

23. Crockett Community Services District

23.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Dale McDonald, General Manager
850 Pomona St
Crockett, CA 94525
Telephone: 510-787-2992
e-mail Address: manager@town.crockett.ca.us

Alternate Point of Contact
Ron Wilson, Recreation Dept. Manager
850 Pomona St
Crockett, CA 94525
Telephone: 510-787-2414
e-mail Address: recreation@town.crockett.ca.us

23.2 JURISDICTION PROFILE

23.2.1 Overview

The Crockett Community Services District (CCSD) is an independent special district and was formed in 2006 through the reorganization of three agencies: Crockett-Valona Sanitary District, County Sanitation District No. 5 (Port Costa), and County Service Area P-1. CCSD serves two separate and distinct unincorporated communities – Crockett with a population of 3,094 and Port Costa with a population of 190 – and is authorized to provide the following services: wastewater collection, treatment, and disposal; public recreation; street lighting; landscape maintenance; graffiti abatement; and construction and maintenance of library buildings and cooperation with other governmental agencies for library services. CCSD encompasses 686 acres (1.07 square miles) and is bordered by the Carquinez Strait to the north and rolling hills to the west, east, and south, much of it belonging to the East Bay Regional Park District. Limited growth is expected within the District. The unincorporated Crockett and Port Costa communities are not contiguous and have separate wastewater systems. There are 6 year round employees and approximately 25 seasonal employees that operate the aquatics center and pool during the summer. CCSD is primarily funded through sewer use charges, residential recreation assessment, local property taxes, and grants. The CCSD Board consists of 5 elected individuals who reside in the towns of Crockett or Port Costa and are accountable to an electorate of approximately 2,000 voters. The CCSD District Board assumes responsibility for the adoption of this plan; the General Manager will oversee its implementation.

23.2.2 Assets

Table 23-1 summarizes the critical assets of the district and their value.

23.3 CAPABILITY ASSESSMENT

23.3.1 Planning and Regulatory Capabilities

Jurisdictions develop plans and programs and implement rules and regulations to protect and serve residents. When effectively prepared and administered, these plans, programs and regulations can support the implementation of mitigation actions.

Table 23-1. Special District Assets

Asset	Value
Property	
5.6 acres of land	$2,385,000
Critical Infrastructure and Equipment	
Total length of sewer pipe in Crockett 15.4 miles ($1.32M per mile x 15 miles)	$20,328,000
Total length of sewer pipe in Port Costa 1.3 miles ($1.32M per mile x 1.3 miles)	$1,716,000
District Emergency Response Vehicle	$25,000
Total:	$22,064,000
Critical Facilities	
Crockett Community Center	$3,500,000
Crockett Aquatics Building, Pool, and Alexander Park	$1,500,000
Crockett Downtown Public Plaza	$850,000
Crockett Veterans Memorial Hall	$750,000
C&H / Crockett Joint-Wastewater-Treatment-Plant (17% share ownership)	$3,400,000
Crockett Pump Stations – Port St (main) and Loring Street (satellite)	$1,400,000
Crockett Equalization Tank, garage, and control building	$2,400,000
Port Costa Wastewater Treatment Plant	$3,000,000
Total:	$16,800,000

The following codes, ordinances, policies, programs or plans are applicable to this hazard mitigation plan:

- **Crockett Community Services District Code** —Adopted January 2015 by Ordinance No. 05-1, a compilation and codification of existing ordinances of the Crockett Community Services District is the official code of the District in accordance with the provisions of Health and Safety Code Section 6491.2 and Government Code Sections 50022.1 to 50022.8.
- **Standard Specifications for the Design, Construction, and Use of Sanitary Sewers** —Adopted January 2005 by Ordinance No. 05-1, governs requirements, design, and all work in connection with sewer construction and/or projects financed by private individuals within the jurisdiction of the District.
- **Resolution No. 14/15-10 EOC**—Adopted December 2014, designating the Crockett Community Center to serve as the Emergency Operation Center (EOC) for the District.
- **Operational Area Agreement with Contra Costa County (County)**— Dated September 20, 1995 which in part requires coordination of resources.

23.3.2 Fiscal, Administrative and Technical Capabilities

Fiscal capability is an indicator of a jurisdiction's ability to fulfill the financial needs associated with hazard mitigation projects. An assessment of fiscal capabilities is presented in Table 23-2. Administrative and technical capabilities represent a jurisdiction's staffing resources for carrying out the mitigation strategy. An assessment of administrative and technical capabilities is presented in Table 23-3.

23.3.3 Education and Outreach Capabilities

Outreach and education capability identifies the connection between government and community members, which opens a dialogue needed for a more resilient community. An assessment of education and outreach capabilities is presented in Table 23-4.

Table 23-2. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes, Sewer Use Charges
Incur Debt through General Obligation Bonds	No
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	Yes
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Federal Grant Programs	Yes
Other	State Revolving Fund (SFR) Loans

Table 23-3. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	No	
Engineers or professionals trained in building or infrastructure construction practices	No	
Planners or engineers with an understanding of natural hazards	No	
Staff with training in benefit/cost analysis	No	
Surveyors	No	
Personnel skilled or trained in GIS applications	No	
Scientist familiar with natural hazards in local area	No	
Emergency manager	Yes	General Manager acts as Emergency Manager as needed.
Grant writers	No	
Other	No	

Table 23-4. Education and Outreach

Criterion	Response
Do you have a Public Information Officer or Communications Office?	No. Board President is spokesman for the District.
Do you have personnel skilled or trained in website development?	No
Do you have hazard mitigation information available on your website? • If yes, please briefly describe	No N/A
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe	No N/A
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly specify	Yes District Board is responsible for policies and funding.
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe	No N/A
Do you have any established warning systems for hazard events? • If yes, please briefly describe	No N/A

23.3.4 Adaptive Capacity for Climate Change

Given the uncertainties associated with how hazard risk may change with a changing climate, a jurisdiction's ability to track such changes and adapt as needed is an important component of the mitigation strategy. Table 23-5 summarizes the District's adaptive capacity for climate change.

Table 23-5. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: None provided*	Low
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: None provided*	Low
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: None provided*	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: None provided*	Unsure
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: None provided*	Low
Participation in regional groups addressing climate risks *Comments/Additional Information: None provided*	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: None provided*	Low
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: None provided*	Unsure
Identified strategies for adaptation to impacts *Comments/Additional Information: None provided*	Low
Champions for climate action in local government departments *Comments/Additional Information: None provided*	Low
Political support for implementing climate change adaptation strategies *Comments/Additional Information: None provided*	Low
Financial resources devoted to climate change adaptation *Comments/Additional Information: None provided*	Low
Local authority over sectors likely to be negative impacted *Comments/Additional Information: None provided*	Medium
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: None provided*	Medium
Local residents support of adaptation efforts *Comments/Additional Information: None provided*	Unsure
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Unsure
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Unsure

a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

23.4 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

23.4.1 Existing Integration

The Crockett Community Services District has implemented hazard mitigation planning within its existing programs and plans. The District has just begun its integration into Contra Costa County's Hazard Mitigation Plan and, as such, there are no measurables for the prior performance period.

Resources listed in Section 23.10 were used to provide information on hazard events and local capabilities within the jurisdiction.

23.4.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the Crockett Community Services District will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan include actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Capital Improvement Plan**—The Crockett Sanitary Department has developed a capital improvement plan for its sanitary sewer collection system. C&H Sugar Company, which operates the Joint-Sewer-Treatment Plant in Crockett, manages the capital improvement plan for the treatment plant. The District takes into consideration the age of the sewer collection pipe, current condition, and risk of failure in prioritizing projects. The hazard mitigation plan may identify potential funding sources to accelerate sewer pipe replacement, lowering the risk of sewer spill or equipment failure.
- **Emergency Response Programs**—The District has multiple plans to manage risk as they relate to the operations of the District including the Sanitary Sewer Overflow (SSO) Emergency Response Plans for Crockett and Loring Pump Stations, Overflow Emergency Response Plan covering the sewer collection systems of Crockett and Port Costa that cover spill response and regulatory reporting, business operation contingency plans for the sanitary department and recreation department, and contingency sewer spill prevention plans. Data from hazard mitigation risk assessments can be used to update the emergency response programs of the District.
- **Injury and Illness Prevention Program**—The General Manager has authority and responsibility for plan implementation. The program includes facility and safety plans for sanitary and recreation facilities.

23.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 23-6 lists past occurrences of natural hazards for which specific damage was recorded in the Crockett Community Services District. Other hazard events that broadly affected the entire planning area, including the Crockett Community Services District, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 23-6. Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Severe Storms, Flooding	DR-4308	2/1/2017 to 2/23/2017	130,000
South Napa Earthquake	DR-4193	8/24/2014	$1,000
Severe Storms, Flooding	Unknown	12/2/2012	$6,000
Severe Storms, Flooding	DR-1203	2/2/1998 to 2/9/1998	$73,391
Severe Storms, Flooding	DR-1155	12/28/1996 to 4/1/1997	Staff overtime and sewer discharges

23.6 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. Noted vulnerabilities within the district include the following:

- Risk of earthquake damage to wastewater and recreation facilities including District office.
- Climate change effect on sea-level rise will likely inundate Crockett wastewater treatment plant and primary pump station, by sea level rise by 2100.
- Flooding from extreme or prolonged storm events could overwhelm existing capacity of sewer wastewater collection systems in Crockett or Port Costa.
- Crockett and Port Costa communities could be cut off and isolated as the result of a hazard event, such as a earthquake or wildfire.

23.7 HAZARD RISK RANKING

Table 23-7 presents a local ranking for the Crockett Community Services District of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 23-7. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake	54	High
2	Severe weather	18	Medium
3	Sea level rise	12	Medium
4	Flood	8	Low
4	Landslide	8	Low
4	Dam and levee failure	6	Low
4	Tsunami	6	Low
4	Drought	6	Low
4	Wildfire	6	Low

23.8 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 23-8 lists the actions that make up the Crockett Community Services District hazard mitigation action plan. Table 23-9 identifies the priority for each action. Table 23-10 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 23-8. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
CRCSD-1—Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 11, 12, 15, 17	Crockett CSD	High	HMGP, PDM, FMA	Short-term
CRCSD-2—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 16	Crockett CSD	Low	Staff Time, General Funds	Short-term
CRCSD-3—Create a Capability Assessment Plan that meets current and future regulatory requirements for protecting wastewater and recreation facilities of the District.						
New and Existing	All Hazards	1, 2, 4, 5, 6, 7, 12, 16, 17, 18	Crockett CSD	High	HMGP, PDM, Grant Funding	Short-term
CRCSD-4—Evaluate whether having professional Public Information Officer is cost-effective to the District and beneficial to the public.						
New and Existing	All Hazards	3, 16, 17, 18	Crockett CSD	Low	Staff Time	Short-term
CRCSD-5—Protect the Crockett Swimming Pool and Aquatics building from damage caused by ground saturation.						
Existing	Flood	1, 4, 10, 11, 13	Recreation Dept.	High	HMGP, FMA	Short-term
CRCSD-6 —Develop Adaptive Capacity for Climate Change report that focuses on the protection of the wastewater systems serving Crockett; identifying current technical limitations, implementation strategies, and funding sources.						
Existing	Severe Weather, Sea Level Rise	1, 4, 5, 7, 9, 11, 12, 14, 15, 17	Crockett Sanitary Dept.	Medium	HMGP, PDM, FMA, State and Local Grants	Short-term
CRCSD-7 —Develop Adaptive Capacity for Climate Change report that focuses on the protection of the wastewater systems serving Port Costa; identifying current technical limitations, implementation strategies, and funding sources.						
Existing	Severe Weather, Sea Level Rise	1, 4, 5, 7, 9, 11, 12, 14, 15, 17	Port Costa Sanitary Dept.	High	HMGP, PDM, FMA, State and Local Grants	Long-term
CRCSD-8—Develop and implement a program to capture perishable data after significant events (e.g. high water marks, preliminary damage estimates, damage photos) to support future mitigation efforts including the implementation and maintenance of hazard mitigation plan.						
New and Existing	All Hazards	6, 8, 18	Crockett CSD	Low	Staff Time, General Funds	Short-term
CRCSD-9—Consider the development of a post-disaster recovery plan and debris management plan.						
New and Existing	All Hazards	6, 13	Crockett CSD	Medium	HMGP, Staff Time, General Funds	Long-term
CRCSD-10—Develop plan to install backup emergency generator at Crockett Community Center to provide operations during power-outages caused by such events such as earthquakes or strain to the electrical grid due to excessive heat.						
New	Earthquake, Severe Weather	2, 7, 13	Recreation Dept.	High	HMGP, State and Local Grants	Long-term
CRCSD-11—Consider seismic study to Crockett aquatics center building and strengthen building if needed.						
Existing	Earthquake	1, 2, 4, 7, 11, 13, 15	Recreation Dept.	High	HMGP, PDM, State and Local Grants	Long-term

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
CRCSD-12—Structural evaluation of Port Costa Sanitary Department Wastewater Treatment sand beds and retrofit/reconstruction if required.						
Existing	Earthquake, Sea Level Rise	1, 2, 4, 7, 11, 13, 15, 17	Port Costa Sanitary Dept.	High	HMGP, PDM, State and Local Grants	Long-term
CRCSD-13—Support the County-wide initiatives identified in Volume 1 of the hazard mitigation plan.						
Existing	All Hazards	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18	Crockett CSD	Low	Staff Time, General Funds	Short-term

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 23-9. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
CRCSD-1	8	High	High	Yes	Yes	No	Medium	High
CRCSD-2	3	Low	Low	Yes	No	Yes	High	Low
CRCSD-3	10	High	High	Yes	Yes	No	Medium	High
CRCSD-4	4	Low	Low	Yes	No	Yes	High	Low
CRCSD-5	5	High	High	Yes	Yes	No	Medium	High
CRCSD-6	10	Medium	Medium	Yes	Yes	No	Medium	Medium
CRCSD-7	10	Medium	High	No	Yes	No	Low	Medium
CRCSD-8	3	Low	Low	Yes	No	Yes	High	Low
CRCSD-9	2	Low	Medium	No	Yes	Yes	Low	Low
CRCSD-10	3	High	High	Yes	Yes	No	Medium	High
CRCSD-11	7	Medium	High	No	Yes	No	Low	Medium
CRCSD-12	8	High	High	Yes	Yes	No	Medium	High
CRCSD-13	18	Low	Low	Yes	No	Yes	High	Low

a. See the introduction to this volume for explanation of priorities.

Table 23-10. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	CRCSD-2, 3, 8, 9, 13	CRCSD-1	CRCSD-4, 13					CRCSD-2, 3, 4, 8, 9
Dam and Levee failure								
Drought								
Earthquake		CRCSD-11, 12			CRCSD-10	CRCSD-12		CRCSD-11
Flood		CRCSD-5						
Landslide								
Sea Level Rise		CRCSD-6, 7				CRCSD-6, 7	CRCSD-6, 7, 12	CRCSD-6, 7
Severe weather	CRCSD-6, 7	CRCSD-6, 7						CRCSD-6, 7
Wildfire								

a. See the introduction to this volume for explanation of mitigation types.

23.9 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

Capability Assessment plan needs to be developed. Currently there is no funding available from either enterprise or non-enterprise funding sources in the District to develop a capability assessment plan. Consultant would need to be hired to identify needs of the District.

Study on effect of climate change to District sanitary department facilities needed, including but not limited to wastewater treatment plants, pump stations, and collection system sewer pipes. Funding needs to be identified. Due to limited staff, consultant would be needed to identify funding and develop the plan.

23.10 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Crockett Sewer Use Charge Study FY 2017/2018**—The annual report was used to develop future operating and capital improvement requirements for the Crockett Sanitary Department.
- **Port Costa Sewer Use Charge Study FY 2017/2018** —The annual report was used to develop future operating and capital improvement requirements for the Port Costa Sanitary Department.
- **Sewer Inspection Program for 2016**—The Crockett Sanitary Department closed-circuit television inspection program helps to document serious defects in the collection system which is used in setting the capital improvement project priorities.
- **Overflow Emergency Response Plan adopted January 22, 2014**—The plan was reviewed to support the development of this annex as it related to emergency sewer spill response and regulatory reporting.

- **Resolution No. 14/15-10 Emergency Operations Center (EOC)**—The District has designated the Crockett Community Center to serve as the Emergency Operations Center for the Crockett Community Services District. Protection of this facility can be considered in the hazardous mitigation plans.
- **Injury and Illness Prevention Program adopted October 2009**—The program was used to support the development of this annex including identification of facility safety plans, employee compliance and communication procedures, training requirements, hazards assessment, and documentation and record keeping.
- **Contingency and Spill Prevention Plans**—The Crockett Sanitary Department and Port Costa Sanitary Department have developed plans to insure its wastewater treatment plant facilities remain in, or are rapidly returned to, operation in the event of emergencies and that measures are taken to clean up the effects of untreated wastes.
- **Sewer System Management Plan updated August 2016**—The plan was used to support the development of this annex including identification of the goals the District has established for sewer collection system operations and maintenance provided by the Crockett Sanitary Department and Port Costa Sanitary Department. These goals are intended to define a program that promotes continuous improvements in the existing collection system management and maintenance process.
- **Crockett Main Pump Station SSO Emergency Response Plan**—Summary information for critical sewer facility used by management and contractors responding to sewer emergencies with goal to avoid or mitigate hazardous situations.
- **Crockett Loring Pump Station SSO Emergency Response Plan**—Summary information for critical sewer facility used by management and contractors responding to sewer emergencies with goal to avoid or mitigate hazardous situations.
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.

24. DELTA DIABLO

24.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Thanh Vo, Senior Engineer
2500 Pittsburg-Antioch Highway
Antioch, CA 94509
Telephone: 925-756-1949
e-mail Address: thanhv@deltadiablo.org

Alternate Point of Contact
Phil Govea, District Engineer
2500 Pittsburg-Antioch Highway
Antioch, CA 94509
Telephone: 925-756-1928
e-mail Address: philg@deltadiablo.org

24.2 JURISDICTION PROFILE

24.2.1 Overview

Delta Diablo (District) was formed in 1976 to protect the health of the public and environment by collecting and treating wastewater in the East Contra Costa County area. The District owns and operates a sub-regional wastewater conveyance, treatment, and effluent disposal system for domestic, commercial, and industrial wastewater generated by the cities of Antioch and Pittsburg, and the unincorporated area of Bay Point. The District also owns and operates a recycled water production and distribution system for industrial use and landscape irrigation. The wastewater treatment plant and recycled water facility are located off the Pittsburg-Antioch Highway in northwest Antioch. The District employs 75 personnel including engineering, operation, maintenance, and administrative staff, and is governed by a three-member Board consisting of one representative each from the city council of Antioch and Pittsburg, and one supervisor from the Contra Costa County Board of Supervisors. Revenue to the District is a combination of wastewater service charges, capital facility capacity charges, ad valorem taxes, and interest earned on reserves.

The District currently serves a population of approximately 206,500 covering a land area of approximately 32,700 acres or 51 square miles. Growth and development in the District's service area is currently very low due to the widespread depressed economic conditions. Historically, the District experiences steady residential and commercial growth resulting in an increase of wastewater influent of 2 percent per year. This growth trend was temporarily impacted by the economic downturn in the late 2000's but is slowly starting to recover in recent years. The District's wastewater capital expansion fund provides the revenue for meeting the needs associated with the long-term growth and development.

The District Board assumes responsibility for the adoption of this plan; Engineering Services Department will oversee its implementation.

24.2.2 Assets

Table 24-1 summarizes the critical assets of the district and their value.

Table 24-1. Special Purpose District Assets

Asset	Value
Property	
4.13 acres (Bridgehead Pump Station)	Not Available
85.31 acres (Treatment Plant (includes recent Dow land acquisition) and Recycled Water Facility)	Not Available
1.57 acres (Broadway Pump Station)	Not Available
3.06 acres (Shore Acres Pump Station)	Not Available
Total: 66.15 acres	Not Available
Critical Infrastructure and Equipment	
Wastewater Treatment Plant Facility	Not Available
Recycled Water Facility	Not Available
Recycled Water System Storage Tank	Not Available
Wastewater Pumping Stations (6)	Not Available
Wastewater Diversion Facility	Not Available
Wastewater Conveyance Pipelines	Not Available
Recycled Water Distribution Pipelines	Not Available
Recycled Water Return Pipelines	Not Available
Wastewater Collection System (Bay Point)	Not Available
Wastewater Treatment Plant Facility	Not Available
Total:	Not Available
Critical Facilities	
Plant Operations Center	Not Available
Total:	Replacement cost is unknown (estimated in the hundreds of millions of dollars)

24.3 CAPABILITY ASSESSMENT

24.3.1 Planning and Regulatory Capabilities

Jurisdictions develop plans and programs and implement rules and regulations to protect and serve residents. When effectively prepared and administered, these plans, programs and regulations can support the implementation of mitigation actions. The following existing codes, ordinances, policies, programs or plans are applicable to this hazard mitigation plan:

- California Division of Drinking Water
- California Code of Regulations
- Federal Endangered Species Act
- California Environmental Quality Act (CEQA)
- National Pollutant Discharge Elimination System (NPDES)
- Statewide General Waste Discharge Requirements
- National Environmental Protection Act
- Contra Costa County Operational Area Hazard Mitigation Plan
- Bay Area Air Quality Management District (BAAQMD)
- Contra Costa County - Certified Unified Program Agency
- FY2017/2018 – FY2021/2022 Capital Improvement Program (CIP)
- Consolidated Emergency Management Plan (CEMP)
- 2016 Emergency Preparedness Table Top Exercise

- District Standard Operating Procedures (SOPs)
  - Wastewater Treatment Plant
  - Wastewater Pump Stations
  - Recycled Water Facility (RWF)

24.3.2 Fiscal, Administrative and Technical Capabilities

Fiscal capability is an indicator of a jurisdiction's ability to fulfill the financial needs associated with hazard mitigation projects. An assessment of fiscal capabilities is presented in Table 24-2. Administrative and technical capabilities represent a jurisdiction's staffing resources for carrying out the mitigation strategy. An assessment of administrative and technical capabilities is presented in Table 24-3.

Table 24-2. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Federal Grant Programs	Yes
Other	N/A

Table 24-3. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	On-Call Consultant(s)
Engineers or professionals trained in building or infrastructure construction practices	Yes	Engineering Services/On-Call Consultant(s)
Planners or engineers with an understanding of natural hazards	Yes	Engineering Services
Staff with training in benefit/cost analysis	Yes	Engineering Services
Surveyors	Yes	
Personnel skilled or trained in GIS applications	Yes	Engineering Services
Scientist familiar with natural hazards in local area	Yes	On-Call Consultant(s)
Emergency manager	Yes	Resource Recovery Services
Grant writers	Yes	Engineering Services
Other	N/A	N/A

24.3.3 Education and Outreach Capabilities

Outreach and education capability identifies the connection between government and community members, which opens a dialogue needed for a more resilient community. An assessment of education and outreach capabilities is presented in Table 24-4.

Table 24-4. Education and Outreach

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe	Yes Consolidated Emergency Management Plan (CEMP)
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe	No N/A
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly specify	No N/A
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe	Yes CEMP
Do you have any established warning systems for hazard events? • If yes, please briefly describe	Yes Emergency Alarms

24.3.4 Adaptive Capacity for Climate Change

Given the uncertainties associated with how hazard risk may change with a changing climate, a jurisdiction's ability to track such changes and adapt as needed is an important component of the mitigation strategy. Table 24-5 summarizes the District's adaptive capacity for climate change.

24.4 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

24.4.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the District made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **FY2017/2018 – FY2021/2022 CIP**—The District's adopted CIP includes projects that can help mitigate potential hazards. The District will act to ensure consistency between the hazard mitigation plan and the current and future capital improvement plans.
- **CEMP and 2016 Emergency Preparedness Table Top Exercise**—The plan and exercise are designed for before and after an emergency and/or a disaster - response to emergency/disaster protocol. Information from the risk assessment is incorporated into planning as appropriate.

Resources listed in Section 24.10 were used to provide information on hazard events and local capabilities within the jurisdiction.

Table 24-5. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: None provided*	Medium
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: None provided*	Low
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: None provided*	Medium
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: None provided*	Medium
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: None provided*	Medium
Participation in regional groups addressing climate risks *Comments/Additional Information: None provided*	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: None provided*	Medium
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: None provided*	Medium
Identified strategies for adaptation to impacts *Comments/Additional Information: None provided*	Low
Champions for climate action in local government departments *Comments/Additional Information: None provided*	Low
Political support for implementing climate change adaptation strategies *Comments/Additional Information: None provided*	Low
Financial resources devoted to climate change adaptation *Comments/Additional Information: None provided*	Medium
Local authority over sectors likely to be negative impacted *Comments/Additional Information: None provided*	Low
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: None provided*	Medium
Local residents support of adaptation efforts *Comments/Additional Information: None provided*	Medium
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Medium
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

24.4.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the District will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan include actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Resource Recovery Master Plan and Facility Condition Assessment**—The master plan, including the assessment, will take into consideration hazard mitigation potential as a means of evaluating project prioritization.

24.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 24-6 lists past occurrences of natural hazards for which specific damage was recorded in the Delta Diablo service area. Other hazard events that broadly affected the entire planning area, including the Delta Diablo service area, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 24-6. Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Severe Weather, Landslides	DR-4301	2/14/2017	Not Available
State Emergency Drought	NA	4/1/2015	Not Available
Earthquake	FEMA-845	10/17/1989	$20,000

24.6 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. Noted vulnerabilities within the District include the following:

- A small portion of the service area for the District is located in a flood zone, including the treatment plant, which has the potential to impact service for an extended period following a flooding event.

24.7 HAZARD RISK RANKING

Table 24-7 presents a local ranking for Delta Diablo of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

24.8 STATUS OF PREVIOUS PLAN ACTIONS

Table 24-8 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 24-7. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake	36	High
1	Flood	36	High
2	Landslide	12	Low
2	Severe weather	12	Low
3	Drought	6	Low
4	Dam and levee failure	3	Low
4	Wildfire	3	Low
5	Sea level rise	0	None
5	Tsunami	0	None

Table 24-8. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action #
1—Maintenance and Emergency Equipment Storage Structure *Comment: Completed in June 2016*	X			
2—Bridgehead Phase IV Expansion *Comment:*			X	DD-3
3—Broadway Conveyance and Diversion Upgrade *Comment:*			X	DD-4
4—Pittsburg Pump Station Capacity Improvements *Comment:*			X	DD-5
5—Shore Acres Pump Station Capacity Improvements *Comment:*			X	DD-6
6—Conveyance and Treatment System Reliability Improvements *Comment: Recurring project that completes each June*	X			
7—Antioch Pump Station Diversion Upgrades *Comment:*			X	DD-7
8—Back-up Diesel Generator Automatic Transfer System *Comment:*			X	DD-10
9—Conveyance System Rehabilitation and Improvements *Comment:*			X	DD-8
10—Emergency Back-up Power Generator *Comment: This project is in the design phase and construction is anticipated to be completed by early 2018.*	X			
11—Rehabilitation Projects *Comment: Recurring project that completes each June*	X			
12—Emergency Supply Storage Facility *Comment:*				
13—Support County-wide initiatives identified in the 2011 Hazard Mitigation Plan *Comment: County-wide initiatives were supported throughout the performance period of the 2011 plan.*	X		X	DD-1
14—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in the 2011 Hazard Mitigation Plan. *Comment: The plan maintenance procedure was supported throughout the performance period of the 2011 plan.*	X		X	DD-2
15—Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan *Comment: The District does not have a General Plan as indicated in this action. The District has identified other opportunities for integration.*		X		

24.9 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 24-9 lists the actions that make up the District hazard mitigation action plan. Table 24-10 identifies the priority for each action. Table 24-11 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 24-9. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
DD-1— Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 2, 4, 11, 15	Delta Diablo	High	HMGP, PDM, FMA	Short-term
DD-2— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	All	County*, Delta Diablo	Low	Staff Time, General Funds	Short-term
DD-3— Bridgehead Phase IV Expansion: This project extends the existing force main in the City of Antioch to account for growth. Without this project, the District will not be able to convey flows coming from the eastern end of the service area during buildout.						
Existing	Earthquake, Flood	1, 2, 4	Delta Diablo – Engineering	High $3.6M	District Funds	Short-term
DD-4— Broadway Conveyance and Diversion Upgrades						
Existing	Earthquake, Flood, Severe Weather	1, 2, 4	Delta Diablo – Engineering	High $5.8M	District Funds	Short-term
DD-5— Pittsburg Pump Station Capacity Improvements						
Existing	Earthquake, Flood, Severe Weather	1, 2, 4	Delta Diablo – Engineering	High $3.2M	District Funds	Short-term
DD-6— Shore Acres Pump Station Capacity Improvements						
Existing	Earthquake, Flood, Severe Weather	1, 2, 4	Delta Diablo – Engineering	High $2.7M	District Funds	Short-term
DD-7— Antioch Pump Station Diversion Upgrades						
Existing	Earthquake, Flood, Severe Weather	1, 2, 4	Delta Diablo – Engineering	Low $100K	District Funds	Short-term
DD-8—Conveyance System Rehabilitation and Replacement						
New and Existing	Earthquake, Flood, Landslide, Severe Weather	1, 2, 4	Delta Diablo – Resource Recovery Services (RRS)	Medium $1M	District Funds	Short-term
DD-9— Pump Station Facilities Repair						
New	Flood	1, 2, 4, 10	Delta Diablo – Engineering	High $11.3M	District Funds, State Revolving Fund (SRF)	Short-term
DD-10—Treatment Plant Electrical Switchgear Replacement (Automatic Transfer Switch)						
New	Earthquake, Flood, Severe Weather	1, 2, 15	Delta Diablo - Engineering	High $3.7M	District Funds	Short-term
DD-11—Emergency Retention Basin Evaluation						
Existing	Earthquake, Flood, Severe Weather	1, 2, 4, 10	Delta Diablo – Engineering	Low $100K	District Funds	Short-term
DD-12— Facility Mechanical and Electrical Rehabilitation: This project consists of planning for repair and replacements of existing mechanical and electrical facilities that have reached the end of their useful life at the treatment plant. This project will ensure continued operational reliability.						
New and Existing	Earthquake, Flood, Severe Weather	1, 2, 4	Delta Diablo – RRS	Medium $900K	District Funds	Short-term

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
DD-13— Remote Site Repair and Replacement: This project provides for planning, design, and repair/rehabilitation of the pump station assets that are at the end of their useful life. This project will ensure continued operational reliability.						
New and Existing	Earthquake, Flood, Severe Weather	1, 2, 4	Delta Diablo – Engineering	Medium $600K	District Funds	Short-term
DD-14— Bay Point Rehabilitation Phase IV: This project consists of rehabilitation of existing sewer lines and manholes in the community of Bay Point that are at the end of their useful life to ensure continued operational reliability.						
New	Earthquake, Flood, Landslide, Severe Weather	1, 2, 4	Delta Diablo - Engineering	High $1.1M	District Funds, SRF	Short-term
DD-15— Climate Change Impact Analysis						
New	Earthquake, Flood, Landslide, Severe Weather	10, 12, 14	Delta Diablo - Engineering	Medium	District Funds	Short-term
DD-16— Arcy Lane Culvert Evaluation and Retrofit						
Existing	Earthquake, Flood, Severe Weather	1, 2, 4	Delta Diablo - Engineering	Low	District Funds	Short-term
DD-17— Resource Recovery Master Plan/Facility Condition Assessment						
New	All Hazards	1, 2, 4, 15	Delta Diablo - Engineering	High $2M	District Funds	Short-term

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 24-10. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
DD-1	5	High	High	Yes	Yes	Yes	Medium	Medium
DD-2	18	High	Low	Yes	No	Yes	Medium	Low
DD-3	3	Low	High	No	No	Yes	Low	Low
DD-4	3	Low	High	No	No	Yes	Low	Low
DD-5	3	Low	High	No	No	Yes	Low	Low
DD-6	3	Low	High	No	No	Yes	Low	Low
DD-7	3	Medium	Low	Yes	No	Yes	Medium	Low
DD-8	3	Medium	Medium	Yes	No	Yes	Medium	Low
DD-9	4	High	High	Yes	Yes	Yes	High	High
DD-10	3	High	High	Yes	No	Yes	High	Low
DD-11	4	Medium	Low	Yes	No	Yes	Medium	Low
DD-12	3	Medium	Medium	Yes	No	Yes	Low	Low
DD-13	3	Medium	Medium	Yes	No	Yes	Low	Low
DD-14	3	High	High	Yes	Yes	Yes	High	High
DD-15	3	Medium	Low	Yes	No	No	Medium	Low
DD-16	3	Medium	Low	Yes	No	Yes	Low	Low
DD-17	18	High	High	Yes	No	Yes	High	Low

a. See the introduction to this volume for explanation of priorities.

Table 24-11. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	DD-1	DD-1	DD-2					DD-2, 17
Dam and Levee failure		DD-11, DD-7			DD-11			
Drought	DD-1		DD-2				DD-16	
Earthquake	DD-3, DD-4, DD-5.DD-6, DD-7, DD-8, DD-9, DD-12, DD-13, DD-14, DD-16	DD-1, DD-3, DD-4, DD-5.DD-6, DD-7, DD-8, DD-9, DD-12, DD-13, DD-14, DD-16, DD-17	DD-2		DD-1.DD-10	DD-9, DD-14, DD-16	DD-16	DD-15
Flood		DD-1, DD-3, DD-4, DD-5.DD-6, DD-7, DD-8, DD-9, DD-12, DD-13, DD-14, DD-16, DD-17	DD-2		DD-1, DD-10	DD-9, DD-14, DD-16	DD-16	DD-15
Landslide			DD-2		DD-1			DD-15
Severe weather		DD-1, DD-3, DD-4, DD-5.DD-6, DD-7, DD-8, DD-9, DD-12, DD-13, DD-14, DD-16, DD-17	DD-2		DD-1, DD-10	DD-9, DD-14, DD-16	DD-16	DD-15
Tsunami	DD-1		DD-2					
Wildfire	DD-1		DD-2					

a. See the introduction to this volume for explanation of mitigation types.

24.10 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.
- **FY2011/FY2012/FY2013/FY2014/FY2015/FY2016/FY2017 CIPs—**The CIPs were used to identify past and current project.
- **CEMP**—The CEMP was used to determined District current emergency response protocol.

25. DIABLO WATER DISTRICT

25.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Nacho Mendoza
Manager of Water Operations
P. O. Box 127
87 Carol Lane
Oakley, CA 94561
Telephone: 925-625-2112
e-mail Address: nmendoza@diablowater.org

Alternate Point of Contact
Wayne Weaver
Manager of Construction and Maintenance
P. O. Box 127
87 Carol Lane
Oakley, CA 94561
Telephone: 925-766-8387
e-mail Address: wweaver@diablowater.org

25.2 JURISDICTION PROFILE

25.2.1 Overview

Diablo Water District (DWD) is a special district created in 1953 to provide water to the City of Oakley and surrounding unincorporated lands located in the northeastern corner of Contra Costa County including the Town of Knightsen, service areas of Bethel Island, Beacon West (M-26), Willow Park Marina (M-27).

A five member elected Board of Directors governs the District. The Board assumes responsibility for the adoption of this plan. The General Manager will oversee its implementation. As of February 2017, the District serves approximately 12,200 water connections, mainly single family connections. DWD has a staff of 14 full-time employees. Funding comes primarily through water rates and developer connection fees.

The land area served is approximately 29 square miles (18,650 acres). The distribution pipeline network grid is approximately 180 miles consisting of 10-inch to 24-inch mains and secondary feeder pipelines of 2-inch to 8-inch mains. The Pipeline grid is fed by 24-inch and 30-inch mains from the Randall-Bold Water Treatment Plant and DWD's Blending Facility.

Currently the DWD serves approximately 41,000 residents. The City of Oakley's 2020 General Plan indicates that residential buildout population is projected to be about 67,000. In addition, DWD will serve the Town of Knightsen and Bethel Island and the total buildout population for all areas is estimated at 75,000 by 2040.

25.2.2 Assets

Table 25-1 summarizes the critical assets of the District and their value.

Table 25-1. Special District Assets

Asset	Value
Property	
Approximately 18 acres of land	2,900,069
Critical Infrastructure and Equipment	
Total length of pipeline: 180 miles	
Eight (8) water wells with service pumps	
Seven (7) hydro pneumatic tanks	
Three (3) steel water storage tanks (1 – 2.5 million gallons & 2 – 5 million gallons)	
Four (4) generators	
Four (4) high service pumps	
Four (4) variable service pumps	
One (1) combination vacuum and valve turner trailer	
One (1) combination vehicle with valve turner	
Eleven (11) vehicles	
Administration office equipment	
DWD SCADA System	
Total:	$120,000,000
Critical Facilities	
Randall-Bold Water Treatment Plant jointly owned by Contra Costa Water District and Diablo Water District	
Corporation Yard compound and buildings	
Administration Office	
Three (3) water inter-ties with the City of Antioch	
Glen Park Well Station	
Stonecreek Well Station	
Blending Facility Station	
South Park (M-24) Well Station	
Knightsen (M-25) Well Station	
Beacon West (M-26) Well Station	
Willow Park Marina (M-27) Well Station (Two wells at this location)	
Emergency Well Station located at the Corporation Yard	
Total:	$27,000,000

Note: The District is currently in the process of developing our Capital Assets Policy. In the Policy, the District will identify each asset along with its value. At the time, the District's assets are grouped within categories. This information will be available for the next Hazard Mitigation Plan update.

25.3 CAPABILITY ASSESSMENT

25.3.1 Planning and Regulatory Capabilities

Jurisdictions develop plans and programs and implement rules and regulations to protect and serve residents. When effectively prepared and administered, these plans, programs and regulations can support the implementation of mitigation actions. The following existing codes, ordinances, policies, programs or plans are applicable to this hazard mitigation plan:

- **California Department of Public Health**—The District follows the rules and guidelines set forth by the Department.
- **California and U.S. Environmental Protection Agencies**—The District follows the rules and guidelines set forth by the agencies. Updated contact information June 2016.
- **California Code of Regulations**—The District reviews the Regulations and performs updates as necessary.
- **California Environmental Quality Act (CEQA)**—The District follows the rules and guidelines set forth by the Act.
- **Contra Costa County Operational Area Hazard Mitigation Plan**—Last update April 2012
- **DWD Vulnerability Assessment**—The last assessment was performed in May 2004.
- **DWD Facilities Plan**—The District's Facilities Plan was last updated in July 2006. An update will be performed in 2017-2018.
- **DWD Standards and Specifications**—The last update was December 2013 and is currently being updated.
- **DWD Emergency Plan**—The last update was April 2016. This plan is reviewed and updated bi-annually or as necessary.
- **DWD Health and Safety Plan**—Last update was performed February 2017 and is ongoing.
- **DWD Hazardous Communication Program**—Last updated February 2017.
- **2015 Urban Water Management Plan**—Last update was performed June 2016. The next update will in 2021.
- **California Water/Wastewater Agency Response Network Members**—Last plan update March 2009.
- **National Pollutant Discharge Elimination System (NPDES)**—Permit application submitted August 2015.

25.3.2 Fiscal, Administrative and Technical Capabilities

Fiscal capability is an indicator of a jurisdiction's ability to fulfill the financial needs associated with hazard mitigation projects. An assessment of fiscal capabilities is presented in Table 25-2. Administrative and technical capabilities represent a jurisdiction's staffing resources for carrying out the mitigation strategy. An assessment of administrative and technical capabilities is presented in Table 25-3.

25.3.3 Education and Outreach Capabilities

Outreach and education capability identifies the connection between government and community members, which opens a dialogue needed for a more resilient community. An assessment of education and outreach capabilities is presented in Table 25-4.

Table 25-2. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No
User Fees for Water, Sewer, Gas or Electric Service	Yes – Water only
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Federal Grant Programs	Yes
Other	No

Table 25-3. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	General Manager oversees with the consultation and assistance from CDM Smith, the District's engineering consultants
Engineers or professionals trained in building or infrastructure construction practices	Yes	General Manager oversees with the consultation and assistance from CDM Smith, the District's engineering consultants
Planners or engineers with an understanding of natural hazards	Yes	General Manager oversees with the consultation and assistance from CDM Smith, the District's engineering consultants
Staff with training in benefit/cost analysis	Yes	General Manager oversees with the consultation and assistance from CDM Smith, the District's engineering consultants
Surveyors	Yes	Contract support is available
Personnel skilled or trained in GIS applications	Yes	Administrative Analyst with the assistance of CDM Smith, the District's engineering consultants; and other GIS contract support
Scientist familiar with natural hazards in local area	Yes	Contract support is available
Emergency manager	Yes	Manager of Water Operations, Manager of Construction & Maintenance, and the Administrative Analyst
Grant writers	Yes	General Manager with staff support
Other	No	

Table 25-4. Education and Outreach

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	No
Do you have hazard mitigation information available on your website? • If yes, please briefly describe	No N/A
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe	No N/A
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly specify	No N/A
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe	Yes The District has a 24 hour/7 days a week emergency phone number that can be utilized as emergency communication.
Do you have any established warning systems for hazard events? • If yes, please briefly describe	In Process The District's current website can post updated information within 24 hours if necessary. The District is currently updating their website software to allow District staff to post emergency updates quickly. We are also looking into other areas where we can make improvements to make the notification process faster and more accessible for our customers.

25.3.4 Adaptive Capacity for Climate Change

Given the uncertainties associated with how hazard risk may change with a changing climate, a jurisdiction's ability to track such changes and adapt as needed is an important component of the mitigation strategy. Table 25-5 summarizes the District's adaptive capacity for climate change.

Table 25-5. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts	Medium
Comments/Additional Information: *The District understands the impact climate change can have on the water supply for our area. With increased heat waves and droughts, the District recognizes the impact these will have on demands for increased irrigation, increased fire events that could have impact on water quality and sedimentation, as well as decreased groundwater recharge due to lower soil moisture.*	
Jurisdiction-level monitoring of climate change impacts	Medium
Comments/Additional Information: *The District receives monitoring information from Contra Costa Water District, the District's wholesale water supplier, that relates to water quality and water conditions in the Delta.*	
Technical resources to assess proposed strategies for feasibility and externalities	Low
Comments/Additional Information: *None provided*	
Jurisdiction-level capacity for development of greenhouse gas emissions inventory	Medium
Comments/Additional Information: *The District does not monitor greenhouse gas emissions, but understands that by making water demands more efficient is part of a climate change adaptation strategy.*	
Capital planning and land use decisions informed by potential climate impacts	Medium
Comments/Additional Information: *The District considers climate impacts on capital planning and land use. Future water supply is considered and how the climate may play a role in future land uses.*	
Participation in regional groups addressing climate risks	Medium
Comments/Additional Information: *The District participates with other water agencies in regards to potential impacts of climate change and risks.*	
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes	Low
Comments/Additional Information: *None provided*	
Identified strategies for greenhouse gas mitigation efforts	Medium
Comments/Additional Information: *The District has a drought tolerant demonstration garden at the District's main office. This provides information and education to the District's customers on water saving techniques for their native gardens.*	
Identified strategies for adaptation to impacts	Low
Comments/Additional Information: *None provided*	
Champions for climate action in local government departments	Low
Comments/Additional Information: *None provided*	
Political support for implementing climate change adaptation strategies	Low
Comments/Additional Information: *The District does not have political support for implementing climate change adaptation strategies at this time.*	
Financial resources devoted to climate change adaptation	Low
Comments/Additional Information: *The District does not have financial resources specifically devoted to climate change adaptation.*	
Local authority over sectors likely to be negative impacted	Low
Comments/Additional Information: *None provided*	
Public Capacity	
Local residents knowledge of and understanding of climate risk	Medium
Comments/Additional Information: *The District provides conservation tips and education to residents by means of community events, flyers, and information on the District's website.*	
Local residents support of adaptation efforts	Medium
Comments/Additional Information: *During the recent drought mandates, overall the District's residents were very supportive and successful in reducing water usage.*	

Criterion	Jurisdiction Rating[a]
Local residents' capacity to adapt to climate impacts	Medium
Comments/Additional Information: The response from the residents to reduce their water usage was very supported as stated above.	
Local economy current capacity to adapt to climate impacts	Low
Comments/Additional Information: None provided	
Local ecosystems capacity to adapt to climate impacts	Low
Comments/Additional Information: None provided	

a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

25.4 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

25.4.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the Diablo Water District made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **2015 Urban Water Management Plan**—The District's Plan includes water demands, water supply reliability and the Districts Water Shortage Contingency Plan.

Resources listed in Section 25.10 were used to provide information on hazard events and local capabilities within the jurisdiction.

25.4.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the Diablo Water District will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan include actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Post-Disaster Recovery Plan**—The District has a Post-Disaster Recovery Plan, but it is outdated. We are in the process of updating the plan utilizing current techniques and procedures. The goal is to make the process of recovery the least inconvenient for our customers/residents of Oakley and surrounding areas. Information from the updated Hazard Mitigation Plan will be incorporated as appropriate.
- **Emergency Operations Plan**—The District is in the process of revising our Emergency Operations Plan using information gathered from our Hazard Mitigation Plan process to improve areas that may have outdated data.
- **Facilities Plan—**The District is updating its facilities plan in 2017-2018. The last update was in 2006.

25.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 25-6 lists past occurrences of natural hazards for which specific damage was recorded in the Diablo Water District. Other hazard events that broadly affected the entire planning area, including the Diablo Water District, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 25-6. Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Drought	N/A	2015	$2,000,000
Drought	N/A	2009	$585,000
Severe Weather, Freeze	NA	12/20/1990	$50,000
Drought	NA	6-9/1991	No estimates available

25.6 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. Noted vulnerabilities within the district include the following:

- The District's Corporation Yard and Reservoir 1 were constructed in the 1950s and is likely to sustain earthquake damage during a Greenville fault M7.0 event. Damage to Reservoir 1 would be devastating to nearby residences and businesses if needed for fire protection.
- The District has experienced severe freezes that have frozen pipelines which have caused pipes to crack and leak. The District must make emergency repairs to ensure residents continue to have access to water.
- Parts of the District's service area are within FEMA's flood hazard areas.
- The District has recently experienced several years of drought conditions. This effects fire protection.

25.7 HAZARD RISK RANKING

Table 25-7 presents a local ranking for the Diablo Water District of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 25-7. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake	51	High
1	Severe weather *(excluding extreme heat)*	51	High
2	Flood	51	High
3	Drought	48	High
4	Landslide	6	Low
4	Wildfire	6	Low
4	Dam and levee failure	6	Low
5	Sea level rise	0	None
5	Tsunami	0	None
5	Severe Weather (extreme heat)	0	None

25.8 STATUS OF PREVIOUS PLAN ACTIONS

Table 25-8 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 25-8. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
DWD1—Emergency Response Equipment	On going		X	DWD-1
Comment: Purchased a satellite phone for emergencies. We are assessing the District's assets for other emergency response equipment needs.				
DWD2—Drought Education	On going		X	DWD-2
Comment:				
DWD3—Retrofit Reservoir 1			X	DWD-3
Comment:				
DWD4—Retrofit Reservoir 2			X	DWD-3
Comment:				
DWD5—Support County-wide initiatives identified in the 2011 Hazard Mitigation Plan.	X			
Comment: The District supported the County-wide initiatives during the performance period of the 2011 plan and will continue to support them during the performance period of the plan update.				
DWD6—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in the 2011 Hazard Mitigation Plan.	X		X	DWD-4
Comment: Plan maintenance was supported during the performance period of the 2011 plan and will continue to be supported during the performance period of the plan update.				
DWD7—Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan		X		
Comment: The District does not have jurisdiction over a General Plan as described by this action, but will integrate information into other plans and programs as appropriate.				

25.9 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 25-9 lists the actions that make up the Diablo Water District hazard mitigation action plan. Table 25-10 identifies the priority for each action. Table 25-11 lists hazards addressed and mitigation type for the actions.

25.10 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed for this annex.

- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.
- **Diablo Water District's Facilities Plan**—The District's Facilities Plan provided specific details and background information on the District's facilities and assisted with determining areas that need improvement.
- **SPUR Report "On Solid Ground"**—This report helped with identifying areas of vulnerabilities within our District and provided suggestions for action planning and disaster recovery.

Table 25-9. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
DWD-1—Emergency Response Equipment – Satellite Phones/Emergency Radios						
New	All Hazards	2, 13	DWD	Low $2,000	District Funds, PDM, HMGP, EMPG	Short-term
DWD-2—Drought Education – Resident outreach/literature/low flow devices						
Existing	Drought	2, 6, 18	DWD	Low $5,000	District Funds, PDM, HMGP	Short-term
DWD-3—Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses. Specifically target retrofit of Reservoir 1 and Reservoir 2.						
Existing	Earthquake, Severe Weather, Flood	1, 4, 7, 9, 12, 14, 15, 17	DWD	High	PDM, HMGP	Long-term
DWD-4— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 16	County*, DWD	Low	Staff Time, General Funds	Short-term

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 25-10. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
DWD-1	2	High	Low	Yes	Yes	Yes	High	Medium
DWD-2	3	High	Low	Yes	Yes	Yes	High	Medium
DWD-3	8	High	High	Yes	Yes	No	High[b]	High
DWD-4	3	Low	Low	Yes	No	Yes	High	N/A

a. See the introduction to this volume for explanation of priorities.
b. This has been identified as a high priority action for the District even though funding is not currently available. It may not be able to be accomplished in the short-term, but it can be initiated as soon as funding is available.

Table 25-11. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	DWD-4				DWD-1			DWD-4
Dam and Levee failure								
Drought			DWD-2	DWD-2			DWD-2	
Earthquake		DWD-3				DWD-3		
Flood		DWD-3				DWD-3		
Landslide								
Severe weather		DWD-3				DWD-3	DWD-2	
Tsunami								
Wildfire								

a. See the introduction to this volume for explanation of mitigation types.

26. EASTERN CONTRA COSTA TRANSIT AUTHORITY-TRI DELTA TRANSIT

26.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Ann Hutcheson, Director Administrative Services
801 Wilbur Avenue
Antioch, CA 94509
Telephone: 925-754-6622
e-mail Address: ahutcheson@eccta.org

Alternate Point of Contact
Jeanne Krieg, Chief Executive Officer
801 Wilbur Avenue
Antioch, CA 94509
Telephone:925-754-6622
e-mail Address: jkrieg@eccta.org

26.2 JURISDICTION PROFILE

26.2.1 Overview

Eastern Contra Costa Transit Authority (ECCTA), also known as Tri Delta Transit, was formed in August of 1976 under the provisions of the California Joint Exercise of Powers Act, Government Code Sections 6500 et. seq. ECCTA represents the Cities of Brentwood, Antioch, Pittsburg and the county of Contra Costa. Oakley incorporated as a city and joined the Joint Powers Agency (JPA) in 1999. ECCTA is responsible for providing public transit fixed route and paratransit service within an approximate 225 square mile service area with a population of approximately 315,000 people.

ECCTA operates fixed route, express route and local paratransit services. The management, maintenance, oversight of the service contract, a portion of customer service (complaints and lost & found), bus stop maintenance for the approximately 700 bus stops in the system, bus shelter ownership and maintenance, planning and marketing for fixed route, express and paratransit services is provided by ECCTA. Service operations are provided under a contract with First Transit. The current 4-year contract began on July 1, 2016 and has the option of three two-year extensions.

ECCTA is governed by an eleven member Board of Directors supported by a professional staff of thirty-six (36) maintenance and administrative employees and one hundred-eighty (180) First Transit staff and operators. The Board includes two representatives from each of the four incorporated cities, two representatives from the county and one at-large member elected by the other members of the Board.

During the fiscal year just completed (FY 2015/2016), ECCTA operated 145,000 revenue hours for fixed route service, covering 2,054,000 revenue miles and serving 2,575,000 passengers. During the same fiscal year, ECCTA provided 132,000 passengers with paratransit services which covered 775,000 revenue miles and 63,000 revenue hours.

The residential population in ECCTA's service area has expanded significantly and according to "Plan Bay Area 2040," a regional transportation planning study made by the Metropolitan Transportation Commission, the population of ECCTA's service area is expected to grow at an average of 1 percent per year.

The cities of Antioch and Pittsburg currently have the highest population and make up nearly 50 percent of the entire population. Brentwood is in a close third based on population and, along with Oakley, have been the fastest growing cities in the ECCTA service area.

According to a 2014 U.S. Census, more than 90 percent of households in the ECCTA service area have access to a motor vehicle and only about 9 percent of commuters used transit. Attracting choice transit users in a dispersed suburban and partially rural low-density environment such as east Contra Costa County is a very difficult task.

Even with the Bay Area's severe congestion problem, it is very difficult both operationally and economically to provide a transit alternative that meets these criteria, particularly in widely dispersed communities such as east Contra Costa County. As a result, ECCTA primarily serves those who don't own a motor vehicle or live in a household with a vehicle, but lack reliable regular access. These markets include seniors, persons with disabilities, youth, and low-income persons.

ECCTA owns a facility at 801 Wilbur Avenue, Antioch, California and a bus parking lot located at 1001 Wilbur Avenue in Antioch, California. The facility was constructed in 1984 and expanded in 2004. This facility includes administration offices, operations offices, a dispatch area, driver's room, classroom space, maintenance bays and stores, fuel island, mechanical bus washer, security system, parking for all ECCTA vehicles and employees and other amenities.

The bus parking lot was constructed in 2003 and includes security cameras and assigned parking spaces for 24 paratransit buses and 40 fixed route buses.

ECCTA currently does not own nor maintain off-street passenger facilities. However, ECCTA buses provide service to a large bus transfer center at the Pittsburg/Bay Point BART station and three Park & Ride lots.

ECCTA received grants for operating and capital purchases from the State Transportation Development Act (TDA), the Federal Transit Administration (FTA), State Transit Assistance (STA), Public Transportation Modernization Improvement and Service Enhancement Account (PTMISEA), California Transportation Security Grant Program (CTSGP), Regional Measure 2 (RM2) funds, AB 664 funds, and Low Carbon Transit Operating Program (LCTOP). ECCTA also receives local operating assistance from Contra Costa County sales tax funds known as Measure J.

Jeanne Krieg, Chief Executive Officer, will ensure responsibility for the adoption of this plan by the ECCTA Board of Directors. Ann Hutcheson, Director of Administrative Services will oversee the implementation of this plan.

26.2.2 Assets

Table 26-1 summarizes the critical assets of the district and their value.

26.3 CAPABILITY ASSESSMENT

26.3.1 Planning and Regulatory Capabilities

Jurisdictions develop plans and programs and implement rules and regulations to protect and serve residents. When effectively prepared and administered, these plans, programs and regulations can support the implementation of mitigation actions.

Table 26-1. Special Purpose District Assets

Asset	Value
Property	
7 acres of land	$5M
Critical Infrastructure and Equipment	
Kregor Peak in Clayton, CA -the facility is owned by Contra Costa County and leased to ECCTA. ECCTA owns radio and microwave equipment located on this land to operate the bus tracking and radio systems on vehicles.	$15,000
Total:	$5,015,000
Critical Facilities	
801 Wilbur Avenue, Antioch, CA (main facility)	$43.5M
1001 Wilbur Avenue, Antioch, Ca (bus parking lot)	$1.5M
Oakley Park & Ride Lot (no building just land at this time)	$880,000
Antioch Park & Ride Lot (no building just land at this time)	$530,000
Total:	$46.4M

The following existing codes, ordinances, policies, programs or plans are applicable to this hazard mitigation plan:

- **Hazard Mitigation Plan**—last updated 2010
- **Emergency Operations Plan**—complete revision in 2016
- **Facility Maintenance Plan**—last updated 2016
- **Hazard Assessment Checklist**—last updated 2016
- **Emergency Contingency Plan**—last updated 2016
- **Hazard Communication Plan**—last updated 2016.

26.3.2 Fiscal, Administrative and Technical Capabilities

Fiscal capability is an indicator of a jurisdiction's ability to fulfill the financial needs associated with hazard mitigation projects. An assessment of fiscal capabilities is presented in Table 26-2. Administrative and technical capabilities represent a jurisdiction's staffing resources for carrying out the mitigation strategy. An assessment of administrative and technical capabilities is presented in Table 26-3.

Table 26-2. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	Yes- Chief Finance Officer (CFO)
Authority to Levy Taxes for Specific Purposes	Yes- CFO
User Fees for Water, Sewer, Gas or Electric Service	No- Not relevant to ECCTA
Incur Debt through General Obligation Bonds	No- Not relevant to ECCTA
Incur Debt through Special Tax Bonds	No- Not relevant to ECCTA
Incur Debt through Private Activity Bonds	No- Not allowed
State-Sponsored Grant Programs	Yes- CFO
Development Impact Fees for Homebuyers or Developers	Yes- CFO
Federal Grant Programs	Yes- CFO
Other	No

Table 26-3. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	No	
Engineers or professionals trained in building or infrastructure construction practices	No	
Planners or engineers with an understanding of natural hazards	No	
Staff with training in benefit/cost analysis	Yes	CFO
Surveyors	No	
Personnel skilled or trained in GIS applications	No	
Scientist familiar with natural hazards in local area	No	
Emergency manager	Yes	CFO, COO & DAS
Grant writers	No	
Other	No	

26.3.3 Education and Outreach Capabilities

Outreach and education capability identifies the connection between government and community members, which opens a dialogue needed for a more resilient community. An assessment of education and outreach capabilities is presented in Table 26-4.

Table 26-4. Education and Outreach

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes-PIO
Do you have personnel skilled or trained in website development?	No- use consultant
Do you have hazard mitigation information available on your website? • If yes, please briefly describe	No N/A
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe	No N/A
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly specify	No N/A
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe	Yes Have used in the past- ECCTA web site and submit approval from ECCTA Board of Directors at public Board meeting.
Do you have any established warning systems for hazard events? • If yes, please briefly describe	Yes Have an employee hot line and would use 511 to distribute information. Also, all buses have radios.

26.3.4 Adaptive Capacity for Climate Change

Given the uncertainties associated with how hazard risk may change with a changing climate, a jurisdiction's ability to track such changes and adapt as needed is an important component of the mitigation strategy. Table 26-5 summarizes the District's adaptive capacity for climate change.

Table 26-5. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: None provided*	Low
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: None provided*	Low
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: None provided*	Medium
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: None provided*	Low
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: None provided*	Low
Participation in regional groups addressing climate risks *Comments/Additional Information: None provided*	Medium
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: None provided*	Low
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: None provided*	Low
Identified strategies for adaptation to impacts *Comments/Additional Information: None provided*	Low
Champions for climate action in local government departments *Comments/Additional Information: None provided*	Low
Political support for implementing climate change adaptation strategies *Comments/Additional Information: None provided*	Low
Financial resources devoted to climate change adaptation *Comments/Additional Information: None provided*	Low
Local authority over sectors likely to be negative impacted *Comments/Additional Information: None provided*	Low
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: None provided*	Low
Local residents support of adaptation efforts *Comments/Additional Information: None provided*	Low
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

26.4 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

26.4.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, Eastern Contra Costa Transit Authority-Tri Delta Transit made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **Annual Hazard Assessment Checklist**—This checklist brings to the attention of management any potential safety hazards in the workplace that need to be addressed. This allows ECCTA to set budget goals in ECCTA's Capital Improvement Plan needed to mitigate future damage and/or prevent future damage caused from a hazardous event.
- **Emergency Operations Center Plan**—Has established policies and procedures for ECCTA to assist, respond and recover from a hazardous event.
- **Emergency Contingency Plan**—Allows ECCTA to plan mitigation strategies before and after a disaster.

Resources listed in Section 0 were used to provide information on hazard events and local capabilities within the jurisdiction.

26.4.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, Eastern Contra Costa Transit Authority-Tri Delta Transit will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan include actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Safety & Security Plan**—Identifies current safety and security vulnerabilities and is used as a means to prioritize mitigation projects.
- **Facility Maintenance Plan**—Gives ECCTA a current view of the state of repair of its facility in order to plan and budget for future capital improvements to mitigate current damage and to address possible future damage,
- **Continuity of Operations Plan (COOP)**—ECCTA does not have a completed COOP for post disaster recovery and intends to develop one as a mitigation planning action over the next three (3) years.

26.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

There have been no past incidents or disasters that have disrupted transportation services for the Eastern Contra Costa Transit Authority. Other hazard events that broadly affected the entire planning area, including the Eastern Contra Costa Transit Authority, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

26.6 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. Noted vulnerabilities within the district include the following:

- ECCTA owns and operates 100 buses and support vehicles. These vehicles may become damaged or destroyed in an event. If this occurs, they must be replaced in order to continue providing service to passengers. Roadway damage in the service area causing interruption of service
- The equipment and supplies located in ECCTA's main building located on Wilbur Avenue is valued at approximately $780,000 and may become damaged or destroyed in an event.
- During an event it is anticipated that transit agencies located closer to the major fault lines most likely to rupture, specifically BART, will require ECCTA's assistance to transport passengers in and out of their service area to ECCTA's service area where approximately 10,000 BART daily passengers live. Costs associated to providing this service at ECCTA's current operating costs per hour could impact the ability to restore regular service to passengers if costs are not reimbursed in a timely manner.
- Kregor Peak in Clayton California is where ECCTA's main radio tower is located. This area is in an active earthquake area and there is concern ECCTA will lose all bus radio communications in a large earthquake disaster.

26.7 HAZARD RISK RANKING

Table 26-6 presents a local ranking for the Eastern Contra Costa Transit Authority-Tri Delta Transit of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 26-6. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake	54	High
2	Severe weather	30	Medium
3	Dam and levee failure	12	Low
3	Flood	12	Low
3	Landslide	12	Low
3	Wildfire	12	Low
4	Drought	0	None
4	Sea level rise	0	None
4	Tsunami	0	None

26.8 STATUS OF PREVIOUS PLAN ACTIONS

Table 26-7 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 26-7. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
1— Shelving, computer systems, filing cabinets, etc. identified in ECCTA's critical facilities will be anchored			X	ECCTA-7
Comment: Partially completed- shelving in parts room has been secured and most filing cabinets and bookcases in the Administration Department have been complete,				
2— Improve/Update SEMS and NIMS plans			X	ECCTA-3
Comment: A big part of this is completed. ECCTA's Emergency Operations Plan was completely revised and meets and/or exceeds SEMS and NIMS standardization of forms and planning materials. Some training has been done but nor completely finished. Still need to have an EOC exercise to practice SEMS and NIMS teachings.				
3— Install Hardened Communication Systems in ECCTA's EOC			X	ECCTA-4
Comment: Mostly accomplished. A new satellite phone was purchased and cell phone and internet power boosters have been installed . However, the next step is to have tablets for use in the EOC.				
4— Update ECCTA's Emergency Operations Plan	X			
Comment: Completed 2016				

26.9 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 26-8 lists the actions that make up the Eastern Contra Costa Transit Authority-Tri Delta Transit hazard mitigation action plan. Table 26-9 identifies the priority for each action. Table 26-10 summarizes the mitigation actions by hazard of concern and mitigation type.

26.10 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

ECCTA will need to hire a consultant to perform a threat/risk assessment of ECCTA's facility. Numerous building improvements and equipment additions to ECCTA's facility have been made recently and a threat/risk assessment should be made to determine the risk to the facility and employees in the event of a disaster.

Table 26-8. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
ECCTA-1—Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	ECCTA Chief Operating Officer	High	HMGP, PDM, FMA	Short-term
ECCTA-2—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 16	ECCTA Director Administrative Services	Low	Staff Time, General Funds	Short-term
ECCTA-3—Improve SEMS and NIMS plans and integrate information from the update to the hazard mitigation plan, as appropriate.						
N/A	All Hazards	2, 13	ECCTA Director Administrative Services	Low	Staff Time, General Funds	Short-term
ECCTA-4—Install hardware in EOC						
Existing	All Hazards	2, 13	ECCTA Director Administrative Services and IT Consultant	High	General Funds, IT Support, possible FEMA/DHS grants	Long-term
ECCTA-5—Mobile EOC- will need to retrofit a bus with communication equipment in case radio tower is destroyed.						
Existing	All Hazards	1, 2, 13	ECCTA Director Administrative Services and IT Consultant	High	General Funds, Staff Time, HMGP, possible FEMA/DHS grants	Long-term
ECCTA-6—Complete a Continuity of Operations Plan						
Existing	All Hazards	2, 13	ECCTA Director of Administrative Services with all other management staff participating in the planning.	Medium	General Funds, Staff Time, possible FEMA/DHS grants	Long-term
ECCTA-7—Continue to anchor shelving, computer systems, filing cabinets in ECCTA's critical facilities						
New	Earthquake	1, 2, 13, 15	ECCTA Director of Maintenance	Low	General Funds, Staff Time	Short-term

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 26-9. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
ECCTA-1	8	High	High	Yes	Yes	No	Medium	High
ECCTA-2	3	Low	Low	Yes	No	Yes	High	Low
ECCTA-3	2	High	Medium	Yes	No	Yes	High	Low
ECCTA-4	2	High	High	Yes	Yes	No	Medium	Medium
ECCTA-5	3	High	High	Yes	Yes	No	Medium	High
ECCTA-6	2	High	High	Yes	Yes	No	Medium	High
ECCTA-7	4	High	Low	Yes	No	Yes	High	Low

a. See the introduction to this volume for explanation of priorities.

Table 26-10. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards		ECCTA-1			ECCTA-3, 4, 5, 6			ECCTA-2, 3, 6
Dam and Levee failure		ECCTA-7			ECCTA-7			
Drought								
Earthquake								
Flood								
Landslide								
Severe weather								
Tsunami								
Wildfire								

a. See the introduction to this volume for explanation of mitigation types.

26.11 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **2010 Local Hazard Mitigation Plan**—Accepted/approved by FEMA on March 24,2011. This plan was used as ECCTA's guideline for completing this plan to ensure follow through with the recommendations made in the 2010 plan to help mitigate ECCTA's vulnerabilities in the event of a natural disaster. The 2010 Plan was also used to ensure ECCTA will comply with plans for what was forecasted for future projects/issues.
- **Emergency Operations Plan**—After the BART fire in Oakland had shut down their service, ECCTA realized it needed to update its Emergency Operations Plan. While that event did not disrupt ECCTA's service it did require ECCTA's Operations Department to provide more service, more quickly for ECCTA passengers riding to and from the Pittsburg BART Station. MTC funded a consultant to completely revise ECCTA's Emergency Operations Plan in 2016. This revision included tactics and measures for ECCTA to follow in responding to an event and perform mitigation strategies for future "like" events as well as for all hazards..
- **Facility Maintenance Plan**—Referred to current use of maintenance performed on/at facility to mitigate future wear and tear. This plan was updated to reflect the mitigation strategies performed (bolting shelving areas) as outlined in the 2010 Local Hazard Mitigation Plan. This plan now reflects the mitigation work performed as well as a maintenance schedule to ensure the work is properly maintained.
- **Hazard Assessment Checklist**—Every year this checklist is performed for all job positions. Mitigates any possible restrictions to performing job duties safely and also mitigates any problems with shop/facility equipment. This checklist was updated describing the parameters used for mitigation functions described in the 2010 Local Hazard Mitigation Plan.
- **Emergency Contingency Plan**—This plan is regularly updated to assist staff in mitigating any future environmental problems as well as how to mitigate a spill and clean-up procedures. This plan was updated using the new checklists added to ECCTA's 2016 Emergency Operation Plan. These checklists

have specific work to be performed in order to respond, recover and mitigate from an environmental/chemical event.

- **Hazard Communication Plan**—Helps to identify hazards in the workplace and has a training plan to mitigate environmental disasters from and/or after they happen. Using the updates to ECCTA's 2016 Emergency Operations Plan, this plan updated it's identification of hazards and updated it's training plan to respond, recover and mitigate hazards in the workplace.
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.

27. IRONHOUSE SANITARY DISTRICT

27.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Tyson Zimmerman, Assistant General Manager
450 Walnut Meadows Drive
Oakley, CA 94561
Telephone: 925-625-2279
e-mail Address: zimmerman@isd.us.com

Alternate Point of Contact
Louis Solana, Collections Superintendent
450 Walnut Meadows Drive
Oakley, CA 94561
Telephone: 925-625-2279
e-mail Address: solana@isd.us.com

27.2 JURISDICTION PROFILE

27.2.1 Overview

The Ironhouse Sanitary District (ISD), created in 1945, provides sewage collection, treatment and disposal services to the City of Oakley, the unincorporated area of Bethel Island, and other unincorporated areas within ISD's service boundary. ISD is bounded by the San Joaquin River to the north, Highway 160 and the City of Antioch to the west, the unincorporated Town of Knightsen and the City of Brentwood to the south and the unincorporated area in Holland Tract to the east. A five-member elected Board of Directors governs the District. The District serves 15,500 sewer connections with the current staff of 28. Funding comes primarily from annual sewer use charges. ISD owns Jersey Island, 3,500 acres, and disposes of its reclaimed water on the Island, as well as on approximately 155 acres on its Oakley property. ISD also grows and markets hay as part of its wastewater reclamation process and has a 2,000 head cattle operation on Jersey Island.

The District currently serves a population of approximately 40,000 covering a land area of approximately 23,400 acres or 37 square miles, with a sphere of influence of an additional 2.4 square miles. Service area bounded by the San Joaquin River on the north, Bethel Island and Holland Tract on the east, city of Brentwood on the south, Highway 160 and the City of Antioch on the west.

The Board of Directors assumes responsibility for the adoption of this plan; the Assistant General Manager will oversee its implementation.

27.2.2 Assets

Table 27-1 summarizes the critical assets of the district and their value.

27.3 CAPABILITY ASSESSMENT

27.3.1 Planning and Regulatory Capabilities

Jurisdictions develop plans and programs and implement rules and regulations to protect and serve residents. These plans, programs and regulations can support the implementation of mitigation actions.

Table 27-1. Special Purpose District Assets

Asset	Value
Property	
285 acres in Oakley	$8,912,467
Total:	*$8,912,467*
Critical Infrastructure and Equipment	
125 miles of sewer collection main, plus related easements	$236,559,469
34 pump stations	$8,000,000
Rolling stock, 37 vehicles	$1,114,500
86 pieces of heavy equipment and farm tractors	$1,654,500
Total:	*$247,328,469*
Critical Facilities	
2.7 MGD sewer treatment plant	$2,542,788
Ongoing construction of 4.3 MGD treatment plant	$59,040,728
350 acre feet, or 114 million gallon storage ponds for treated wastewater	$368,282
Main office compound and shop with vehicle and parts storage facilities	$4,141,140
Jersey Island facilities	$1,682,521
Total:	*$67,775,459*

The following existing codes, ordinances, policies, programs or plans are applicable to this hazard mitigation plan:

- **California Department of Public Health**—Last updated in 2017 (SPCC, APSA, CERS).
- **State and Regional Water Quality Control Boards**— Last updated WDR in 2012.
- **ISD Sewer Master Plan**— Last updated in 2004.
- **ISD Sewer System Management Plan**—Last updated 2017.
- **ISD Emergency Operations Plan**—Last updated 2016.
- **Capital Improvement Program**—Updated and approved annually, covers 5 year timeframe.

27.3.2 Fiscal, Administrative and Technical Capabilities

Fiscal capability is an indicator of a jurisdiction's ability to fulfill the financial needs associated with hazard mitigation projects. An assessment of fiscal capabilities is presented in Table 27-2. Administrative and technical capabilities represent a jurisdiction's staffing resources for carrying out the mitigation strategy. An assessment of administrative and technical capabilities is presented in Table 27-3.

27.3.3 Education and Outreach Capabilities

Outreach and education capability identifies the connection between government and community members, which opens a dialogue needed for a more resilient community. An assessment of education and outreach capabilities is presented in Table 27-4.

27.3.4 Adaptive Capacity for Climate Change

Given the uncertainties associated with how hazard risk may change with a changing climate, a jurisdiction's ability to track such changes and adapt as needed is an important component of the mitigation strategy. Table 27-5 summarizes the District's adaptive capacity for climate change.

Table 27-2. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No
User Fees for Water, Sewer, Gas or Electric Service	Yes, Sewer
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Federal Grant Programs	Yes
Other	No

Table 27-3. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Consultants
Engineers or professionals trained in building or infrastructure construction practices	Yes	Collections crew and contractors
Planners or engineers with an understanding of natural hazards	Yes	Consultants
Staff with training in benefit/cost analysis	Yes	Consultants
Surveyors	Yes	Consultants
Personnel skilled or trained in GIS applications	Yes	Consultants
Scientist familiar with natural hazards in local area	No	
Emergency manager	Yes	General Manager or designee
Grant writers	No	
Other	No	

Table 27-4. Education and Outreach

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes, consultant
Do you have personnel skilled or trained in website development?	Yes, consultant
Do you have hazard mitigation information available on your website? • If yes, please briefly describe	No N/A
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe	No N/A
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly specify	No N/A
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe	Yes Website
Do you have any established warning systems for hazard events? • If yes, please briefly describe	No

Table 27-5. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: None provided*	Low
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: None provided*	Low
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: None provided*	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: None provided*	Low
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: None provided*	Low
Participation in regional groups addressing climate risks *Comments/Additional Information: None provided*	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: None provided*	Low
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: The District has purchases power from a solar array to reduce electrical grid power consumption.*	High
Identified strategies for adaptation to impacts *Comments/Additional Information: None provided*	Low
Champions for climate action in local government departments *Comments/Additional Information: None provided*	Low
Political support for implementing climate change adaptation strategies *Comments/Additional Information: None provided*	Low
Financial resources devoted to climate change adaptation *Comments/Additional Information: None provided*	Low
Local authority over sectors likely to be negative impacted *Comments/Additional Information: None provided*	Low
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: None provided*	Low
Local residents support of adaptation efforts *Comments/Additional Information: None provided*	Low
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

27.4 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

27.4.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the Ironhouse Sanitary District made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **ISD Emergency Operations Plan—**The Plan incorporates risk assessment of flooding and earthquakes. New vulnerabilities are addressed as they are identified by hazard mitigation efforts.
  ISD Sewer Master Plan—The Plan addresses the operation of the sewer collection system as well as future expansion. Additionally, risks identified by hazard mitigation efforts are input to the Capital Improvement Program to address deficiencies in the collection system.

Resources listed in Section 27.10 were used to provide information on hazard events and local capabilities within the jurisdiction.

27.4.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the Ironhouse Sanitary District will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan include actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Capital Improvement Program—**Identify new projects that can help mitigate potential hazards.
- **Outreach**— Leverage social media and website to engage public in emergency preparedness.
- **Inter-agency Cooperation**—Explore opportunities to work collaboratively with local and federal agencies to enhance emergency response and planning.

27.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 27-6 lists past occurrences of natural hazards for which specific damage was recorded in the Ironhouse Sanitary District. Other hazard events that broadly affected the entire planning area, including the Ironhouse Sanitary District, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 27-6. Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Severe Storms, Flooding, and Mudslides	DR-4301	2/14/2017	Not Available
Severe Storms, Flooding, and Mudslides	DR-1628	2/3/2006	Not Available
Electric panel damage (pelican shorted power lines)	NA	2001	$1,600

27.6 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. Noted vulnerabilities within the district include the following:

- The District headquarters and Water Recovery Facility are located near the San Joaquin river and may be at risk to flooding due to severe storms.
- Bethel Island is located in the District's service area and is at high risk to flooding due to severe storms.
- The District headquarters and Water Recovery Facility are located in an area with a high likelihood of liquefaction.
- The District service area would likely experience strong shaking from a Calaveras M7.0 earthquake.

27.7 HAZARD RISK RANKING

Table 27-7 presents a local ranking for the Ironhouse Sanitary District of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 27-7. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake	48	High
2	Severe weather	30	Medium
3	Flood	18	Medium
4	Landslide	18	Medium
5	Dam and levee failure	11	Low
6	Drought	9	Low
7	Wildfire	6	Low
8	Sea level rise	0	None
9	Tsunami	0	None

27.8 STATUS OF PREVIOUS PLAN ACTIONS

Table 27-8 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 27-8. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
ISD 1—Installation of redundant force main from Bethel Island *Comment: Future project*			x	ISD-1
ISD 2—Installation of East Cypress corridor redundant collection system *Comment: Future project*			x	ISD-2
ISD 3—Solar panels for emergency power *Comment: Completed in 2013*	x			
ISD 4—Acquire additional emergency response equipment *Comment: Completed in 2012*	x			
ISD 5—Acquire additional portable generators *Comment: Completed in 2012*	x			
ISD 6—Acquire additional 6" pump *Comment: Completed in 2015*	x			
ISD 7—Support County-wide initiatives identified in Volume 1 of the Hazard Mitigation Plan *Comment: Ongoing*	x		x	ISD-7
ISD 8—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in the 2011 Hazard Mitigation Plan. *Comment: Ongoing*	x		x	ISD-8

27.9 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 27-9 lists the actions that make up the Ironhouse Sanitary District hazard mitigation action plan. Table 27-10 identifies the priority for each action. Table 27-11 summarizes the mitigation actions by hazard of concern and mitigation type.

27.10 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **ISD Sewer Master Plan**—The Plan provides a connection to the risks identified in the collection system and the Capital Improvement Plan.
- **ISD Emergency Operations Plan**—The Plan was used to review risks that have been identified by the District.
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.

Table 27-9. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
ISD-1—Installation of redundant force main from Bethel Island						
New and Existing	Earthquake, Flood, Severe Weather	1, 13	ISD Engineering	Medium; $3 M	Staff Time, General Funds	Long-term
ISD-2—Installation of East Cypress corridor redundant collection system						
New and Existing	Earthquake, Flood, Severe Weather	1, 13	ISD Engineering	Medium; $0	Developers	Long-term
ISD-3—Solar panels for emergency power						
New and Existing	Earthquake, Flood, Severe Weather, Dam/Levee Failure	1, 13, 16	ISD Engineering	Medium; $0	Power Purchase Agreement, Grants	Long-term
ISD-4—Acquire additional emergency response equipment (safety harnesses, fall protection winches, emergency pumps)						
New and Existing	All Hazards	2, 13	ISD Maintenance	Medium; $10k	Staff Time, General Funds	Short-term
ISD-5—Acquire additional portable generators						
New and Existing	All Hazards	2, 13	ISD Maintenance	Medium; $120k	Staff Time, General Funds	Short-term
ISD-6—Acquire additional 6” pump						
New and Existing	All Hazards	2, 13	ISD Maintenance	Medium; $60k	Staff Time, General Funds	Short-term
ISD-7—Support the County-wide initiatives identified in Volume I of the hazard mitigation plan.						
Existing	All Hazards	All	County*, ISD Administration	Low	Staff Time, General Funds	Short-term
ISD 8—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in the 2017 Hazard Mitigation Plan.						
Existing	All Hazards	All	County*, ISD Administration	Low	District Funds, FEMA Mitigation Grant Funding for 5-year update	Short-term
ISD-9—Integrate the hazard mitigation plan into other plans and programs that support infrastructure investments choices, such as the capital improvement program.						
Existing	All Hazards	4, 5, 14	ISD Administration	Low	Staff Time, General Funds	Short-term
ISD-10—Develop warning systems for hazard events						
New and Existing	All Hazards	All	ISD Administration	Low	Staff Time, General Funds	Short-term
ISD-11—Develop a post-disaster and a debris management plan.						
New and Existing	All Hazards	1, 2, 4, 9	Emergency Management	Medium	HMPG, EMPG	Short-term
ISD-12— Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	All	ISD Maintenance	High	HMGP, PDM, FMA	Short-term

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 27-10. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
ISD-1	2	Medium	Medium	Yes	No	Yes	Medium	Low
ISD-2	2	Medium	Medium	Yes	No	Yes	Medium	Low
ISD-3	3	Medium	Medium	Yes	No	Yes	Low	Low
ISD-4	2	Medium	Medium	Yes	No	Yes	High	Low
ISD-5	2	Medium	Medium	Yes	No	Yes	High	Low
ISD-6	2	Medium	Medium	Yes	No	Yes	High	Low
ISD-7	16	Medium	Low	Yes	No	Yes	High	Low
ISD-8	16	Medium	Low	Yes	Yes	Yes	High	Medium
ISD-9	3	Medium	Low	Yes	No	Yes	High	Low
ISD-10	16	Medium	Low	Yes	No	Yes	High	Low
ISD-11	4	Medium	Medium	Yes	Yes	No	High	High
ISD-12	16	High	High	Yes	Yes	No	Medium	High

a. See the introduction to this volume for explanation of priorities.

Table 27-11. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards								
Dam and Levee failure	ISD-8, 9, 10, 11, 12		ISD-7, 8				ISD-3	ISD-3, 7, 11
Drought	ISD-8, 9, 10, 11, 12		ISD-7, 8			ISD-1, 2	ISD-3	ISD-7
Earthquake	ISD-8, 9, 10, 11, 12		ISD-7, 8		ISD-3, 4, 5, 6	ISD-1, 2, 3	ISD-3	ISD-3, 7, 11
Flood	ISD-8, 9, 10, 11, 12		ISD-7, 8		ISD-3, 4, 5, 6	ISD-1, 2, 3	ISD-3	ISD-3, 7, 11
Landslide							ISD-3	
Severe weather	ISD-8, 9, 10, 11, 12		ISD-7, 8		ISD-3, 4, 5, 6	ISD-1, 2, 3	ISD-3	ISD-3, 7, 11
Tsunami								
Wildfire	ISD-8, 9, 10, 11, 12		ISD-7, 8		ISD-3, 4, 5, 6	ISD-1, 2, 3	ISD-3	ISD-7, 11

a. See the introduction to this volume for explanation of mitigation types.

28. KENSINGTON FIRE PROTECTION DISTRICT

28.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Michael Bond, Battalion Chief
10900 San Pablo Ave.
El Cerrito CA 94530
Telephone: 510-215-4450
e-mail Address: mbond@ci.el-cerrito.ca.us

Alternate Point of Contact
Lance Maples, Fire Chief
10900 San Pablo Ave.
El Cerrito CA 94530
Telephone: 510-215-4450
e-mail Address: lmaples@ci.el-cerrito.ca.us

28.2 JURISDICTION PROFILE

28.2.1 Overview

Kensington Fire Protection District is a relatively small fire district that serves the small unincorporated community of Kensington, which is located in Western Contra Costa County. The community is neighbored by the City of El Cerrito on the west and north, the City of Berkeley on the south, and East Bay Regional Parks open area on the east.

The Kensington Fire Protection District serves approximately 1.1 square miles with about 2,300 homes and businesses. The population of Kensington is approximately 5,250 people and has an assessed value of over $1,650,000,000. The community of Kensington is almost entirely built out and has a very low growth rate. The community is largely an elder population with fixed incomes. However, lately resale or inheritance of existing home stocks have been trending towards a younger population. With this growth trend we expect the population to remain consistent with today's demographics.

The unincorporated town of Kensington began a volunteer fire department in 1928. Twenty-four years later, the Kensington Fire Protection District (formed in 1937) hired a staff of professional firefighters under the supervision of a fire chief. In 1995, the District entered into a contract with the City of El Cerrito whereby El Cerrito would provide all fire prevention, fire suppression and emergency services within Kensington for an annual fee. Currently, the Kensington Fire Protection District has one employee who serves as the District's Administrator.

The early fire department was housed in a small, quaint English country-style building next to the Chevron Oil gas station on the Arlington. The current public safety building, owned by the District, was constructed in 1970 and substantially renovated in 1998-1999. In addition to seismic upgrading of the Public Safety Building, the Board of Directors works to enhance public safety. As a result, the District owns two fire engines. These fire engines are specifically engineered for the steep, narrow streets of Kensington and the urban interface fire situation that the community faces. One of these fire engines is a Type I engine for structural firefighting and the other engine is a Type III or wildland fire engine for use during high fire season.

The district initiated paramedic service in 2001. It offers the first engine-based Advanced Life Support service in West Contra Costa County, bringing medications and equipment to a patient's side in under five minutes on average. In addition to our paramedic service, we are able to provide a timely and appropriate level of response by active participation with other West Contra Costa County fire agencies in automatic response agreements that use the combined resources of all agencies to serve the area irrespective of jurisdictional lines.

To help ensure our community's safety, the District developed and operates a Community Emergency Response Team (CERT) training program. This program has been offered to the community since 1995 and has trained several hundred community members to be prepared and self-sustaining for several days after a major disaster. The District is governed by a five-person Board of Directors elected by the voters of Kensington and is funded by property tax revenues as well as a special tax approved by the voters in 1980.

The Kensington Fire Protection District assumes responsibility for the adoption of this plan: the Kensington Fire Protection District will oversee its implementation.

The District participates in the Public Protection Class Rating System and currently has a rating of 3.

28.2.2 Assets

Table 28-1 summarizes the critical assets of the district and their value.

Table 28-1. Special District Assets

Asset	Value
Property	
.5 acres of land	$500,00.00
Critical Infrastructure and Equipment	
Type 1 Fire Engine	$650,000.00
Type 3 Fire Engine	$450,000.00
Emergency Generator	$200,000.00
Total:	$1,000,000.00
Critical Facilities	
Fire Station	$6,000,000.00
Total:	$6,000,000.00

28.3 CAPABILITY ASSESSMENT

28.3.1 Planning and Regulatory Capabilities

Jurisdictions develop plans and programs and implement rules and regulations to protect and serve residents. When effectively prepared and administered, these plans, programs and regulations can support the implementation of mitigation actions. The following existing codes, ordinances, policies, programs or plans are applicable to this hazard mitigation plan:

- **California Department of Public Health**—The Community of Kensington Fire protection District (KFPD)is under the direction of the Contra Costa County Health Department and has function in that manner.
- **California and US Environmental Protection Agencies**—The KFPD follows all CEQA & NEQA guidelines.
- **California Code of Regulations**—KFPD subscribes to the 2017 CCR
- **Federal Endangered Species Act**

- **California Environmental Quality Act (CEQA)**—KFPD uses current and published CEQA guidelines
- **Contra Costa County, Community Wildfire Protection Plan (CWPP)**—The KFPD developed and adopted their own CWPP in 2017
- **California Building Codes**—The Kensington Fire Protection District currently is subject to the California Building Codes and falls within the Very High Fire Severity Zone and all new building is subject to the California Wildland Urban Interface Codes.
- **Vegetation Management Standards**—The District has adopted "Vegetation Management Standards" that all property owners must comply with.

28.3.2 Fiscal, Administrative and Technical Capabilities

Fiscal capability is an indicator of a jurisdiction's ability to fulfill the financial needs associated with hazard mitigation projects. An assessment of fiscal capabilities is presented in Table 28-2. Administrative and technical capabilities represent a jurisdiction's staffing resources for carrying out the mitigation strategy. An assessment of administrative and technical capabilities is presented in Table 28-3.

Table 28-2. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No
Federal Grant Programs	Yes
Other	No

Table 28-3. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	By Contract
Engineers or professionals trained in building or infrastructure construction practices	Yes	By Contract
Planners or engineers with an understanding of natural hazards	Yes	By Contract
Staff with training in benefit/cost analysis	Yes	By Contract
Surveyors	Yes	By Contract
Personnel skilled or trained in GIS applications	Yes	By Contract
Scientist familiar with natural hazards in local area	Yes	By Contract
Emergency manager	Yes	Fire Chief
Grant writers	Yes	By Contract
Other	No	None

28.3.3 Education and Outreach Capabilities

Outreach and education capability identifies the connection between government and community members, which opens a dialogue needed for a more resilient community. An assessment of education and outreach capabilities is presented in Table 28-4.

Table 28-4. Education and Outreach

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	No
Do you have hazard mitigation information available on your website? • If yes, please briefly describe	Yes CWPP, CERT, LHMP
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe	Yes Nextdoor
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly specify	Yes The Kensington Emergency Preparedness Group
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe	Yes CWS, TENS, CERT, KARO/ECHO Amateur Radio Group and District website
Do you have any established warning systems for hazard events? • If yes, please briefly describe	Yes CWS, TENS

28.3.4 Adaptive Capacity for Climate Change

Given the uncertainties associated with how hazard risk may change with a changing climate, a jurisdiction's ability to track such changes and adapt as needed is an important component of the mitigation strategy. Table 28-5 summarizes the District's adaptive capacity for climate change.

28.4 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

28.4.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the Kensington Fire Protection District made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **Community Wildfire Protection Plan (CWPP)**—The CWPP includes information on risk and potential mitigation strategies to the wildfire hazard. Information has been incorporated from this plan into the hazard mitigation plan as appropriate, and vice versa.

Resources listed in Section 28.10 were used to provide information on hazard events and local capabilities within the jurisdiction.

Table 28-5. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: Limited to non-scientific staff with an interest in Climate Change*	Medium
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: Limited to non-scientific staff with an interest in Climate Change*	Low
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: Limited to non-scientific staff with an interest in Climate Change*	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: Small district with no regulatory control over greenhouse gasses*	Low
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: Small district with no regulatory control over development*	Low
Participation in regional groups addressing climate risks *Comments/Additional Information: None provided*	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: District has no authority to regulate influences in climate change*	Low
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: No regulatory jurisdiction of such influences*	Low
Identified strategies for adaptation to impacts *Comments/Additional Information: New equipment bought with concern with pollution*	Medium
Champions for climate action in local government departments *Comments/Additional Information: Board members prescribe to and support climate change initiatives*	Medium
Political support for implementing climate change adaptation strategies *Comments/Additional Information: Board members support climate change initiatives in local government*	Medium
Financial resources devoted to climate change adaptation *Comments/Additional Information: In new apparatus and facilities upgrades or purchases*	Low
Local authority over sectors likely to be negative impacted *Comments/Additional Information: None The district reduces negative impacts of wildfire by enforcing vegetation management standards*	Low
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: The community is extremely environmentally aware and conscious of climate change*	High
Local residents support of adaptation efforts *Comments/Additional Information: The community strongly supports all climate change efforts*	High
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: The community is an older population with many residents living on fixed incomes*	Medium
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: The community is an older population with many residents living on fixed incomes*	Medium
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: The local ecosystem is very adaptive in the short term*	Medium

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

28.4.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the Kensington Fire Protection District will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan include actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Emergency Operations Plan**—At the time of its next update, information from the hazard mitigation plan will be incorporated as appropriate.
- **Local amendments to the CFC**—Information from the risk assessment will be used to inform local amendments to the CFC, as appropriate.

28.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 28-6 lists past occurrences of natural hazards for which specific damage was recorded in the Kensington Fire Protection District. Other hazard events that broadly affected the entire planning area, including the Kensington Fire Protection District, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 28-6. Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Severe Weather, Winter Storm	FEMA-1203-DR	2/9/1998	No estimates available
Earthquake	FEMA-845	10/17/1989	No estimates available

28.6 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. Noted vulnerabilities within the district include the following:

- The district is bisected by the Hayward Fault and has been classified as a High Risk Seismic Zone (formerly Seismic Zone 4)
- 100 percent of the KFPD is within the Very High Fire Hazard Severity Zone.

28.7 HAZARD RISK RANKING

Table 28-7 presents a local ranking for the Kensington Fire Protection District of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

28.8 STATUS OF PREVIOUS PLAN ACTIONS

Table 28-8 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 28-7. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake	54	High
1	Wildfire	54	High
1	Landslide	54	High
1	Severe weather	54	High
2	Dam and levee failure	0	None
2	Flood	0	None
2	Drought	0	None
2	Sea level rise	0	None
2	Tsunami	0	None

Table 28-8. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
KFPD 01—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in the 2011 Hazard Mitigation Plan.	X		X	KFPD-2
Comment: Continual and ongoing				
KFPD 02—Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan		X		
Comment: When the safety element of the General Plan is updated the HMP will be incorporated. The County is the lead agency for this action and it is not within the jurisdiction of KFD.				
KFPD 03—Upgrade the Emergency Operations Center's (EOC) internal communication system and maintain it in a fully functional state	X		X	KFPD-3
Comment: The Kensington Public Safety Building is the districts EOC				
KFPD 04—Develop and conduct multi hazard seasonal public awareness program to include exercises	X		X	KFPD-4
Comment: Need to be completed annually				
KFPD 05—Conduct a mass care and shelter Drill which involve; district, city, county, CERTs and NGOs	X		X	KFPD-5
Comment: Need to be completed annually				
KFPD 06—Enhance/Improve District Code language and enforcement including: District Fire Codes to Increase Compliance with SB 1369 Defensible Space and Other Fire Safe Requirements within the City.	X		X	KFPD-6
Comment: Revised during code cycles				
KFPD 07—Improve, expand and develop new programs that increase awareness of and reduce risk to wildfires including: Support Diablo Fire Safe Council & Fire Dept. Chipper Program	X		X	KFPD-7
Comment: Ongoing				
KFPD 08—Ensure that government-owned facilities are subject to the same or more stringent regulations as imposed on privately-owned development	X		X	KFPD-8
Comment: The Fire Station needs to be replaced				
KFPD 09—Prior to acquisition of property to be used as a critical facility, conduct a study to ensure the absence of significant hazards	X		X	KFPD-9
Comment: When property is bought or acquired it is done				

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
KFPD 10—Establish a framework and process for pre-event planning for post-event recovery that specifies roles, priorities, and responsibilities for various departments within local government organization, and that outlines a structure and process for policy-making involving elected and appointed advisory committees *Comment: In the Emergency Operations Plan (EOP)*	X		X	KFPD-10
KFPD 11—Establish a goal for the resumption of local government services that may vary from function to function *Comment: In the Emergency Operations Plan (EOP)*	X		X	KFPD-11
KFPD 12—Maintain and update as necessary the local government's Standardized Emergency Management System Plan *Comment: All new employees are trained*	X		X	KFPD-12
KFPD 13—Purchase command vehicles for use as mobile command/EOC vehicles if current vehicles are unsuitable or inadequate *Comment: Equipment must be replaced after it reaches the end of its service Life*	X		X	KFPD-13
KFPD 14—Continue to participate not only in general mutual-aid agreements, but also in agreements with adjoining jurisdictions for cooperative response to all hazards and disasters *Comment: Mutual aid has expanded to the City of Berkeley*	X		X	KFPD-14
KFPD 15—Develop a business continuity plan that includes backup storage of vital records, such as essential medical records and financial information *Comment: Ongoing as demand increase and equipment wears out*	X		X	KFPD-15
KFPD 16—Increase efforts to reduce hazards in existing development in Very High Fire Hazard Fire Severity Zones (VHFHSZ) through improving engineering design and vegetation management standards for mitigation, appropriate code enforcement and public education on defensible space mitigation strategies. *Comment: Annual inspections of all properties for fire hazards*	X		X	KFPD-16
KFPD 17—Require new homes in Wildland-Urban-Interface and VHFHSZ threatened communities to be constructed of fire resistant building materials to increase structural survivability and reduce ignitability *Comment: All new homes in the district are required to be built in accordance With the CBC chapter 7a*	X		X	KFPD-17
KFPD 18—Ensure new development provides required improvements to the storm drainage system necessary to accommodate increased flows from the development *Comment: This action is routinely conducted by CCC PW*	X			
KFPD 19—Support County-wide initiatives identified in the 2011 Hazard Mitigation Plan. *Comment: KFPD supported the County-wide initiatives identified in the 2011 plan and will continue to support those in the updated plan.*	X			
KFPD 20- Retrofit or replace the existing fire station *Comment: The existing fire police station is not built to current standards.*			X	KFPD-18

28.9 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 28-9 lists the actions that make up the Kensington Fire Protection District hazard mitigation action plan. Table 28-10 identifies the priority for each action. Table 28-11 summarizes the mitigation actions by hazard of concern and mitigation type.

28.10 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Community Wildfire Protection Plan—**The Community Wildfire Plan was used to evaluate wildfire risks and develop mitigation plans
- **Kensington Emergency Operations Plan—**The Emergency Operations Plan was used identify emergency response and recovery needs
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.

Table 28-9. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
KFPD-1—Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	KFPD	High	HMGP, PDM, FMA	Short-term
KFPD-2—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 16	KFPD	Low	Staff Time, General Funds	Short-term
KFPD-3—Upgrade the Emergency Operations Center's (EOC) internal communication system and maintain it in a fully functional state						
Existing	All Hazards	1, 2	KFPD	Medium	Staff time General Funds HMGP, PDM, EMPG	Long-term
KFPD-4—Develop and conduct multi hazard seasonal public awareness program to include exercises						
N/A	All Hazards	3, 16	KFPD	Low	Staff Time General Funds	Ongoing
KFPD-5—Conduct a mass care and shelter Drill which involve; district, city, county, CERTs and NGOs						
N/A	All Hazards	3, 16	KFPD	Low	Staff Time General Funds	Ongoing
KFPD-6—Enhance/Improve District Code language and enforcement including: District Fire Codes to Increase Compliance with SB 1369 Defensible Space and Other Fire Safe Requirements within the District						
New and Existing	Wildfire	5, 6	KFPD	Low	Staff Time General Funds	Ongoing
KFPD-7—Improve, expand and develop new programs that increase awareness of and reduce risk to wildfires including: Support Diablo Fire Safe Council & Fire Dept. Chipper Program						
N/A	Wildfire	2, 17	KFPD	Medium	Staff Time General Funds HMGP, PDM	Ongoing

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
KFPD-8—Ensure that government-owned facilities are subject to the same or more stringent regulations as imposed on privately-owned development						
New and Existing	All Hazards	1, 2, 6	KFPD	High	Staff Time General Funds	Ongoing
KFPD-9—Prior to acquisition of property to be used as a critical facility, conduct a study to ensure the absence of significant hazards						
New	All Hazards	1, 2, 6	KFPD	High	Staff Time General Funds HMGP, PDM, FMA	Ongoing
KFPD-10—Establish a framework and process for pre-event planning for post-event recovery that specifies roles, priorities, and responsibilities for various departments within local government organization, and that outlines a structure and process for policy-making involving elected and appointed advisory committees						
N/A	All hazards	2, 3	KFPD	Low	Staff Time General Fund	Ongoing
KFPD-11—Establish a goal for the resumption of local government services that may vary from function to function						
Existing	All Hazards	2, 3	KFPD	Low	Staff Time General Fund	Ongoing
KFPD-12—Maintain and update as necessary the local government's Standardized Emergency Management System Plan						
Existing	All Hazards	2, 3	KFPD	Low	Staff time General Funds	Ongoing
KFPD-13—Purchase command vehicles for use as mobile command/EOC vehicles if current vehicles are unsuitable or inadequate						
New	All Hazards	1, 2	KFPD	High	Staff Time General Funds, EMPG	Ongoing
KFPD-14—Continue to participate not only in general mutual-aid agreements, but also in agreements with adjoining jurisdictions for cooperative response to all hazards and disasters						
N/A	All Hazards	2, 16	KFPD	Low	Staff Time General Fund	Ongoing
KFPD-15—Develop a business continuity plan that includes backup storage of vital records, such as essential medical records and financial information						
Existing	All Hazards	1, 2	KFPD	Medium	Staff Time General Fund HMGP	Ongoing
KFPD-16—Increase efforts to reduce hazards in existing development in Very High Fire Hazard Fire Severity Zones (VHFHSZ) through improving engineering design and vegetation management standards for mitigation, appropriate code enforcement and public education on defensible space mitigation strategies.						
New and Existing	Wildfire	3, 5	KFPD	Medium	Staff Time General Fund	Ongoing
KFPD-17—Require new homes in Wildland-Urban-Interface and VHFHSZ threatened communities to be constructed of fire resistant building materials to increase structural survivability and reduce ignitability						
New	Wildfire	3, 5	KFPD	Low	Staff Time General fund	Ongoing
KFPD-18—Retrofit or replace the existing fire station						
Existing	All Hazards	1, 2, 15	KFPD	High	Staff Time General Fund HMGP, PDM, FMA	Short-term
KFPD-19—Upgrade, replace or add new fire main into VHFHSZ						
New and Existing	Wildfire, Earthquake	1, 2, 15	KFPD	High	Staff Time General Fund HMPG, PDM	Ongoing

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 28-10. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
KFPD-1	8	High	High	Yes	Yes	No	Medium	High
KFPD-2	3	Low	Low	Yes	No	Yes	High	Low
KFPD-3	2	High	High	Yes	Yes	No	Medium	High
KFPD-4	2	High	Low	Yes	No	Yes	High	Low
KFPD-5	2	Low	Low	Yes	No	Yes	High	Low
KFPD-6	2	Medium	Low	Yes	No	Yes	High	Low
KFPD-7	2	Low	Low	Yes	Yes	No	Medium	Medium
KFPD-8	3	Medium	Low	Yes	No	No	Medium	Low
KFPD-9	3	Medium	High	No	Yes	No	Medium	High
KFPD-10	2	High	Low	Yes	No	Yes	High	Low
KFPD-11	2	High	Low	Yes	No	Yes	High	Low
KFPD-12	2	Low	Low	Yes	No	Yes	High	Low
KFPD-13	2	Low	High	No	Yes	No	Medium	Medium
KFPD-14	2	High	Low	Yes	No	Yes	High	Low
KFPD-15	2	Medium	Low	Yes	Yes	Yes	High	Medium
KFPD-16	2	High	Low	Yes	No	Yes	High	Low
KFPD-17	2	High	Low	Yes	No	Yes	High	Low
KFPD-18	3	High	High	Yes	Yes	No	Medium	High
KFPD-19	3	High	High	Yes	Yes	No	Medium	Medium

a. See the introduction to this volume for explanation of priorities.

Table 28-11. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	1, 2, 7, 9, 11, 12, 13	13	1, 2, 4, 5, 11, 12, 13, 14, 15	13, 14	1, 2, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15	15	1, 15	2, 4, 5
Dam and Levee Failure								
Drought		1, 15		1, 2, , 13				
Earthquake	4	1, 2, 4, 11, 12, 14, 15	5	1, 2, 3, 4, 13		2		
Flood	4	1, 2, 4, 12 , 14, 15		1, 2, 3, 4, 12, 13		1, 2		
Landslide	4, 5	1, 2, 4, 5, 12, 14, 15	3	1, 2, 3, 12, 13	5	1, 2		
Severe weather		1, 2, 3, 4, 5, 12, 14	3	1, 2, 3, 4, 12	3	1, 2		
Tsunami								
Wildfire	3, 4, 5, 6, 7, 8, 9, 10, 14, 15, 16, 17, 18, 19	1, 2 , 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19	5, 6, 7, 10, 16, 17,	1, 2, 5, 4, 6, 7, 10, 12, 16, 17, 18, 19	5, 6, 7, 16, 17, 18, 19	1, 2, 6, 7, 8, 9, 16, 17, 18, 19	16, 17, 18, 19	

a. See the introduction to this volume for explanation of mitigation types.

29. Kensington Police Protection and Community Services District

29.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Tony Constantouros, District General Manager
217 Arlington Ave
Kensington, CA 94707
Telephone: 510-526-4141
e-mail Address:
tconstantouros@kensingtoncalifornia.org

Alternate Point of Contact
Ricky Hull, Chief of Police
217 Arlington Ave
Kensington, CA 94707
Telephone: 510-526-4141
e-mail Address:
rhull@kensingtoncalifornia.org

29.2 JURISDICTION PROFILE

29.2.1 Overview

The Kensington Police Protection and Community Services District (KPPCSD) provides police protection, waste collection, and park services to the unincorporated community of Kensington. KPPCSD was formed in 1946 as the Kensington Police District under the Health and Safety Code. The District expanded its services to include park and recreation services in 1955. In 1981, voters approved adding trash collection and disposal. In 1993, voters approved changing the name of the District to Kensington Police Protection and Community Services District.

The District currently serves a population of approximately 5,000, covering a land area of approximately one square mile in west Contra Costa County, bordered by the cities of Berkeley, Albany, El Cerrito, and Tilden Park. It employs three administrative and ten law enforcement personnel. District operations are funded primarily by property taxes with some additional funds from refuse collection, and fees for services. The population and thus District revenues and services are stable from year to year with periodic cost of living adjustments. The District will continue to provide law enforcement protection to the community as well as provide park and recreational services and solid waste collection. The District is governed by five unpaid board members elected into office by the community to serve staggered four year terms.

The KPPCSD assumes responsibility for the adoption of this plan and the District General Manager will oversee its implementation.

29.2.2 Assets

Table 29-1 summarizes the critical assets of the district and their value.

Table 29-1. Special Purpose District Assets

Asset	Value
Property	
10-acres (park)	$2,808,347
Critical Infrastructure and Equipment	
Police cars	$238,212
Equipment	$88,599
DUI Trailer	$10,000
Amateur Radio Equipment	$2,500
Office Equipment	$148,475
Total:	*$487,786*
Critical Facilities	
The Community Center- This building is also designated as an evacuation shelter	$550,000
Building E-Currently leased to the Kensington Community Council for recreational programs	$450,000
Improvements	$618,818
Total:	*$1,6i8,818*

29.3 CAPABILITY ASSESSMENT

29.3.1 Planning and Regulatory Capabilities

Jurisdictions develop plans and programs and implement rules and regulations to protect and serve residents. When effectively prepared and administered, these plans, programs and regulations can support the implementation of mitigation actions. The following existing codes, ordinances, policies, programs or plans are applicable to this hazard mitigation plan:

- **California Department of Public Health**
- **California and US Environmental Protection Agencies**
- **California Code of Regulations**
- **Federal Endangered Species Act**
- **California Environmental Quality Act (CEQA)**
- **Contra Costa County Operational Area Hazard Mitigation Plan**
- **City of El Cerrito Emergency Operations Plan**—Kensington Annex dated February 2007
- **Kensington Community Center Remodel Proposal** by Glass Associates, Inc., dated August 2016

29.3.2 Fiscal, Administrative and Technical Capabilities

Fiscal capability is an indicator of a jurisdiction's ability to fulfill the financial needs associated with hazard mitigation projects. An assessment of fiscal capabilities is presented in Table 29-2. Administrative and technical capabilities represent a jurisdiction's staffing resources for carrying out the mitigation strategy. An assessment of administrative and technical capabilities is presented in Table 29-3.

29.3.3 Education and Outreach Capabilities

Outreach and education capability identifies the connection between government and community members, which opens a dialogue needed for a more resilient community. An assessment of education and outreach capabilities is presented in Table 29-4.

Table 29-2. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No
Federal Grant Programs	Yes
Other	No

Table 29-3. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	No	
Engineers or professionals trained in building or infrastructure construction practices	No	
Planners or engineers with an understanding of natural hazards	No	
Staff with training in benefit/cost analysis	No	
Surveyors	No	
Personnel skilled or trained in GIS applications	No	
Scientist familiar with natural hazards in local area	No	
Emergency manager	Yes	District General Manager
Grant writers	No	
Other	No	

Table 29-4. Education and Outreach

Criterion	Response
Do you have a Public Information Officer or Communications Office?	No
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe	No N/A
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe	No N/A
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly specify	Yes Kensington Public Safety Council
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe	Yes District website & mailing list, PD mailing list, KARO/ECHO Amateur Radio Group
Do you have any established warning systems for hazard events? • If yes, please briefly describe	Yes County Community Warning System

29.3.4 Adaptive Capacity for Climate Change

Given the uncertainties associated with how hazard risk may change with a changing climate, a jurisdiction's ability to track such changes and adapt as needed is an important component of the mitigation strategy. Table 29-5 summarizes the District's adaptive capacity for climate change.

Table 29-5. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: None provided*	Medium
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: None provided*	Low
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: None provided*	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: None provided*	Low
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: None provided*	Low
Participation in regional groups addressing climate risks *Comments/Additional Information: None provided*	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: None provided*	Medium
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information:* County Community Power participation in utilization of solar power available on grid	Low
Identified strategies for adaptation to impacts *Comments/Additional Information: None provided*	Low
Champions for climate action in local government departments *Comments/Additional Information: None provided*	Medium
Political support for implementing climate change adaptation strategies *Comments/Additional Information: None provided*	Low
Financial resources devoted to climate change adaptation *Comments/Additional Information: None provided*	Low
Local authority over sectors likely to be negative impacted *Comments/Additional Information: None provided*	Low
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: None provided*	Medium
Local residents support of adaptation efforts *Comments/Additional Information:* The District and County are getting started on these efforts.	Medium
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Medium
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low

a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

29.4 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

29.4.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the Kensington Police Protection and Community Services District made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **Park Grounds Fuel Reduction**—This ongoing effort has been working to reduce the wildfire fuel load in the District parkland. A combination of volunteer workers, grant funded professionals, and commercial resources contributors have worked over the last several years to remove flammable or otherwise unwanted vegetation, trimmed up trees to reduce “ladder effects”. The group has used grants from Diablo Fire Safe Council to remove dying and dangerous trees.
- **Kensington Public Safety Council**—The group presents talks on how to prepare for earthquakes and other hazards likely to occur in this area. These cover both human and pet preparedness. There is a Wildfire talk every spring prior to the fire season.

Resources listed in Section 29.11 were used to provide information on hazard events and local capabilities within the jurisdiction.

29.4.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the Kensington Police Protection and Community Services District will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan include actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report.

- **District Emergency Operations Plan**—At this time a revision of the District Emergency Operations Plan is planned for March 2018. It will reference this LHMP and use Risk Information developed in this document.

29.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 29-6 lists past occurrences of natural hazards for which specific damage was recorded in the Kensington Police Protection and Community Services District. Other hazard events that broadly affected the entire planning area, including the Kensington Police Protection and Community Services District, are listed in the risk assessments in Volume 1 of this hazard mitigation plan. Kensington hasn’t had any hazard events since 2007. However, given its proximity to the Hayward Fault and the fire-fuel-loaded East Bay Regional Park, Kensington is at significant risk of natural hazard events: earthquakes and fires. Figure 25-1 approximates the boundaries of Kensington in green. It shows fire risk in pale red and the Hayward Fault area in gray.

Table 29-6. Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Earthquake	NA	10/30/2007	No estimates available
Wildfire	NA	10/20/1991	No damage in Kensington/Fire stopped at Berkeley border
Earthquake	FEMA-845	10/17/1989	$1,000,000

Source: myplan.caloes.ca.gov/

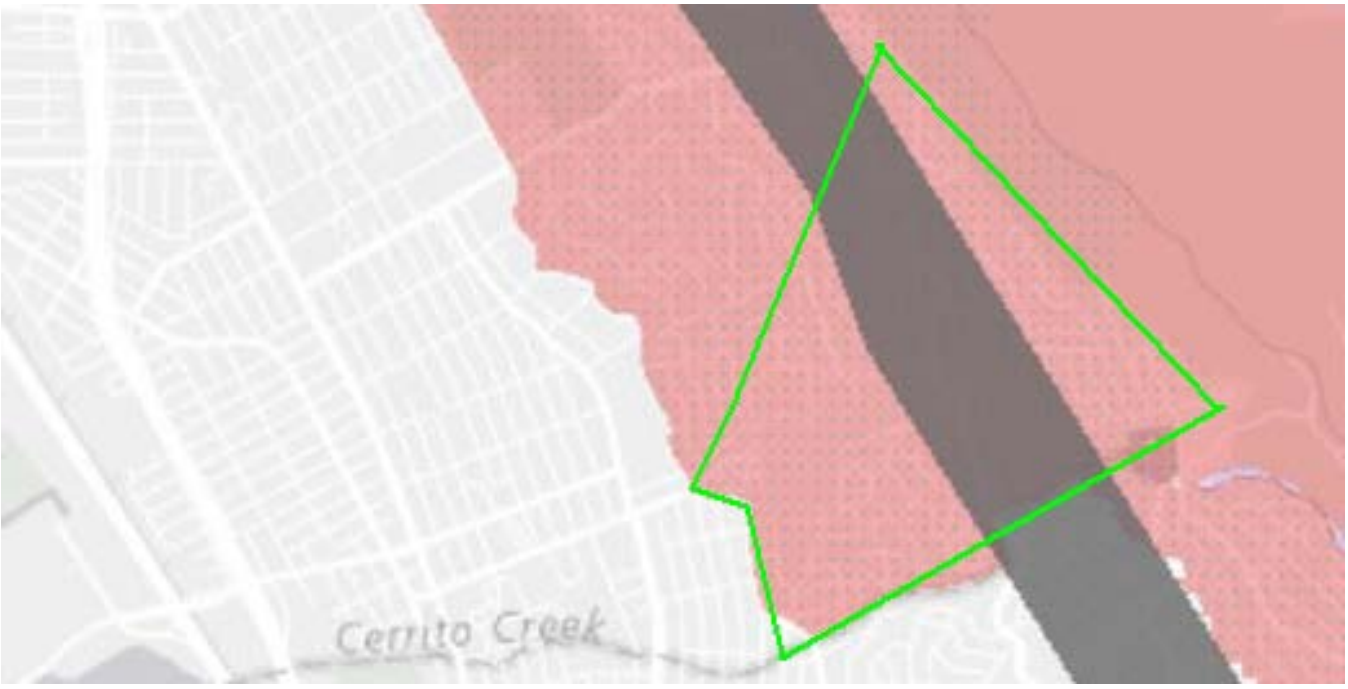


Figure 29-1. Approximate Boundaries of Kensington with Fire and Earthquake Risk Areas

29.6 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. Noted vulnerabilities within the district include the following:

- The KPPCSD administration office, police department, and fire department are on the Hayward Fault.
- 50 homes and an elementary school are located on the Wildland Urban Interface of Kensington and Tilden Park
- Most of Kensington is in a danger zone for Wildfire, Earthquake Shaking, Soil Liquefaction, or combinations of these events.
- Kensington has several neighborhoods on dead-end roads that have no alternative exit routes if the connecting end of the road is impassable.

29.7 HAZARD RISK RANKING

Table 29-7 presents a local ranking for the Kensington Police Protection and Community Services District of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 29-7. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake	54	High
1	Wildfire	54	High
1	Landslide	54	High
2	Flood	6	Medium
2	Severe weather	6	Medium
2	Drought	6	Medium
3	Water Storage Tank Failure	3	Low
3	Sea level rise	0	None
3	Tsunami	0	None

29.8 STATUS OF PREVIOUS PLAN ACTIONS

Table 29-8 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 29-8. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update: Check if Yes	Carried Over to Plan Update: Enter Action #
1—Structural Engineers Analysis of Community Center			✓	KPPCSD-3
Comment: An Architect has been selected to provide improvements to the Community Center. A structural analysis is included in the contract.				
2—Structural Retrofit of Community Center			✓	KPPCSD-3
Comment: An Architect has been selected to provide improvements to the Community Center. Seismic upgrades are included in the contract to be signed.				
3—Structural Engineers Analysis of Annex Building		✓		
Comment: The Annex Building cannot be upgraded for a reasonable cost.				
4—Structural Retrofit of Annex Building		✓		
Comment: The Annex Building cannot be upgraded for a reasonable cost				
5—Fuel Reduction along EBRPD border			✓	KPPCSD-7
Comment: Fuel reduction efforts continue along the southern portion of the EBRPD border. Grant applications are planned to support the creation of a firebreak on the northern portion of this Wildland Urban Interface.				
6—Utility undergrounding		✓		
Comment: The cost of undergrounding of power and communication lines exceeds the benefits gained.				
7—Support County-wide initiatives identified in the 2011 Hazard Mitigation Plan.	✓			
Comment: The 2011 Initiatives that are relevant to Kensington are still guiding current mitigation efforts as are those updates/revisions that were made as part of the plan update process.				
8—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in the 2011 Hazard Mitigation Plan.	✓		✓	KPPCSD-2
Comment: KPPCSD continues to support the plan maintenance protocol of the Hazard Mitigation Plan.				
9—Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan	✓			
Comment: The Safety Element of the General Plan was amended in June 2011 to incorporate the LHMP by reference.				

29.9 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 29-9 lists the actions that make up the Kensington Police Protection and Community Services District hazard mitigation action plan. Table 29-10 identifies the priority for each action. Table 29-11 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 29-9. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
KPPCSD-1— Where appropriate (feasible and cost-effective), support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses and/or are impacted by hazards ranked as "high" (earthquake, wildfire, landslide).						
Existing	Earthquake, Wildfire, Landslide, Flood and Severe Weather	11, 15	*KPPCSD & County	High	PDM, HMGP	Short-term
KPPCSD-2— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan. Conduct annual Town Hall meetings to involve the public. Publish the plan on the District website.						
New and Existing	All hazards assessed by this plan	16	KPPCSD	Low	Staff Time, General Funds	Ongoing
KPPCSD-3—Conduct Community Center Earthquake Retrofit to preserve structure usability after an earthquake.						
Existing	Earthquake	1, 2, 6, 7, 15, 18	KPPCSD	Medium	KPPCSD, EBRPD Measure WW, KCC, PDM	Short-term
KPPCSD-4— Add grey and rain water recovery system to Community Center and Building E.						
Existing	Drought	13, 17, 18	KPPCSD	Low	KPPCSD	Short-term
KPPCSD-5— Provide public information classes and information on irrigation systems, low-water plantings, defensible space options and other alternatives appropriate for the mitigation of drought and wildfire hazards.						
Existing	Drought, Wildfire	3, 6, 17, 18	KPPCSD	Low	KPPCSD	Ongoing
KPPCSD-6— Develop a post-disaster action plan, including grant funding and debris removal, that will address all hazards ranked as "high" or "medium," excluding drought (earthquake, wildfire, landslide, flood, severe weather).						
Existing	Earthquake, Wildfire, Landslide, Flood, and Severe Weather	1, 2, 13, 18	*KPPCSD, County	Medium	HMGP	Short-term
KPPCSD-7— Implement fuel reduction programs in the park and along the EBRPD Wildland Urban Interface. Use completed and ongoing work to illustrate proper Defensible Space techniques and Fire-wise plantings.						
Existing	Wildfire	1, 3, 6, 13, 14, 16, 17, 18	KPPCSD	Low	DFSC, PDM, HMGP	Ongoing
KPPCSD-8—Create and maintain a log of the impacts of unplanned events that disrupt normal activities.						
Existing	Natural Disasters, Infrastructure issues, Human caused issues	3, 6, 8, 12, 13	KPPCSD	Low	KPPCSD	Ongoing
KPPCSD-9—Provide Amateur and FR—S radio training along with the purchase of an Amateur radio for each of the six CERT areas plus a spare.						
Existing	All Hazards	2, 4, 13, 18	KPPCSD	Low	PDM, HMGP	Short-term
KPPCSD-10—Mitigate unplanned water release from EBMUD storage tank at Spruce St. & Grizzly Peak Blvd, also Berkeley Park.						
New	Flood	3, 6,	*EBMUD, KPPCSD	High	PDM, HMGP	Long-term
KPPCSD-11—Support the Kensington Public Safety Council educational talks for the community on disaster awareness, preparedness, mitigation, response, and recovery.						
Existing	All Hazards	3, 6, 12, 17	KPPCSD	Low	Staff Time	Ongoing

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 29-10. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
KPPCSD-1	8	High	High	Yes	Yes	No	Medium	High
KPPCSD-2	3	Low	Low	Yes	No	Yes	High	Low
KPPCSD-3	6	High	High	Yes	Yes	No	Medium	High
KPPCSD-4	2	High	Low	Yes	Yes	No	Medium	High
KPPCSD-5	4	High	Low	Yes	No	No	Low	Low
KPPCSD-6	4	High	Medium	Yes	Yes	No	Medium	Medium
KPPCSD-7	8	High	High	Yes	Yes	No	Medium	High
KPPCSD-8	5	High	Low	Yes	No	Yes	Medium	Low
KPPCSD-9	4	High	Low	Yes	Yes	No	Medium	Low
KPPCSD-10	2	High	High	Yes	Yes	No	Medium	Medium
KPPCSD-11	4	High	Low	Yes	No	Yes	Low	Low

a. See the introduction to this volume for explanation of priorities.

Table 29-11. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards		1, 3	8, 11		9	3		2, 6, 8, 9
Dam and Levee failure		10	11			10		
Drought			5, 11	4, 7			4, 5	5
Earthquake	6	1, 3	11		6			
Flood	6							
Landslide	6		8, 11		6, 9			
Severe weather	6				8, 9			
Tsunami								
Wildfire	6, 7, 11	11	7, 11	7, 11	6, 9			

a. See the introduction to this volume for explanation of mitigation types.

29.10 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

The District needs to develop GIS capability to have access to, and develop an understanding of faults, topography, vegetation density, etc.

29.11 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed for this annex.

- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.
- **District Assets Valuation**—The District Assets Valuation information was developed for insurance purposes. It is the most recent valuation available.
- **Kensington Community Center Upgrade**—The Kensington Community Center Upgrade proposal is in the final stage of development by the Architectural firm chosen for the project. The two principal topics are Seismic Retrofitting and Updates for ADA compliance.
- **KPPCSD Emergency Operations Plan**—The District EOP is an appendix of the El Cerrito plan. It was reviewed for pertinent information to be included in this annex.

30. PLEASANT HILL PARKS AND RECREATION DISTRICT

30.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Mr. Mark Blair, Admin. Services Mgr.
147 Gregory Lane
Pleasant Hill, CA 94523
Telephone: (925)682-0896
e-mail Address: mblair@pleasanthillrec.com

Alternate Point of Contact

Ms. Michelle Lacy, General Manager
147 Gregory Lane
Pleasant Hill, CA 94523
Telephone: (925)682-0896
e-mail Address: mlacy@pleasantrec.com

30.2 JURISDICTION PROFILE

30.2.1 Overview

Pleasant Hill Parks and Recreation District is a special taxing district within Contra Costa County established in January of 1951 by citizens who desired recreational opportunities and park facilities within their community. The District is committed to providing park facilities, open space, programs, and activities to the citizens of Contra Costa County. The District is governed by the Public Resources Code of the State of California and operates as a Special District, an independent local governmental agency separate from the City of Pleasant Hill. A Board of Directors establishes policy for the District. The Board of Directors is made up of five elected officials. They are elected by residents within District boundaries during the general election of the even years in November. Each member serves a four-year term and the terms are staggered so as to have three members' terms expire in one election and the remaining members on the alternative date. There is also an appointed ex-officio member from a high school in the District. Board members serve on board committees and work with the staff on youth-related activities. Day to day operations of the District are overseen by the general manager. The Board of Directors assumes responsibility for the adoption of this plan, and the Administration Department will oversee its implementation.

The District serves a population of approximately 40,00 as of January 1, 2017. The land area served includes the entirety of the City of Pleasant Hill and portions of the district include small areas of the cities of Lafayette, Walnut creek and the unincorporated area of Walden. The jurisdictional area of the District encompasses approximately 8.8 square miles, or 5,616 acres.

The District had 272 employees in 2016. Of this total, 29 were full-time (40hrs/wk.) employees.

Total secured and unsecured assessed value for properties with the District boundaries for the fiscal 2016-17 year is $7,200,537,000.

A bond measure passed by District Residents in 2009 allowed for the building of a new 22k sq. ft. Senior Center, a 21k sq. ft. Community Center, a 7k sq. ft. Teen Center and for a major renovation of Pleasant Oaks Park. Since the completion of these capital projects in 2013 revenues from programming hosted at these site and related rental

income have demonstrated a steady growth trend. Fiscal year ending June 30, 2016 reflected programming/rental revenue of just over $4,000,000 out of total District revenue of $8,000,000.

The new Senior Center has become a regional facility with over 2000 Senior Members predominantly from Cities all over Contra Costa County.

The Pleasant Hill Parks and Recreation District facilities and boundaries can be viewed on-line at:

http://www.360villagevirtualtours.com/phparks/phparkstour.html

30.2.2 Assets

Table 30-1 summarizes the critical assets of the district and their value.

Table 30-1. Special Purpose District Assets

Asset	Value
Property	
Pleasant Hill Park	$5m
Rodgers-Smith Park	$2m
Pleasant Oaks Park	$4.3m
Paso Nagal Park	$2.5m
Brookwood Park	$1m
Frank Salfingere Park	$500k
Chilpancingo Park	$400k
Shadowood Park	$500k
Shannon Hills Park	$500k
Dinosaur Park	$300k
Total: 269 acres of park land	$17m
Critical Infrastructure and Equipment	
1986,1990, 1995, 2000, 2002 and 2007 Ford Ranger light pick-ups	$7,000
2003, 2010 and 2015 F-150 Ford pick-ups	$43,000
2-2001, 2-2008 and a 2014 F-250 Ford pick-ups	$64,000
1990 and 2007 F-350 Ford pick-ups	$20,000
1994 GMC C-3500 pick-up	$7,000
2008 John Deere 110s tractor	$45k
2011 Turfstar Riding Mower	$55k
Total:	*$241k*
Critical Facilities	
Pleasant Hill Community Center	$11.7m
Pleasant Hill Senior Center	$10.3m
Winslow Center	$1.1m
District Office	$430k
Teen Center	$4m
School House	$1m
Kidstop	$500k
Rogers Ranch	$500k
Pleasant Hill Aquatics Center	1.1m value
Total:	*$30.13m*

30.3 CAPABILITY ASSESSMENT

30.3.1 Planning and Regulatory Capabilities

Jurisdictions develop plans and programs and implement rules and regulations to protect and serve residents. When effectively prepared and administered, these plans, programs and regulations can support the implementation of mitigation actions. The following existing codes, ordinances, policies, programs or plans are applicable to this hazard mitigation plan:

- **Permit Authority**—The District does not possess permit authority for the construction of habitable structures. Construction Codes administered by the municipalities for which the District has facilities located will be adhered to according to their building permit protocol.

30.3.2 Fiscal, Administrative and Technical Capabilities

Fiscal capability is an indicator of a jurisdiction's ability to fulfill the financial needs associated with hazard mitigation projects. An assessment of fiscal capabilities is presented in Table 30-2. Administrative and technical capabilities represent a jurisdiction's staffing resources for carrying out the mitigation strategy. An assessment of administrative and technical capabilities is presented in Table 30-3.

Table 30-2. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	Yes
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No
Federal Grant Programs	Yes

Table 30-3. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Not on staff, but available on a contract basis.
Engineers or professionals trained in building or infrastructure construction practices	Yes	Building Maintenance Department employees familiar with construction practices. Engineers and other professionals available on a contract basis.
Planners or engineers with an understanding of natural hazards	Yes	Not on staff, but available on a contract basis.
Staff with training in benefit/cost analysis	Yes	Administrative Department
Surveyors	Yes	Not on staff, but available on a contract basis.
Personnel skilled or trained in GIS applications	Yes	Not on staff, but available on a contract basis.
Scientist familiar with natural hazards in local area	Yes	Not on staff, but available on a contract basis.
Emergency manager	Yes	General Manager
Grant writers	Yes	General Manager
Other	No	N/A

30.3.3 Education and Outreach Capabilities

Outreach and education capability identifies the connection between government and community members, which opens a dialogue needed for a more resilient community. An assessment of education and outreach capabilities is presented in Table 30-4.

Table 30-4. Education and Outreach

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes, Communications Dept.
Do you have personnel skilled or trained in website development?	Yes, Communications Dept.
Do you have hazard mitigation information available on your website? • If yes, please briefly describe. Currently redesigning our website, will plan on making this available in the new website.	Yes Will have a link to plan on new website.
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe	No N/A
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly specify	No N/A
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe	Yes Have hosted CERT earthquake preparedness seminars for the public and other agencies.
Do you have any established warning systems for hazard events? • If yes, please briefly describe	Yes FEMA Emergency Alert System.

30.3.4 Adaptive Capacity for Climate Change

Given the uncertainties associated with how hazard risk may change with a changing climate, a jurisdiction's ability to track such changes and adapt as needed is an important component of the mitigation strategy. Table 30-5 summarizes the District's adaptive capacity for climate change.

30.4 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

30.4.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the Pleasant Hill Parks and Recreation District made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives.

Table 30-5. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: Aware of potential climate change issues.*	Low
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: Perform no monitoring activities*	Low
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: Administration Department and Board would review on a case by case basis.*	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: Have no authority for this*	Low
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: Would utilize potential climate change impacts in future planning process.*	Medium
Participation in regional groups addressing climate risks *Comments/Additional Information: Would attend regional meetings.*	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: Have no authority outside of park properties.*	Low
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: Follow recommended procedures.*	Low
Identified strategies for adaptation to impacts *Comments/Additional Information: Would develop strategy as new capital projects become reality.*	Low
Champions for climate action in local government departments *Comments/Additional Information: Could partner with local municipalities to promote climate action.*	Low
Political support for implementing climate change adaptation strategies *Comments/Additional Information: Would be receptive to adopt strategies within our capability.*	Medium
Financial resources devoted to climate change adaptation *Comments/Additional Information: Have limited uncommitted financial resources.*	Low
Local authority over sectors likely to be negative impacted *Comments/Additional Information: Only authority within park properties.*	Low
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: District residents are well aware of climate issues.*	High
Local residents support of adaptation efforts *Comments/Additional Information: Have not polled residents.*	Medium
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: Believe the residents would adapt but District has no enforcement ability.*	Medium
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: Believe local businesses would adapt but District has no enforcement ability.*	Medium
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: Will attempt to respond as climate impacts occur for properties under PHRPD control.*	Medium

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

The following plans and programs currently integrate components of the hazard mitigation strategy:

- Construction and remodel programs as part of the District's capital facilities program:
  - Completed construction of a new 22k sq. ft. Senior Center, 21k sq. ft. Community Center and 7k sq. ft. Teen Center in 2013 that were completed with current earthquake resistance standards. The prior facilities built in the 1960's an 70's were built without such standards. The Hazard Mitigation Plan was used to inform these construction projects on the risk associated with the location of each facility.
  - Completed a remodel and upgrading of drainage capability at Pleasant Oaks Park. This site is now better equipped to deal with light flooding issues. As with the above action, the Hazard Mitigation Plan was used to inform this capital construction project on the risk associated with the location of this facility.

Resources listed in Section 30.11 were used to provide information on hazard events and local capabilities within the jurisdiction.

30.4.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the Pleasant Hill Parks and Recreation District will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan include actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Flood Control Plans**—Will attempt to develop partnerships with local municipalities that have flood control jurisdiction on city streets that surround District properties to develop joint flood control plans.
- **Climate Impacts Data**—Will utilize current climate impact data in planning for construction of future District facilities.

30.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 30-6 lists past occurrences of natural hazards for which specific damage was recorded in the Pleasant Hill Parks and Recreation District. Other hazard events that broadly affected the entire planning area, including the Pleasant Hill Parks and Recreation District, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 30-6. Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Winter Flooding and Mudslides	DR-4301	Jan 2017	No major damages sustained by District properties.
Landslide	N/A	December, 2005	$21,000
Landslide	N/A	January, 1999	$25,000
Earthquake		10/17/1989	No major damage sustained by District Facilities.

30.6 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. Noted vulnerabilities within the district include the following:

- Several District properties are susceptible to potential mudslides during periods of heavy rainfall.
- District Administration offices were constructed prior to current earthquake safety building codes were enacted. As such, it is more susceptible to damage than newer District facilities to earthquake damage.

30.7 HAZARD RISK RANKING

Table 30-7 presents a local ranking for the Pleasant Hill Parks and Recreation District of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 30-7. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake	21	Medium
2	Landslide	18	Medium
3	Flood	12	Low
3	Dam and levee failure	12	Low
3	Severe weather	12	Low
4	Wildfire	9	Low
5	Drought	6	Low
6	Sea level rise	0	None
6	Tsunami	0	None

30.8 STATUS OF PREVIOUS PLAN ACTIONS

Table 30-8 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

30.9 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 30-9 lists the actions that make up the Pleasant Hill Parks and Recreation District hazard mitigation action plan. Table 30-10 identifies the priority for each action. Table 30-11 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 30-8. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
Initiative #PHRPD-1—Perform a seismic structural retrofit of the Winslow Center.		X		
Comment: *Current engineers estimates give this facility approximately 2-3 more years of serviceable life before the current foundation and other building integrity issues mandate it's closure.*				
Initiative #PHRPD-2—Perform a seismic structural retrofit of Schoolhouse.		X		
Comment: *This facility has lost all structural integrity and currently cannot be occupied.*				
Initiative #PHRPD-3—Perform a seismic structural retrofit of District Office			X	PHRPD-4
Comment:				
Initiative #PHRPD-4—Implement appropriate flood control/drainage improvement project to reduce the impacts of flooding on Pleasant Hill Park.			X	PHRPD-3
Comment: *District will explore partnership opportunities with local municipalities that have flood control jurisdiction for streets surrounding District properties.*				
Initiative #PHRPD-5—Implement appropriate flood control/drainage improvement project to reduce the impacts of flooding on Pleasant Oaks Park.			X	PHRPD-3
Comment: *Improved drainage capabilities have been accomplished associated with the remodel of this park that was completed in 2013. District will look to partner with the City of Pleasant Hill that has jurisdiction for flood control on streets surrounding Pleasant Oaks Park.*				
Initiative #PHRPD-6—Support County-wide initiatives identified in the 2011 Hazard Mitigation Plan.	X			
Comment:				
Initiative #PHRPD-7—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in the 2011 Hazard Mitigation Plan.	X		X	PHPRD-2
Comment: *District participating in update of this 2017 plan.*				
Initiative #PHRPD-8—Partner with other local governments in educating the citizens on the potential consequences associated with natural hazards and the opportunities to mitigate their impacts.			X	PHRPD-5
Comment: *District will look for partnership opportunities with local municipalities to educate residents of potential consequences associated with natural hazards and their mitigation opportunities.*				

Table 30-9. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
PHPRD-1— Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	PHRPD Administration Department	High	CIP, HMGP, PDM, FMA	Short-term
PHPRD-2— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 16	PHRPD Administration Department	Low	Staff Time, General Funds	Short-term
PHRPD-3—Explore partnership opportunities with Cities of Pleasant Hill and Lafayette where District properties are located to attempt to address overall flood control plans for areas surrounding District sites.						
Existing	Flooding	1, 16	Cities of Pleasant Hill & Lafayette*, PHPRD	Low	Staff Time	Short-term
PHRPD-4— Perform a seismic structural retrofit of District Office						
Existing	Earthquake	1, 15	PHRPD Administration Department	High	HMGP, PDM	Short-term, after funding received
PHRPD-5—Look for partnership opportunities with local municipalities to educate residents of potential consequences associated with natural hazards and their mitigation opportunities.						
New and Existing	All Hazards	3, 16	PHRPD Administration Department	Low	General Funds	Short-term

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 30-10. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
PHPRD-1	8	High	High	Yes	Yes	No	Medium	High
PHPRD-2	3	Low	Low	Yes	No	Yes	High	Low
PHRPD-3	4	High	Low	Yes	Yes	No	Medium	Low
PHRPD-4	2	High	High	Yes	Yes	No	Low	High
PHRPD-5	2	Low	Low	Yes	No	Yes	High	Low

a. See the introduction to this volume for explanation of priorities.

Table 30-11. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	PHRPD-2	PHRPD-1	PHRPD-5					PHRPD-2
Dam and Levee failure								
Drought								
Earthquake								
Flood	PHRPD-3	PHRPD-4						PHRPD-3
Landslide								
Severe weather								
Tsunami								
Wildfire								

a. See the introduction to this volume for explanation of mitigation types.

30.10 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

Updated information on suggested protocols in response to current climate impact data.

30.11 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.

31. Reclamation District No. 830, Jersey Island

31.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Dave Dal Porto, Trustee
450 Walnut Meadows Drive
Oakley, CA 94561
Telephone: 925-625-2279
e-mail Address: zimmerman@isd.us.com

Alternate Point of Contact
Chad Davisson, Trustee
450 Walnut Meadows Drive
Oakley, CA 94561
Telephone: 925-625-2279
e-mail Address: solana@isd.us.com

31.2 JURISDICTION PROFILE

31.2.1 Overview

Reclamation District No. 830 (RD 830) was formed on March 11, 1911 as an independent special district. The District was originally formed to provide levee and drainage maintenance services to Jersey Island. Jersey Island is a 3,561 acre island located 6 miles east of Antioch in the western Sacramento-San Joaquin Delta.

Jersey Island is under the ownership of a single landowner - Ironhouse Sanitary District (ISD). ISD purchased the last 50 acres of the island from Delta Properties in 2011. RD 830's territory is primarily used for agriculture, cattle grazing, and habitat preservation. RD 830 has a population of three persons, and no population growth is expected within the next 10 to 15 years.

RD 830 covers a land area of approximately 3,561 acres, 16 miles of levee and 420 acres of easements. There is no possibility of expanding the service area as it is an island. RD 830 maintains 16 miles of levee which protects Jersey Island from flooding. RD 830 contracts with ISD for levee maintenance, flood control, drainage, upkeep of levee access roads, weed abatement, slope protection, vector/rodent control, levee control, and flood protection. RD 830 levies an annual Operation and Maintenance Assessment on ISD and easement holders in order to fund maintenance of the levee system. RD 830 also receives funds from the California Department of Water Resources to reimburse maintenance costs and fund levee rehabilitation projects. These funds are from the DWR Subventions Program and Special Projects Program.

RD 830 is governed by a three member elected Board of Trustees voted on by ISD. There are no RD 830 employees. Employees and equipment are contracted with ISD.

The Board of Directors assumes responsibility for the adoption of this plan; the Board of Directors will oversee its implementation.

31.2.2 Assets

Table 31-1 summarizes the critical assets of the district and their value.

Table 31-1. Special Purpose District Assets

Asset	Value
Property	
3,561 acres (Ironhouse Sanitary District)	
Total:	*$15,000,000*
Critical Infrastructure and Equipment	
16 miles of levee infrastructure	
3 discharge pumps	
1 CAT Dozer	
Total:	*$16,400,000*
Critical Facilities	
No critical facilities	
Total:	*$0*

31.3 CAPABILITY ASSESSMENT

31.3.1 Planning and Regulatory Capabilities

Jurisdictions develop plans and programs and implement rules and regulations to protect and serve residents. When effectively prepared and administered, these plans, programs and regulations can support the implementation of mitigation actions. The following existing codes, ordinances, policies, programs or plans are applicable to this hazard mitigation plan:

- **California Department of Public Health**—Last updated in 2017 (SPCC, APSA, CERS).
- **California and US Environmental Protection Agencies**— Provides guidelines on environmental safety.
- **California Code of Regulations**—Provides specific regulatory codes related to the state.
- **Federal Endangered Species Act**— Last updated, December 8, 2015.
- **California Environmental Quality Act (CEQA** —Last updated, February 2016.
- **Regional Water Quality Board**—Last updated, May 4, 2017.
- **California Department of Water Resources**—Last updated, March 27, 2017.
- **US Army Corps of Engineers**—USACE Disaster Response
- **California Fish and Wildlife**—Provides guidelines on fish and wildlife in and around Jersey Island.
- **US Coast Guard**—Provides guidelines to waterways around Jersey Island.
- **Contra Costa County Local Flood Safety Plan**—Last updated, February 2016
- **Ironhouse Sanitary District Emergency Operations Plan**—The Plan was used to review risks that have been identified by the District.

31.3.2 Fiscal, Administrative and Technical Capabilities

Fiscal capability is an indicator of a jurisdiction's ability to fulfill the financial needs associated with hazard mitigation projects. An assessment of fiscal capabilities is presented in Table 31-2. Administrative and technical capabilities represent a jurisdiction's staffing resources for carrying out the mitigation strategy. An assessment of administrative and technical capabilities is presented in Table 31-3.

31.3.3 Education and Outreach Capabilities

Outreach and education capability identifies the connection between government and community members, which opens a dialogue needed for a more resilient community. An assessment of education and outreach capabilities is presented in Table 31-4.

Table 31-2. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	No
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No
Federal Grant Programs	Yes
Other	No

Table 31-3. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Consultants
Engineers or professionals trained in building or infrastructure construction practices	Yes	Consultants
Planners or engineers with an understanding of natural hazards	Yes	Consultants
Staff with training in benefit/cost analysis	Yes	Consultants
Surveyors	Yes	Consultants
Personnel skilled or trained in GIS applications	No	
Scientist familiar with natural hazards in local area	Yes	Consultants
Emergency manager	No	
Grant writers	No	
Other	No	

Table 31-4. Education and Outreach

Criterion	Response
Do you have a Public Information Officer or Communications Office?	No
Do you have personnel skilled or trained in website development?	No
Do you have hazard mitigation information available on your website? • If yes, please briefly describe	No N/A
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe	No N/A
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly specify	No N/A
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe	No N/A
Do you have any established warning systems for hazard events? • If yes, please briefly describe	No N/A

31.3.4 Adaptive Capacity for Climate Change

Given the uncertainties associated with how hazard risk may change with a changing climate, a jurisdiction's ability to track such changes and adapt as needed is an important component of the mitigation strategy. Table 31-5 summarizes the District's adaptive capacity for climate change.

Table 31-5. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: None provided*	Low
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: None provided*	Low
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: None provided*	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: None provided*	Low
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: None provided*	Low
Participation in regional groups addressing climate risks *Comments/Additional Information: None provided*	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: None provided*	Low
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: None provided*	Low
Identified strategies for adaptation to impacts *Comments/Additional Information: None provided*	Low
Champions for climate action in local government departments *Comments/Additional Information: None provided*	Low
Political support for implementing climate change adaptation strategies *Comments/Additional Information: None provided*	Low
Financial resources devoted to climate change adaptation *Comments/Additional Information: None provided*	Low
Local authority over sectors likely to be negative impacted *Comments/Additional Information: None provided*	Low
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: None provided*	Low
Local residents support of adaptation efforts *Comments/Additional Information: None provided*	Low
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low

a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

31.4 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

31.4.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, Reclamation District No. 830, Jersey Island made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **Contra Costa County Local Flood Safety Plan—**This Plan identifies the risk of flooding on Jersey Island and makes recommendations to mitigate the threat.
- **ISD Emergency Operations Plan**—The Plan was used to review risks that have been identified by Ironhouse Sanitary District.

Resources listed in Section 31.10 were used to provide information on hazard events and local capabilities within the jurisdiction.

31.4.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, Reclamation District No. 830, Jersey Island will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan include actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Mutual Aid Agreements**— Develop and implement mutual aid agreements with neighboring Reclamation Districts. These agreements have not been formalized but should be for clarification.
- **Contra Costa County Local Flood Safety Plan—**This Plan identifies the risk of flooding on Jersey Island and makes recommendations to mitigate the threat.
- **Levee Rehabilitation Program**—Continue to rehabilitate and fortify the levee system on Jersey Island.

31.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 31-6 lists past occurrences of natural hazards for which specific damage was recorded in Reclamation District No. 830. Other hazard events that broadly affected the entire planning area, including Reclamation District No. 830, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 31-6. Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Severe Storms, Flooding, and Mudslides	DR-4301	2/14/2017	Not Available
Severe Weather, Levee Damage	DR-1628	2/3/2006	$450,000
Severe Weather, Levee Damage	NA	1997	$300,000
Severe Weather, Levee Damage	NA	1983	$200,000

31.6 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. Noted vulnerabilities within the district include the following:

- Being that Jersey Island is a Delta Island it carries significant risk of flooding due to severe weather and potential levee failure.
- Jersey Island is in the High and Medium liquefaction regions of the county.
- Jersey Island would likely experience strong shaking from a Calaveras M7.0 earthquake.

31.7 HAZARD RISK RANKING

Table 31-7 presents a local ranking for Reclamation District No. 830, of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 31-7. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Flood[a]	54	High
1	Earthquake	54	High
1	Severe weather *(excluding extreme heat)*	54	High
2	Wildfire	6	Low
2	Drought	6	Low
3	Dam failure	0	None
3	Landslide	0	None
3	Sea level rise	0	None
3	Tsunami	0	None
3	Severe Weather (extreme heat)	0	None

a. Due to the nature of the District, levee failure is considered within the flood hazard for risk ranking.

31.8 STATUS OF PREVIOUS PLAN ACTIONS

Table 31-8 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 31-8. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
RD 830 1—Rehabilitate 10 miles of levee *Comment: Complete in 2017*	x			
RD 830 2—Relocate discharge pump station *Comment: Project planned for FY 17/18*			x	RD830-1
RD 830 3—Mitigation for vegetation removal to prevent wildfires *Comment: Ongoing*	x		x	RD830-3
RD 830 4—Support County-wide initiatives identified in the 2011 Hazard Mitigation Plan. *Comment: Ongoing*	x		x	RD830-4
RD 830 5— Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in the 2011 Hazard Mitigation Plan. *Comment: Ongoing*	x		x	RD830-5
RD 830 6—Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan *Comment: Ongoing*			x	RD830-6

31.9 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 31-9 lists the actions that make up the Reclamation District No. 830, Jersey Island hazard mitigation action plan. Table 31-10 identifies the priority for each action. Table 31-11 summarizes the mitigation actions by hazard of concern and mitigation type.

31.10 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Contra Costa County Local Flood Safety Plan—**This Plan identifies the risk of flooding on Jersey Island and makes recommendations to mitigate the threat. It was reviewed for the potential inclusion of mitigation actions.
- **ISD Emergency Operations Plan**—The Plan was used to review risks that have been identified by the District.
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.

Table 31-9 Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
RD830-1— Rehabilitate 10 miles of levee (phase one of rehabilitation project)						
Existing	Levee Failure, Earthquake, Flood, Severe Weather	1, 2, 7, 13, 15, 16	RD 830	High	General Funds, DWR	Long-term
RD830-2— Relocate discharge pump station						
Existing	Flood	1, 2, 7, 13, 15, 16	RD 830	Medium	General Funds, DWR, HMGP, PDM	Short-term
RD830-3— Mitigation for vegetation removal to reduce the risk of wildfires and flooding.						
Existing	Wildfires, Flood	1, 10, 13, 16	RD 830	Low	General Funds, DWR	Short-term
RD830-4— Support County-wide initiatives identified in the 2017 Hazard Mitigation Plan						
New & Existing	All Hazards	All	RD 830	Low	Staff Time, General Funds	Short-term, ongoing
RD830-5— Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in the 2017 Hazard Mitigation Plan.						
New & Existing	All Hazards	All	County*, RD 830	Low	Staff Time, General Funds, FEMA Mitigation Grant Funding for 5-year update	Short-term, ongoing
RD830-6— Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan						
New & Existing	All Hazards	4, 5, 14	County	Low	Staff Time, General Funds	Short-term, ongoing
RD830-7— Prepare an Emergency Operation Plan.						
New	All Hazards	All	RD 830	Low	Staff Time, General Funds	Short-term
RD830-8— Rehabilitate six (6) miles of levee (phase 2 of rehabilitation project)						
Existing	Levee Failure, Earthquake, Flood, Severe Weather	1, 2, 7, 13, 15, 16	RD 830	High	General Funds, DWR	Short-term
RD830-9— Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	All	RD 830	High	HMGP, PDM, FMA	Short-term

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 31-10. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
RD830-1	6	High	Low	Yes	Yes	Yes	High	High
RD830-2	6	High	Medium	Yes	No	Yes	High	Low
RD830-3	4	High	Low	Yes	No	Yes	High	Low
RD830-4	16	Medium	Low	Yes	No	Yes	High	Low
RD830-5	16	Medium	Low	Yes	No	Yes	High	Low
RD830-6	3	Low	Low	Yes	No	Yes	High	Low
RD830-7	16	High	Low	Yes	No	Yes	High	Low
RD830-8	6	High	Low	Yes	Yes	Yes	High	High
RD830-9	16	High	High	Yes	Yes	No	Medium	High

a. See the introduction to this volume for explanation of priorities.

Table 31-11. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	RD830-4, 5, 6, 7, 9		RD830-4, 5, 6, 7		RD830-4, 5, 6, 7			RD830-5, 7
Dam and Levee failure	RD830-1, 8, 9	RD830-1, 8, 9				RD830-1, 8, 9	RD830-1, 8	
Drought								
Earthquake	RD830-1, 8	RD830-1, 8				RD830-1, 8		
Flood	RD830-1, 2, 3, 8	RD830-1, 8				RD830-1, 8, 9		
Landslide								
Severe weather	RD830-1, 8	RD830-1, 8, 9				RD830-1, 8, 9		
Tsunami								
Wildfire								

a. See the introduction to this volume for explanation of mitigation types.

32. San Ramon Geological Hazard Abatement District

32.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Steven Spedowfski, Senior Analyst
2401 Crow Canyon Road
San Ramon, CA 94583
Telephone: 925-973-2653
e-mail Address: spedowfski@sanramon.ca.gov

Alternate Point of Contact

Robin Bartlett, District Engineer
2401 Crow Canyon Road
San Ramon, CA 94583
Telephone: 925-973-2683
e-mail Address: rbartlett@sanramon.ca.gov

32.2 JURISDICTION PROFILE

32.2.1 Overview

The Geologic Hazard Abatement District No. 1990-01 (GHAD) was formed in 1990 in accordance with the Public Resources Code of the State of California, Section 26500 et seq. The GHAD is an independent governmental organization which was formed for the purpose of preventing, mitigating, abating, and controlling geological hazards. The City Council members serve as the GHAD Board of Directors and the District is managed by City staff. The GHAD boundaries include the West Branch area, located at Crow Canyon Road and Dougherty Road, Old Ranch Summit, and the Dougherty Valley totaling approximately 2,767 acres of open space. Funding for the GHAD is obtained through an annual assessment on properties located within the GHAD boundaries.

The GHAD provides for activity that is necessary or incidental to the prevention, mitigation, abatement, or control of a geologic hazard including, but not limited to, the acquisition of property or any interest therein, construction, or the maintenance, repair, or operation of any improvement, or the issuance and servicing of bonds issued to finance any of the foregoing.

The GHAD Board assumes responsibility for the adoption of this plan; the GHAD District Engineer will oversee its implementation.

32.2.2 Assets

Table 32-1 summarizes the critical assets of the district and their value.

Table 32-1. Special Purpose District Assets

Asset	Value
Property	
1,994 acres of land (773 acres to be annex at a later date)	$0 (please note, land is under conservation easement with $0 assessed value)
Critical Infrastructure and Equipment	
V-Ditch (53,052 feet)	$501,840
Subdrains	unknown
Monitoring Equipment	unknown
Total:	*$501,840*
Critical Facilities	
None	
Total:	*NA*

32.3 CAPABILITY ASSESSMENT

32.3.1 Planning and Regulatory Capabilities

Jurisdictions develop plans and programs and implement rules and regulations to protect and serve residents. When effectively prepared and administered, these plans, programs and regulations can support the implementation of mitigation actions. The following existing codes, ordinances, policies, programs or plans are applicable to this hazard mitigation plan:

- **GHAD Plan of Control**—Updated August 28, 2009

32.3.2 Fiscal, Administrative and Technical Capabilities

Fiscal capability is an indicator of a jurisdiction's ability to fulfill the financial needs associated with hazard mitigation projects. An assessment of fiscal capabilities is presented in Table 32-2. Administrative and technical capabilities represent a jurisdiction's staffing resources for carrying out the mitigation strategy. An assessment of administrative and technical capabilities is presented in Table 32-3.

Table 32-2. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No
Federal Grant Programs	Yes
Other	N/A

Table 32-3. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Public Works/GHAD/District Engineer
Engineers or professionals trained in building or infrastructure construction practices	Yes	Public Works/GHAD/District Engineer
Planners or engineers with an understanding of natural hazards	Yes	Public Works/GHAD/District Engineer
Staff with training in benefit/cost analysis	Yes	Public Works/GHAD/Senior Analyst
Surveyors	Yes	Public Works/GHAD/Senior Inspector
Personnel skilled or trained in GIS applications	Yes	Public Works/GHAD/Engineering Specialist
Scientist familiar with natural hazards in local area	No	N/A
Emergency manager	No	N/A
Grant writers	Yes	Public Works/GHAD/Senior Analyst
Other	No	N/A

32.3.3 Education and Outreach Capabilities

Outreach and education capability identifies the connection between government and community members, which opens a dialogue needed for a more resilient community. An assessment of education and outreach capabilities is presented in Table 32-4.

Table 32-4. Education and Outreach

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe	No N/A
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe	No N/A
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly specify	No N/A
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe	Yes Social media and website
Do you have any established warning systems for hazard events? • If yes, please briefly describe	No N/A

32.3.4 Adaptive Capacity for Climate Change

Given the uncertainties associated with how hazard risk may change with a changing climate, a jurisdiction's ability to track such changes and adapt as needed is an important component of the mitigation strategy. Table 32-5 summarizes the District's adaptive capacity for climate change.

Table 32-5. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: None provided*	Low
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: None provided*	Low
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: None provided*	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: None provided*	Low
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: None provided*	Low
Participation in regional groups addressing climate risks *Comments/Additional Information: None provided*	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: None provided*	Low
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: None provided*	Low
Identified strategies for adaptation to impacts *Comments/Additional Information: None provided*	High
Champions for climate action in local government departments *Comments/Additional Information: None provided*	Low
Political support for implementing climate change adaptation strategies *Comments/Additional Information: None provided*	Medium
Financial resources devoted to climate change adaptation *Comments/Additional Information: None provided*	Low
Local authority over sectors likely to be negative impacted *Comments/Additional Information: None provided*	Medium
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: None provided*	Low
Local residents support of adaptation efforts *Comments/Additional Information: None provided*	Low
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

32.4 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

32.4.1 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the San Ramon Geological Hazard Abatement District will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan include actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **GHAD Plan of Control**—The Plan of Control was prepared by a State-Certified Engineering Geologist for both formation and subsequent amendments of the GHAD. Pursuant to Section 26509, this Plan of Control was prepared by an engineering geologist certified pursuant to Section 7822 of the Business and Professions Code and describes potential geologic hazards within the proposed GHAD boundaries. It also provides a plan for the prevention, mitigation, abatement, and control thereof. As used in this Plan of Control, and as provided in Section 26507, "geologic hazard" means an actual or threatened landslide, land subsidence, soil erosion, earthquake, fault movement, or any other natural or unnatural movement of land or earth. The hazard mitigation plan will be incorporated by reference at the time of the next update.

32.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 32-6 lists past occurrences of natural hazards for which specific damage was recorded in the San Ramon Geological Hazard Abatement District. Other hazard events that broadly affected the entire planning area, including the San Ramon Geological Hazard Abatement District, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 32-6. Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Landslide	DR CA 4301	2017	$1,200,842
Landslide	NA	2016	$131,302
Landslide	NA	2015	$149,379
Landslide	NA	2014	$160,130
Landslide	NA	2013	$124,165
Landslide	NA	2012	$202,170
Landslide	NA	2011	$263,678
Landslide	NA	2010	$72,000
Landslide	NA	2007	$221,500

32.6 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. Noted vulnerabilities within the district include the following:

- Over the past 10 years, the GHAD has experienced approximately $2,525,166 in landslide/slope stability repair activity.
- Various slopes need to be evaluated for preventative erosion protection and/or repair activities in areas that threaten public infrastructure and private property.
- Slopes and hillsides need monitoring in order to determine if preventative measures should be installed to minimize the risk of landslides.
- New methods need to be developed/evaluated to survey slopes and hillsides in order to determine soil movement at the earliest opportunity.
- Enhanced fuel management practices need to be evaluated to reduce the risk of wildfires, in particular after higher than average rainfall seasons where vegetation growth may be above average.

32.7 HAZARD RISK RANKING

Table 32-7 presents a local ranking for the San Ramon Geological Hazard Abatement District of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 32-7. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake[b]	54	High
2	Landslide[e]	54	High
3	Severe weather	30	Medium
4	Flood[c]	18	Medium
5	Wildfire[e]	14	Medium
6	Drought	9	Low
7	Dam and levee failure[a]	0	None
7	Sea level rise[d]	0	None
7	Tsunami	0	None

a. Based on the level of detail conducted in the risk assessment, the risk ranking for this hazard is focused solely on dam failure impacts. See Chapter 6.4 of Volume 1 for combined dam inundation list on which this assessment is based.
b. Haywired M7.05 event was used to assign probability and impacts
c. 1-percent annual chance event was used to assign probability and impacts
d. 2100 upper range estimates and extreme tide are used to assign probability and impacts
e. Very High and High severity zones were used to assign probability and impacts

32.8 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 32-8 lists the actions that make up the San Ramon Geological Hazard Abatement District hazard mitigation action plan. Table 32-9 identifies the priority for each action. Table 32-10 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 32-8. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
SRGHAD-1—Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	SRGHAD	High	HMGP, PDM, FMA	Short-term
SRGHAD-2—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 16	SRGHAD	Low	Staff Time, General Funds	Short-term
SRGHAD-3—Enhance fire break mowing, fuel control, and grazing activities within open space parcels owned or maintained by the GHAD.						
Existing	Wildfire	1, 3, 4, 6, 12, 13, 14, 17	SRGHAD	Medium	HMGP, General Fund	Short-term
SRGHAD-4—Install surface and sub-surface drainage infrastructure and conduct slope stabilization activities along hillsides to reduce or eliminate landslide activity.						
Existing	Landslides, Earthquake	1, 6, 7, 13, 17	SRGHAD	Medium	HMGP, PDM, FMA, General Fund	Short-term
SRGHAD-5—Install monitoring devices to detect geologic activity that could indicate the formation of a landslide.						
Existing	Landslides	1, 6, 7, 13, 17	SRGHAD	Medium	HMGP, PDM, General Fund	Short-term
SRGHAD-6—Purchase a fixed wing UAS to survey acres of hillside using LiDAR or point cloud mapping to detect geologic activity.						
Existing	Landslides	1, 3, 6, 7, 13, 17	SRGHAD	Medium	HMGP, PDM, FMA, General Fund	Short-term

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 32-9. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
SRGHAD-1	8	High	High	Yes	Yes	No	Medium	High
SRGHAD-2	3	Low	Low	Yes	No	Yes	High	Low
SRGHAD-3	8	High	Low	Yes	Yes	Yes	Medium	Medium
SRGHAD-4	5	High	Medium	Yes	Yes	No	Medium	Medium
SRGHAD-5	5	High	Low	Yes	Yes	No	Medium	Medium
SRGHAD-6	6	High	Low	Yes	Yes	Yes	Medium	Medium

a. See the introduction to this volume for explanation of priorities.

Table 32-10. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	SRGHAD-1, SRGHAD-2	SRGHAD-1, SRGHAD-2	SRGHAD-2	SRGHAD-2	SRGHAD-1	SRGHAD-2	SGRHAD-1, SRGHAD-2	SRGHAD-2
Dam and Levee failure								
Drought								
Earthquake	SRGHAD-4					SRGHAD-4		SRGHAD-6
Flood								
Landslide	SRGHAD-4, SRGHAD-5, SRGHAD-6	SRGHAD-4, SRGHAD-5, SRGHAD-6	SRGHAD-6	SRGHAD-4, SRGHAD-5, SRGHAD-6				SRGHAD-6
Severe weather								
Tsunami								
Wildfire	SRGHAD-3	SRGHAD-3	SRGHAD-3	SRGHAD-3				

a. See the introduction to this volume for explanation of mitigation types.

32.9 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **GHAD Plan of Control**—The GHAD Plan of Control was reviewed to determine what enhanced maintenance activities could be implemented to further reduce the risks associated with the GHAD.
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.

33. San Ramon Valley Fire Protection District

33.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Derek Krause, Deputy Fire Chief
1500 Bollinger Canyon Rd
San Ramon, CA 94583
Telephone: 925.838.6602
e-mail Address: dkrause@srvfire.ca.gov

Alternate Point of Contact
Frank Drayton, Fire & Life Safety Manager
1500 Bollinger Canyon Rd
San Ramon, CA 94583
Telephone: 925.838.6659
e-mail Address: fdrayton@srvfire.ca.gov

33.2 JURISDICTION PROFILE

33.2.1 Overview

The San Ramon Valley Fire Protection District (SRVFPD) is an autonomous Special District as defined under the Fire Protection District Law of 1987, Health and Safety Code, Section 13800, of the State of California. The SRVFPD is responsible for providing the highest level of emergency and non-emergency services to the community in an effort to protect life, the environment and property. The early beginnings of the SRVFPD took place during a meeting on March 19, 1912 when the Danville Farm Defense Fire District was established. Numerous reorganizations and mergers have resulted in the San Ramon Valley Fire Protection District as it exists today.

A five-member elected Board of Directors, each serving a staggered four year term, governs the SRVFPD. The Fire Chief oversees general operations of the SRVFPD in accordance with the policy direction prescribed by the Board of Directors. The Fire Chief also serves as Treasurer for the District. The primary source of revenue for the operation of the SRVFPD is generated through the collection of secured, unsecured, and supplemental property taxes (92%), with most remaining revenue coming from ambulance service fees and interest income.

The SRVFPD employs nearly 200 personnel, in addition to approximately 50 volunteers serving in four separate volunteer programs. The SRVFPD also facilitates training for a robust Community Emergency Response Team (CERT) cadre of trained citizen volunteers. The SRVFPD maintains ten fire stations, two annex buildings, one training site and one administrative building. Of the ten fire stations, nine provide quarters for paid firefighters and one remote station is staffed by fifteen volunteer personnel who respond from their personal residences. There are also approximately twenty-one reserve firefighters. The SRVFPD staffs fifteen companies, including structure and wildland engines, three truck companies, five transport Advanced Life Support (ALS) ambulances, and specialized Hazardous Materials, Urban Search and Rescue, Mobile Communications, and other support units. In addition, the SRVFPD operates its own nationally accredited (NAEMD) 9-1-1 Communications Center staffed daily with three Dispatchers. All other Administrative personnel reside at the Administrative Office.

The SRVFPD service area encompasses approximately 155 square miles, covering the communities of Alamo, Blackhawk, the Town of Danville, Diablo, the City of San Ramon, the southern area of Morgan Territory and the

Tassajara Valley. Within the boundaries of the SRVFPD are expansive wildland areas, large single-family homes and multi-residential complexes, hotels, a regional hospital, numerous convalescent/assisted living facilities, equestrian areas, hiking trails, rock climbing areas, and a facility housing a low-level nuclear reactor. The SRVFPD is also bisected by a major interstate highway (I-680).

The total population served by the SRVFPD in 2016 exceeded 200,000. On business days, this figure grows by another 30,000 to include people employed in the Bishop Ranch Business Park, a 585 acre development with nine million square feet of office space located in San Ramon. Since its inception in 1984, the Business Park has evolved into a nationally recognized premier business center, comprised of over 300 diverse companies ranging from established Global 500 companies such as the corporate headquarters of Chevron Corporation to innovative start-ups in high growth fields.

An outline of the area served is as follows:

- Northern boundary: Alamo/Unincorporated Contra Costa County (Walnut Creek) border
- Eastern boundary: Los Vaqueros Reservoir and East Contra Costa County Fire District border
- Southern boundary: Contra Costa County/Alameda County line
- Western boundary: Contra Costa County/Alameda County line.

A Moderate growth in new residential construction and an increase in commercial building and density of land uses will represent a minor to moderate increase in population and thus a projected low increase in call volume.

The District participates in the Public Protection Class Rating System and currently has a rating of 02/2Y.

The San Ramon Valley Fire Protection District Board assumes responsibility for the adoption of this plan; The Fire Chief at SRVFPD will oversee its implementation.

33.2.2 Assets

Table 33-1 summarizes the critical assets of the district and their value.

33.3 CAPABILITY ASSESSMENT

33.3.1 Planning and Regulatory Capabilities

Jurisdictions develop plans and programs and implement rules and regulations to protect and serve residents. When effectively prepared and administered, these plans, programs and regulations can support the implementation of mitigation actions. The following existing codes, ordinances, policies, programs or plans are applicable to this hazard mitigation plan

- **California Department of Public Health—**The District abides by the regulations and requirements of the California Department of Public Health, which requires mitigation for life safety.
- **California and US Environmental Protection Agencies—**The District abides by the regulations and requirements of the California and US Environmental Protection Agencies, which requires mitigation for identified natural hazards.
- **California Code of Regulations—**The District abides by the regulations and requirements of the California Code of Regulations which requires mitigation for identified natural hazards.
- **Federal Endangered Species Act—**The District abides by the regulations and requirements of the Federal Endangered Species Act which requires regulations to protect wildlife and balance mitigation.

Table 33-1. Special Purpose District Assets

Asset	Value
Property	
15.1 acres	$30,200,000
Critical Infrastructure and Equipment	
18 Type I Fire Engines	$13,500,000.00
3 Type I Tractor Drawn Aerial Ladder Trucks	$4,500,000
10 Type 3 Fire Engines	$4,000,000
2 Type 6 Fire Engines	$500,000
3 Water Tenders	$1,200,000
1 Type 1 Communications Support Unit	$1,200,000
1 Breathing Support Unit	$1,100,000
1 Type 1 HazMat Vehicle	$1,100,000
1 Urban Search and Rescue Vehicle	$1,100,100
9 Advanced Life Support Modular Ambulance	$4,050,000
29-- Staff and Utility Vehicles	$1,670,000
Total:	$37,920,000
Critical Facilities	
10 Fire Stations	55,500,000.00
1 Administrative Building	$12,000,000
1 Training Building	Unavailable
Total:	$144,620,000

- **California Environmental Quality Act (CEQA)—**The District abides by the regulations and requirements of the California Environmental Quality Act, which requires mitigation for identified natural hazards.
- **SRVFPD Ordinances # 16, 18, 22—**The ordinances were adopted in the 2007 CA Building Code Standards and Regulations and are enforced as part of normal operations.
- **SRVFPD Resolution 99-05**—The seismic retrofit of Stations No. 34, 35 and 39 are complete.
- **SRVFPD 2009 Standards of Cover—**The Standards of cover continue to be updated yearly to match community growth and coverage 2016.
- **SRVFPD 2015 Damage Assessment Guide—**The Damage Assessment Guide was updated in 2015 and continues to layout the priority of needs in an emergency
- **Contra Costa County Community Wildfire Protection Plan**—2014

33.3.2 Fiscal, Administrative and Technical Capabilities

Fiscal capability is an indicator of a jurisdiction's ability to fulfill the financial needs associated with hazard mitigation projects. An assessment of fiscal capabilities is presented in Table 33-2. Administrative and technical capabilities represent a jurisdiction's staffing resources for carrying out the mitigation strategy. An assessment of administrative and technical capabilities is presented in Table 33-3.

33.3.3 Education and Outreach Capabilities

Outreach and education capability identifies the connection between government and community members, which opens a dialogue needed for a more resilient community. An assessment of education and outreach capabilities is presented in Table 33-4.

Table 33-2. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Federal Grant Programs	Yes
Other	Special Revenue Bonds

Table 33-3. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Parks and Rec, City of San Ramon, Planner
Engineers or professionals trained in building or infrastructure construction practices	Yes	Fire & Life Safety Division, SRV Fire, Fire & Life Safety Manager
Planners or engineers with an understanding of natural hazards	Yes	Fire & Life Safety Division, SRV Fire, Plans Examiner
Staff with training in benefit/cost analysis	Yes	Accounting, SRV Fire, Controller
Surveyors	No	
Personnel skilled or trained in GIS applications	Yes	Technology, SRV Fire, Technology Systems Manager
Scientist familiar with natural hazards in local area	Yes	Geology, USGS, Senior Geologist
Emergency manager	Yes	Fire & Life Safety Division, SRV Fire, Emergency Manager/Coordinator
Grant writers	Yes	Fire & Life Safety Division, SRV Fire, Emergency Coordinator
Other		

Table 33-4. Education and Outreach

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe	Yes Firedepartment.org/Hazard Abatement
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe	Yes PIO Office
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly specify	Yes San Ramon Valley Emergency Preparedness Citizen Corps Council
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe	Yes Public Education Programs
Do you have any established warning systems for hazard events? • If yes, please briefly describe	No N/A

33.3.4 Adaptive Capacity for Climate Change

Given the uncertainties associated with how hazard risk may change with a changing climate, a jurisdiction's ability to track such changes and adapt as needed is an important component of the mitigation strategy. Table 33-5 summarizes the District's adaptive capacity for climate change.

Table 33-5. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts	Low
Comments/Additional Information: As the City of San Ramon, Town of Danville and our unincorporated areas covered by the County continue to improve planning on climate change we will support and coordinate planning accordingly.	
Jurisdiction-level monitoring of climate change impacts	Low
Comments/Additional Information: As the City of San Ramon, Town of Danville and our unincorporated areas covered by the County continue to improve planning on climate change we will support and coordinate planning accordingly.	
Technical resources to assess proposed strategies for feasibility and externalities	Low
Comments/Additional Information: As the City of San Ramon, Town of Danville and our unincorporated areas covered by the County acquire any technical resources and assess for planning the Fire District will support their efforts.	
Jurisdiction-level capacity for development of greenhouse gas emissions inventory	Low
Comments/Additional Information: As the City of San Ramon, Town of Danville and our unincorporated areas covered by the County look to address greenhouse issues we will support and coordinate update planning accordingly.	
Capital planning and land use decisions informed by potential climate impacts	Low
Comments/Additional Information: As the City of San Ramon, Town of Danville and our unincorporated areas covered by the County look to address potential climate impacts we will support and coordinate planning accordingly.	
Participation in regional groups addressing climate risks	Low
Comments/Additional Information: As the City of San Ramon, Town of Danville and our unincorporated areas covered by the County look form groups addressing climate risks we will support and coordinate planning accordingly.	
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes	Low
Comments/Additional Information: As the City of San Ramon and Town of Danville activate their Councils to determine appropriate target for climate change we will support and coordinate amendments needed at the Fire District Level.	
Identified strategies for greenhouse gas mitigation efforts	Low
Comments/Additional Information: As the City of San Ramon and Town of Danville activate their Councils to determine appropriate target for greenhouse gas mitigation efforts we will support and coordinate amendments needed at the Fire District Level.	
Identified strategies for adaptation to impacts	Low
Comments/Additional Information: As the City of San Ramon and Town of Danville activate their Councils to determine strategies for adaption to climate impacts we will support and coordinate amendments needed at the Fire District Level.	
Champions for climate action in local government departments	Low
Comments/Additional Information: As the City of San Ramon and Town of Danville activate their Councils to determine strategies to Champion for climate change we will coordinate with that effort.	
Political support for implementing climate change adaptation strategies	Low
Comments/Additional Information: As the City of San Ramon and Town of Danville activate their Councils to implement climate change adaptation strategies we will coordinate with that effort.	

Criterion	Jurisdiction Rating[a]
Financial resources devoted to climate change adaptation	Low
Comments/Additional Information: It is unknown at this time. However, we will work closely with the City of San Ramon, Town of Danville and our unincorporated areas covered by the County and determine what financial resources need to be created for future climate change.	
Local authority over sectors likely to be negative impacted	Low
Comments/Additional Information: It is unknown at this time. However, we will work closely with the City of San Ramon, Town of Danville and our unincorporated areas covered by the County.	
Public Capacity	
Local residents knowledge of and understanding of climate risk	Low
Comments/Additional Information: As the City of San Ramon, Town of Danville and our unincorporated areas covered by the County begin to understand climate risk and communicate to the public the Fire District will follow suit and support this effort.	
Local residents support of adaptation efforts	Low
Comments/Additional Information: It is unknown at this time how supportive residents will be of adaption efforts the City and Town may take in the future.	
Local residents' capacity to adapt to climate impacts	Low
Comments/Additional Information: It is unknown at this time what the local residents' capacity to adapt climate impacts will be.	
Local economy current capacity to adapt to climate impacts	Low
Comments/Additional Information: It is unknown at this time what the current capacity of the local economy to adapt to climate impacts will be.	
Local ecosystems capacity to adapt to climate impacts	Low
Comments/Additional Information: It is unknown at this time what the capacity of the local ecosystems to adapt to climate impacts will be.	

a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

33.4 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

33.4.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the San Ramon Valley Fire Protection District made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy as discussed through mitigation typologies:

- **Prevention**—The Fire District enforces Weed Abatement to reduce potential wildfires and controls landslides and flood plain issues. The law is followed to preserve open space, wildlife and adherence to EBMUD Water standards and regulations around storm water management. The Fire District enforces the uniform Fire Code and works with the Town of Danville, City of San Ramon and Contra Costa County to enforce fire code issues.

- **Property Protection**—The Fire District enforce the Uniform Fire Code and has special construction standards for home that are within the wildland interface areas. Also the Fire District has a very aggressive weed abatement program that helps the fire threat thought-out the summer months.
- **Public Education and Awareness**—The District has created the SRV Emergency Preparedness Citizen Corps Council. On this council sits our City Managers from both the Town of Danville and City of San Ramon, Fire Chief, Police Chiefs, Mayors and Emergency Managers. The meetings and actions produced by this body of people are to educate and inform our Citizens. We run programs such as CERT, HeartSafe, Access & Functional Needs training and a team versed in Emergency Communications. In addition, the Fire District has a vegetation management and hazard mitigation program titled Exterior Hazard Abatement (EHA), to ensure the safety of all properties from Fire.
- **Natural Resource Protection**— The District follows regulations enacted by EMBUD and East Bay Regional Parks to ensure the District's actions minimize hazard loss and also to preserve or restore the functions of natural systems. In addition, we have our own vegetation management program (EHA) to safeguard property owners throughout our District.
- **Emergency Services**— The District works closely with Contra Costa County to initiate the Early Warning System when necessary. We will use our State resources immediately following, a disaster or hazard event. The District also utilizes mutual aid for emergency response services when District resources are below safe levels.
- **Structural Projects**—The Fire District adheres to plans and approvals by the City and Town enforcing retaining walls, floodwalls and levees to protect properties.
- **San Ramon Valley Emergency Preparedness Citizens Corps Council (SRVEPCCC)-**The Town is part of a Joint Powers Authority (JPA) that includes Contra Costa County, The San Ramon Valley Unified School District, The City of San Ramon and the San Ramon Valley Fire Prevention District. The SRVEPCCC works collaboratively to ensure the San Ramon Valley is prepared to respond to, recover from and mitigate a natural or manmade disaster.

Resources listed in Section 33.11 were used to provide information on hazard events and local capabilities within the jurisdiction.

33.4.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the San Ramon Valley Fire Protection District will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan include actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **The Fire District Emergency Operations Plan (EOP)**—The District will ensure that the EOP is integrated with the LHMP by linking the annual review and revision of these documents. In addition, include the Disaster Debris Management Plan (DDMP)- if needed to scope out if contract services are needed for the Fire District.
- **SB 379-Climate Change**—The Fire District will move forward with the knowledge of the bill and address evacuation routes and minimum road widths and clearances around structures, as those items relate to identified fire and geologic hazards. Historical data on vulnerable areas to wildfires will be kept and utilized for planning.

33.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 33-6 lists past occurrences of natural hazards for which specific damage was recorded in the San Ramon Valley Fire Protection District. Other hazard events that broadly affected the entire planning area, including the San Ramon Valley Fire Protection District, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 33-6. Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Morgan Territory Fire & Slide	N/A	January 2017	No estimates available
2015 Swarm of Earthquake (400 approx.)	N/A	October 2015	No estimates available
Landslide	N/A	2008	No estimates available
Wind	N/A	2008	No estimates available
Frost Damage	N/A	2007	No estimates available
Landslide	N/A	2006	No estimates available
Landslide	N/A	2005	No estimates available
Landslide	N/A	2004	No estimates available
Flood	N/A	2003	No estimates available
Frost Damage/Wind	N/A	2002	No estimates available
Landslide	N/A	2001	No estimates available
Wind	N/A	2001	No estimates available
Landslide	N/A	2000	No estimates available
Heat/Wind	N/A	2000	No estimates available
Landslide	N/A	1999	No estimates available
Wind	N/A	1999	No estimates available
Landslide	N/A	1998	No estimates available
Wind	N/A	1998	No estimates available
Severe Storm/Wind	N/A	1995	No estimates available
Frost Damage	N/A	1994	No estimates available
Wind	N/A	1993	No estimates available
Heat/Wind/Frost Damage	N/A	1992	No estimates available
Frost Damage	N/A	1990	No estimates available
Frost Damage	N/A	1989	No estimates available
Wind	N/A	1988	No estimates available
Wind	N/A	1987	No estimates available
Severe Storm/Wind	N/A	1983	No estimates available
Wind	N/A	1982	No estimates available
Frost Damage	N/A	1981	No estimates available
Severe Storm	N/A	1980	No estimates available

33.6 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. Noted vulnerabilities within the district include the following:

- The West side of the District by Montair Elementary and back side by Bollinger Canyon is located in high severity risk zones.
- Fire station number 32 is in need of a new station upgrade and this is in the works.
- Several Fire Stations are in need of an additional generator and access to fuel supply.
- After an major earthquake event, access to needed water supplies may be interrupted. Greater redundancy is needed in the district's water supply. We have established a relationship with the Emergency Manager at EBMUD Steve to continue building resiliency.
- A number of communities have only one point of ingress and egress, this would be extremely problematic in the event of a major hazard event impacting these areas.

33.7 HAZARD RISK RANKING

Table 33-7 presents a local ranking for the San Ramon Valley Fire Protection District of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 33-7. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Wildfire	54	High
2	Earthquake	48	High
3	Flood	36	High
3	Landslide	36	High
4	Severe weather	12	Low
5	Drought	6	Low
6	Dam and levee failure	0	None
6	Sea level rise	0	None
6	Tsunami	0	None

33.8 STATUS OF PREVIOUS PLAN ACTIONS

Table 33-8 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

33.9 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 33-9 lists the actions that make up the San Ramon Valley Fire Protection District hazard mitigation action plan. Table 33-10 identifies the priority for each action. Table 33-11 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 33-8. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
SRM-1—Support County-wide initiatives identified in the 2011 Hazard Mitigation Plan.	X			
Comment: Ongoing throughout the performance period of the 2017 plan and will be continued through the performance period of the 2017 plan.				
SRM-2—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in the 2011 Hazard Mitigation Plan.	X		X	SRVFPD-2
Comment: Ongoing				
SRM-3—Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan			X	SRVFPD-3
Comment: *SRVFPD does not develop a General Plan, but will integrate the hazard mitigation plan with the Emergency Operations Plan*				
SRM-4—Pre-position emergency power generation capacity in critical buildings to maintain continuity of government and services	X		X	SRVFPD-4
Comment: Ongoing				
SRM-5—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	SRVFPD-5
Comment:				
SRM- 6—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		X	SRVFPD-6
Comment: Ongoing				
SRM-7—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	SRVFPD-7
Comment:				
SRM-8—Develop and maintain 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		X	SRVFPD-8
Comment: Ongoing				
SRM-9—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		X	SRVFPD-10
Comment: Ongoing				

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
SRM-10—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. *Comment:* Ongoing	X		X	SRVFPD-10
SRM-11—Enforce a 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. *Comment:*	X		X	SRVFPD-11
SRM-12—Require that development in high fire hazard areas provide adequate access roads (with width and vertical clearance that meet the minimum standards of the Fire Code or relevant local ordinance), onsite fire protection systems, evacuation signage, and fire breaks. *Comment:* Ongoing	X		X	SRVFPD-12
SRM-13—Ensure adequate fire equipment road or fire road access to developed and open space areas. *Comment: Ongoing*	X		X	SRVFPD-13
SRM-14—Maintain fire roads and/or public right-of-way roads and keep them passable at all times. *Comment:* Ongoing	X		X	SRVFPD-14
SRM-15—Continue maintenance efforts to keep drains, storm drains and creeks free of obstructions, while retaining vegetation in the channel (as appropriate), to allow for free flow of water *Comment:* Ongoing	X		X	SRVFPD-15
SRM-16—Facilitate and/or coordinate the distribution of materials that are prepared by others, such as by placing materials in District, city or utility newsletters, websites, or on community access channels, as appropriate. *Comment:* Ongoing	X		X	SRVFPD-16

Table 33-9. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
SRVFPD-1—Where appropriate (feasible and cost-effective), support retrofitting or relocation of District facilities in high hazard areas, prioritizing structures that have experienced repetitive losses and/or structures impacted by hazards ranked as "high" (wildfire, earthquake, flood, landslide).						
Existing	Wildfire, Earthquake, Flood and Landslide	1, 4, 7, 9, 12, 14, 15, 17	City of San Ramon Planning Department	High	HMGP, PDM, FMA	Short-term
SRVFPD-2—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All hazards assessed by this plan	3, 8, 16	County*, SRVFPD	Low	Staff Time, General Funds	Short-term
SRVFPD-3—Integrate appropriate components of this plan on risk and vulnerability into the District's Emergency Operation Plan (EOP) upon its next comprehensive update.						
Existing	Wildfire, earthquake, landslide, flood and severe weather	2, 13	San Ramon Valley Fire & Life Safety Division	Low	Staff Time, General Funds	Short-term
SRVFPD-4—Keep current with state fire code amendments and continue to meet state requirements while approving plans for constructing or remodeling of critical infrastructure.						
New and Existing	Fire	1, 4, 7, 11, 15	California Fire Chiefs Association	Medium	Staff time, General Funds	Ongoing
SRVFPD-5—Utilize the risk assessment of this plan to guide and highlight low and high risks and to train employees and community members in areas of actions to take after an emergency.						
New and Existing	All hazards assessed and ranked by this plan	3, 14, 16	San Ramon Valley Fire & Life Safety Division	Low	Staff time, General Funds	Long-term
SRVFPD-6—Continue to work with EMBUD at joint meetings to ensure a reliable source of water for fire suppression (meeting acceptable standards for minimum volume and duration of flow) for existing and new development						
New and Existing	All hazards assessed by this plan	1, 2, 4, 7, 9, 10,	San Ramon Valley Fire & Life Safety Division	Low	Staff time, General Funds, Cal Chiefs Grant, Possibly FEMA	Long-term
SRVFPD-7—A coordinated approached will be established between fire jurisdictions and water supply agencies to identify needed improvements to the water distribution system, initially focusing on areas of highest wildfire hazard.						
New and Existing	Wildfire, earthquake , landslide, flood and severe weather	2, 4, 5, 7, 12,	San Ramon Valley Fire Operations Division	Medium	Staff time, General Funds, HMGP	Long-term
SRVFPD-8—Actively enforce the adopted 2016 SRV Fire Ordinance #34 to maintain defensible space vegetation program that includes 30-foot clearance of access and evacuation roads and routes to critical facilities and (b) all non-native species within the 30 feet of access and evacuation roads and routes to critical facilities.						
New and Existing	Wildfire	2, 3, 4, 8,	San Ramon Valley Fire & Life Safety Division	High	Staff time, General Funds, Wildland Protection Association	Long-term
SRVFPD-9—Actively enforce the Fire Code Chapter 5 updated 2016 that 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						
New and Existing	Wildfire	2, 4, 8,	San Ramon Valley Fire & Life Safety Division	Medium	Staff time, General Funds	Long-term
SRVFPD-10—Actively enforce a 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 as recommended by the Fire Code updated 2016.						
New and Existing	Wildfire	2, 3, 4, 8,	San Ramon Valley Fire & Life Safety Division	Low	Staff time, General Funds	Long-term

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
SRVFPD-11—Adequate access roads (with width and vertical clearance have met the minimum standards of the Fire Code or relevant local ordinance), onsite fire protection systems, evacuation signage, and fire breaks.						
New and Existing	Wildfire	2, 3, 4, 8,	San Ramon Valley Fire & Life Safety Division	Low	Staff time, General Funds	Long-term
SRVFPD-12—Continue to ensure adequate fire equipment road or fire road access to developed and open space areas in accordance with the Fire Code and local ordinances.						
New and Existing	Wildfire	2, 3, 8,	San Ramon Valley Fire & Life Safety Division	Low	Staff time, General Funds	Long-term
SRVFPD-13—Continue to maintain fire roads and/or public right-of-way roads and keep them passable at all times in accordance with the Fire Code and local ordinances.						
New and Existing	Wildfire, Landslide	2, 3, 4, 8,	San Ramon Valley Fire & Life Safety Division	Low	Staff time, General Funds	Long-term
SRVFPD-14—Continue to enforce the maintenance efforts to keep drains, storm drains and creeks free of obstructions, while retaining vegetation in the channel (as appropriate), to allow for free flow of water						
New and Existing	Wildfire, Flood, Severe Weather	2, 4, 5, 9, 10	San Ramon Valley Fire & Life Safety Division	Low	Staff time, General Funds	Long-term
SRVFPD-15—Continue to facilitate and/or coordinate the distribution of public outreach materials that are prepared by others on property protection measures for all hazards ranked as "high" in Table 33-7, by placing materials in District, city or utility newsletters, websites, or on community access channels, as appropriate.						
New and Existing	Wildfire	3, 4, 16	San Ramon Valley Fire & Life Safety Division	Low	Staff time, General Funds	Long-term

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 33-10. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
SRVFPD-1	8	High	High	Yes	Yes	No	Medium	High
SRVFPD-2	3	Low	Low	Yes	No	Yes	High	Low
SRVFPD-3	2	Low	Low	Yes	No	Yes	Low	Low
SRVFPD-4	5	High	Low	Yes	No	Yes	High	Low
SRVFPD-5	3	Low	Low	Yes	No	Yes	Medium	Low
SRVFPD-6	6	Medium	Low	Yes	Yes	Yes	Medium	Low
SRVFPD-7	5	Medium	Low	Yes	Yes	Yes	High	Low
SRVFPD-8	4	High	Low	Yes	Yes	Yes	High	Low
SRVFPD-9	3	Medium	Low	Yes	No	Yes	High	Low
SRVFPD-10	4	Medium	Low	Yes	No	Yes	High	Low
SRVFPD-11	4	Medium	Low	Yes	No	Yes	High	Low
SRVFPD-12	3	Medium	Low	Yes	No	Yes	High	Low
SRVFPD-13	4	Medium	Low	Yes	No	Yes	High	Low
SRVFPD-14	5	Low	Low	Yes	No	Yes	High	Low
SRVFPD-15	3	Low	Low	Yes	No	Yes	High	Low

a. See the introduction to this volume for explanation of priorities.

Table 33-11. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	SRVFPD-2, 3, 4	SRVFPD-1			SRVFPD-7, 9, 10, 11, 12		SRVFPD-3, 5	SRVFPD-2, 6
Dam and Levee failure	SRVFPD-1, 2	SRVFPD-1, 4	SRVFPD-15					
Drought	SRVFPD-4	SRVFPD-4	SRVFPD-15	SRVFPD-5, 14	SRVFPD-5, 7	SRVFPD-1, 4		
Earthquake	SRVFPD-1, 2, 4	SRVFPD-1, 4	SRVFPD-15, 3	SRVFPD-5, 6, 14	SRVFPD-5, 7	SRVFPD-1, 4		
Flood	SRVFPD-1, 2	SRVFPD-1, 4	SRVFPD-15, 3	SRVFPD-5, 6, 7, 14	SRVFPD-5, 7	SRVFPD-1, 4		
Landslide	SRVFPD-1, 2, 4	SRVFPD-1, 4	SRVFPD-15, 3	SRVFPD-5, 6, 14		SRVFPD-1, 4		
Severe weather	SRVFPD-2	SRVFPD-1	SRVFPD-15	SRVFPD-5, 6, 7, 14	SRVFPD- 5, 7			
Tsunami	SRVFPD-2	SRVFPD-1	SRVFPD-15	SRVFPD- 5				
Wildfire	SRVFPD-1, 2	SRVFPD-1, 4	SRVFPD-15, 3	SRVFPD-5, 8	SRVFPD-5, 7, 9, 10, 11, 12	SRVFPD-1, 4		

a. See the introduction to this volume for explanation of mitigation types.

33.10 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

We will stay closely partnered with the City of San Ramon, Town of Danville and our unincorporated areas covered by the County about Climate Change and Policy. In addition, we will be attending a Disability and climate change training his year addressing access and functional needs and preparing for the future and understanding our risk and vulnerabilities.

33.11 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.
- **The Community Wildfire Protection Plan**—The CWPP was reviewed for potential mitigation strategies to be included in the plan.

34. San Ramon Valley Unified School District

34.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Brent Hull, Risk Manager
3280 Crow Canyon Rd.
San Ramon CA, 94583
Telephone: 925-552-5035
e-mail Address: bhull@srvusd.net

Alternate Point of Contact
Craig Cesco, Director of Maintenance
3280 Crow Canyon Rd.
San Ramon CA, 94583
Telephone: 925-824-1818
e-mail Address: ccesco@srvusd.net

34.2 JURISDICTION PROFILE

34.2.1 Overview

The San Ramon Valley Unified School District was established in 1965, and is a California TK-12 public school district within the County of Contra Costa. Funding to operate the district comes from the State of California and parent organizations. The district is comprised of 36 schools covering 18 square miles in area, serving more than 32,000 students with approximately 4,500 employees. Over the past several years the district grow at a rate between 200 and 400 students per year, but future trends show the growth slowing and leveling out. The district has a five member Board of Education that has adoptive authority. The district encompasses the communities of Alamo, Blackhawk, Danville, Diablo and San Ramon.

The Board of Education assumes responsibility for the adoption of this plan; Risk Manager/Management will oversee its implementation.

34.2.2 Assets

Table 34-1 summarizes the critical assets of the district and their value.

Table 34-1. Special District Assets

Asset	Value
Property	
567 acres of land	$279,735,595
Critical Infrastructure and Equipment	
7 Type 1 Buses	$105,000
46 Type 2 Buses	$690,000
41 Maintenance Vehicles	$615,000
7 Specialty Vehicles	$350,000
5 Warehouse Trucks	$275,000
2 Forklifts	$75,000

Asset	Value
2 Emergency Generators	$160,000
Service Center Walk-in Freezers	$200,000
Total:	$247,0000
Critical Facilities	
Alamo Elementary School	$7,734,555
Bella Vista Elementary School	$17,090,956
Bollinger Canyon Elementary School	$14,624,856
Coyote Creek Elementary School	$20,945,022
Country Club Elementary School	$11,748,055
Creekside Elementary School	$20,945,394
Golden View Elementary School	$10,874,623
Greenbrook Elementary School	$16,228,306
Green Valley Elementary School	$14,042,253
Hidden Hills Elementary School	$21,136,884
John Baldwin Elementary School	$14,494,869
Live Oak Elementary School	$22,127,294
Montair Elementary School	$12,412,643
Montevideo Elementary School	$11,314,840
Neil Armstrong Elementary School	$15,665,858
Quail Run Elementary School	$20,179,446
Rancho Romero Elementary School	$11,147,602
Sycamore Elementary School	$10,727,508
Tassajara Hills Elementary School	$12,367,187
Twin Creek Elementary School	$11,378,439
Vista Grande Elementary School	$13,446,037
Walt Disney Elementary School	$17,219,691
Charlotte Wood Middle School	$22,604,267
Diablo Vista Middle School	$23,521,423
Gale Ranch Middle School	$33,413,684
Iron Horse Middle School	$25,337,560
Los Cerros Middle School	$22,310,428
Pine Valley Middle School	$26,470,569
Stone Valley Middle School	$14,975,424
Windemere Ranch Middle School	$31,997,957
California High School	$98,364,383
Dougherty Valley High School	$110,530,180
Monte Vista High School	$85,994,367
San Ramon Valley High School	$68,793,930
Del Amigo (Continuation) High School	$3,689,522
Venture Independent Study	$3,024,088
Ed Center (District Offices)	$5,096,488
Service Center	$8,175,912
Total:	$911,260,500

34.3 CAPABILITY ASSESSMENT

34.3.1 Planning and Regulatory Capabilities

Jurisdictions develop plans and programs and implement rules and regulations to protect and serve residents. When effectively prepared and administered, these plans, programs and regulations can support the implementation of mitigation actions. The following existing codes, ordinances, policies, programs or plans are applicable to this hazard mitigation plan:

- **BP/AR 0450, Comprehensive Safety Plan—**3/2016
- **IIPP – Illness and Injury Prevention Program—**2017/18
- **FIT – Facility Inspection Tool—**2017
- **Healthy Schools Act (HSC)**
- **Americans with Disability Act**
- **BP 3514, Environmental Safety Programs**
- **BP 3514.1, Hazardous Substances/Communications Standards**
- **Cal/OSHA Regulations**
- **BP 3516, Emergency and Disaster Preparedness Plan**
- **AR 3516.3, Earthquake Emergency Procedure System**
- **SB 187 Comprehensive District Wide School Safety Plan (Emergency Management Plan)**—Designed to provide administrators with resources for protecting students, staff and school facilities, as well as to describe the responsibilities of staff members for wide range of emergency and disaster situations that may occur.

34.3.2 Fiscal, Administrative and Technical Capabilities

Fiscal capability is an indicator of a jurisdiction's ability to fulfill the financial needs associated with hazard mitigation projects. An assessment of fiscal capabilities is presented in Table 34-2. Administrative and technical capabilities represent a jurisdiction's staffing resources for carrying out the mitigation strategy. An assessment of administrative and technical capabilities is presented in Table 34-3.

Table 34-2. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Federal Grant Programs	Yes
Other	No

Table 34-3. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	No	
Engineers or professionals trained in building or infrastructure construction practices	Yes	Facilities Department
Planners or engineers with an understanding of natural hazards	No	
Staff with training in benefit/cost analysis	Yes	Chief Business Officer
Surveyors	No	
Personnel skilled or trained in GIS applications	No	
Scientist familiar with natural hazards in local area	No	
Emergency manager	Yes	Superintendent of Schools
Grant writers	No	
Other	No	

34.3.3 Education and Outreach Capabilities

Outreach and education capability identifies the connection between government and community members, which opens a dialogue needed for a more resilient community. An assessment of education and outreach capabilities is presented in Table 34-4.

Table 34-4. Education and Outreach

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe	No N/A
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe	No N/A
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly specify	No N/A
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe	Yes Cell phones, Emergency radio system, School Messenger to contact parents through email. phones or text
Do you have any established warning systems for hazard events? • If yes, please briefly describe	No N/A

34.3.4 Adaptive Capacity for Climate Change

Given the uncertainties associated with how hazard risk may change with a changing climate, a jurisdiction's ability to track such changes and adapt as needed is an important component of the mitigation strategy. Table 34-5 summarizes the District's adaptive capacity for climate change.

Table 34-5. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts *Comments/Additional Information: Understand the need for flexibility and change but not a priority*	Medium
Jurisdiction-level monitoring of climate change impacts *Comments/Additional Information: None provided*	Low
Technical resources to assess proposed strategies for feasibility and externalities *Comments/Additional Information: None provided*	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory *Comments/Additional Information: None provided*	Low
Capital planning and land use decisions informed by potential climate impacts *Comments/Additional Information: None provided*	Low
Participation in regional groups addressing climate risks *Comments/Additional Information: None provided*	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes *Comments/Additional Information: None provided*	Low
Identified strategies for greenhouse gas mitigation efforts *Comments/Additional Information: None provided*	Low
Identified strategies for adaptation to impacts *Comments/Additional Information: None provided*	Low
Champions for climate action in local government departments *Comments/Additional Information: None provided*	Low
Political support for implementing climate change adaptation strategies *Comments/Additional Information: None provided*	Low
Financial resources devoted to climate change adaptation *Comments/Additional Information: None provided*	Low
Local authority over sectors likely to be negative impacted *Comments/Additional Information: None provided*	Low
Public Capacity	
Local residents knowledge of and understanding of climate risk *Comments/Additional Information: Residents are aware of possible climate risks*	Medium
Local residents support of adaptation efforts *Comments/Additional Information: Unknown at this time*	Low
Local residents' capacity to adapt to climate impacts *Comments/Additional Information: Unknown at this time*	Low
Local economy current capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low
Local ecosystems capacity to adapt to climate impacts *Comments/Additional Information: None provided*	Low

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

34.4 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

34.4.1 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the San Ramon Valley Unified School District will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan include actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- Place the hazard mitigation plan on the district website
- Integrate the districts hazard mitigation plan with City of San Ramon and Town of Danville to increasing efficiency and communications during emergency situations.
- Understand and have plans in place for loss of utilities to schools
- Adopt climate action plan.

34.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 34-6 lists past occurrences of natural hazards for which specific damage was recorded in the San Ramon Valley Unified School District. Other hazard events that broadly affected the entire planning area, including the San Ramon Valley Unified School District, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 34-6. Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Severe Weather (Drought)	N/A	2011 - 2015	Not available
Flood	N/A	2003	Not available
Flood	N/A	2007	$607,640
Flood	N/A	2003	$5,762,719
Earthquake	N/A	10/17/1989	Not available
Severe Weather (Drought)	N/A	1991	Not available

34.6 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. Noted vulnerabilities within the district include the following:

- The District Service Center (Maintenance & Transportation) is not equipped with a backup generator. 4 District schools could have access cutoff in the event of hazardous event. There is only one way in and

out of Alamo, Sycamore Valley and Tassajara Hills Elementary schools. There is only one way in and out of the neighborhood to Rancho Romero.

- Flooding could affect operations at schools located by creeks and drainage culverts. 6 Elementary schools, 4 Middle schools and 3 High schools.

34.7 HAZARD RISK RANKING

Table 34-7 presents a local ranking for the San Ramon Valley Unified School District of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 34-7. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake	54	High
2	Severe weather	30	Medium
3	Landslide	15	Medium
3	Wildfire	15	Medium
4	Flood	12	Low
5	Dam and levee failure	6	Low
5	Drought	6	Low
6	Sea level rise	0	None
6	Tsunami	0	None

34.8 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 34-8 lists the actions that make up the San Ramon Valley Unified School District hazard mitigation action plan. Table 34-9 identifies the priority for each action. Table 34-10 summarizes the mitigation actions by hazard of concern and mitigation type.

34.9 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

One of the Districts action items is to complete a risk management evaluation for each site. This will help to understand the risks and vulnerabilities of each site. The evaluations will also help put a prioritize list together to either resolve these items in short period of time or to resolve at a later day when a site is modernized.

34.10 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Earthquakes**—homefacts.com/earthquakes/California/contracosta-county/sanramon.html. Historical information on area earthquakes
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.
- **High Risk Gas Line** – The San Ramon Patch newsletter was used to gain information on the large 10 inch fuel line that runs along Iron Horse Trail

Table 34-8. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline
SRVUSD 1 — Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 5, 7, 9, 10, 11, 12, 15	Facilities Depart	High	HMGP, PDM, FMA	Short-term
SRVUSD 2 — Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	All	Risk Management Depart	Low	Staff Time, General Funds	Short-term
SRVUSD 3 — Add emergency generator transfer box connects to all school Admin buildings so they can be powered up during a prolonged power outage						
New and Existing	All Hazards	2, 8, 13	Facilities Depart	High	General Fund, Bond	Ongoing
SRVUSD 4— Ensure appropriate staff is trained to support District functions when the (EOC) Emergency Operation Center is activated.						
New	All Hazards	2, 3	Risk Management Dept.	Low	General Fund	Short-term
SRVUSD 5 — District wide risk assessment of all schools and support staff sites						
Existing	All Hazards	1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 15	Facilities Depart /Risk Management Depart	Low	General Fund	Ongoing
SRVUSD 6 — Implement a storm drain preventative maintenance program to prevent flooding due to clogged drains						
Existing	Flooding	1, 10	Maintenance Depart.	Low	RRM Funds	Ongoing
SRVUSD 7— Reprogram existing radios to be more efficient in a true emergency and acquire additional radios for (EOC) Emergency Operation Center.						
New and Existing	All Hazards	2, 3	Risk Management Depart	Low	General Fund	Short-term
SRVUSD 8 — Update aerial maps of all sites that include utility shutoffs and other emergency information						
Existing	All Hazards	2, 6, 16	Facilities Depart	Low	General Fund	Ongoing
SRVUSD 9 — Install seismic natural gas shutoff valves on all main gas lines						
New and Existing	Earthquake	7, 11, 13	Maintenance Depart	Medium	RRM Fund	Short-term
SRVUSD 10 — Plan, instruct, equip campuses with procedures/protocols for hazardous materials event (gasoline, diesel and jet fuel line) along Iron Horse Trail or tank truck accident on i680						
New and Existing	Earthquake, Hazardous Materials Incident	2, 3, 5, 6, 7, 12, 14, 15,	Risk Management Depart	Low	General Fund	Short-term
SRVUSD 11—Purchase a facility to house district emergency supplies and equipment.						
New	All Hazards	1, 2, 3, 13	Risk Management	Medium	General Fund	Short-term

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 34-9. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
SRVUSD-1	8	High	High	Yes	Yes	No	Medium	High
SRVUSD-2	3	Low	Low	Yes	No	Yes	High	Low
SRVUSD-3	3	Medium	High	No	No	Yes	Medium	Medium
SRVUSD-4	2	High	Low	Yes	No	Yes	High	Low
SRVUSD-5	12	High	Low	Yes	No	Yes	High	Low
SRVUSD-6	2	High	Low	Yes	No	Yes	Medium	Low
SRVUSD-7	2	High	Medium	Yes	Yes	Yes	High	Medium
SRVUSD-8	3	Medium	Medium	Yes	No	Yes	Medium	Low
SRVUSD-9	3	High	Medium	Yes	No	Yes	Medium	Low
SRVUSD-10	8	Medium	Low	Yes	No	Yes	Medium	Low
SRVUSD-11	4	High	Medium	Yes	Yes	No	Medium	Medium

a. See the introduction to this volume for explanation of priorities.

Table 34-10. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	SRVUSD-1, 3, 6	SRVUSD-1, 2, 5, 6, 9	SRVUSD-2, 4, 5, 7		SRVUSD-2, 3, 4, 7, 8, 11	SRVUSD-1, 2, 3, 5		SRVUSD-2, 4
Dam and Levee failure								
Drought	SRVUSD-5	SRVUSD-3	SRVUSD-3, 5		SRVUSD-5			
Earthquake	SRVUSD-1, 3, 7, 8, 9, 10	SRVUSD-1, 5, 6, 9, 10	SRVUSD-1, 2, 4, 5, 7, 8, 9, 10		SRVUSD-2, 3, 4, 7, 8, 10, 11	SRVUSD-1, 2, 3, 5, 10		
Flood	SRVUSD-6	SRVUSD-6			SRVUSD-4, 7, 11			
Landslide	SRVUSD-5, 6	SRVUSD-5, 6	SRVUSD-6		SRVUSD-5, 11			
Severe weather	SRVUSD-2, 5, 6	SRVUSD-5, 6	SRVUSD-6		SRVUSD 11			
Tsunami								
Wildfire								

a. See the introduction to this volume for explanation of mitigation types.

35. West Contra Costa Unified School District

35.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Elizabeth MontesNation
Coordinator Disaster Preparedness and Safety
1108 Bissell Ave
Richmond, CA 94801
Telephone: 510-307-7862
e-mail Address: elizabeth.montesnation@wccusd.net

Alternate Point of Contact
Luis Freese
Executive Director, Facilities
1400 Marina Way South
Richmond, CA 94804
Telephone: 510-307-4554
e-mail Address: lfreese@wccusd.net

35.2 JURISDICTION PROFILE

35.2.1 Overview

The West Contra Costa Unified School District (WCCUSD) is a California K-12 public school district within the county of Contra Costa. The District is a Local Education Agency ("LEA") as recognized by the State of California and operates under the state's Education Code. It was formed in 1965 under the name of Richmond Unified School District, and in 1990 the District's name was changed to the West Contra Costa Unified School District. The district's five member governing body is the West Contra Costa Unified School District Board of Education. This board will assume the responsibility for the adoption and implementation of this plan. The district has 2,820 employees located in 67 building locations. These buildings include 37 grammar schools, 6 middle schools, 7 high schools, 6 alternative and continuation education schools, and 7 support facilities. The district has an area of 110 square miles, across five cities, and includes unincorporated areas of Contra Costa County.

The District currently serves a population of approximately 201,000 covering a land area of approximately 110 square miles (Hercules, Pinole, San Pablo, Richmond, El Cerrito, and unincorporated areas of the county).

The District has experienced overall declining enrollment from 1999 through 2010. Enrollment projections indicate flat to modest student population growth levels through 2020.

35.2.2 Assets

Table 35-1 summarizes the critical assets of the district and their value.

Table 35-1. Special Purpose District Assets

Asset	Value
Property	
574 acres (in 67 sites)	$28,411,359,424
Critical Infrastructure and Equipment	
None identified	
Critical Facilities	
Adams Middle School	$29,211,759
Administration	$7,977,330
Alvarado Adult Education Center	$12,007,834
Bayview Elementary	$12,828,499
Cameron Special Education Center	$3,806,573
Castro Elementary	$7,960,775
Cesar E Chavez Elementary	$10,120,493
Collins Elementary	$10,931,942
Coronado Elementary	$9,410,128
Crespi Middle School	$27,601,719
De Anza High	$91,500,000
Dover Elementary	$22,000,000
Edward M Downer Elementary	$24,870,230
El Cerrito High	$113,238,469
El Sobrante Elementary	$8,246,204
Ellerhorst Elementary	$20,330,323
Facilities Operation Center	$2,126,288
Fairmont Elementary	$8,500,000
Ford Elementary	$21,000,000
Furniture Warehouse	$2,815,373
Gompers Continuation High & Temp	$23,399,009
Grant Elementary	$11,276,074
Hanna Ranch Elementary	$10,615,750
Richmond College Prep	$1,050,594
Harding Elementary	$28,845,160
Harmon School/Knolls Center	$1,607,809
Helms Middle School	$52,000,000
Lupine Hills Elementary	$13,091,433
Hercules Middle/High School	$43,176,337
Highland Elementary	$9,115,677
Kappa High	$1,517,202
Kennedy High	$42,583,468
Kensington Elementary	$30,285,962
King Elementary	$16,000,000
Lake Elementary	$9,352,274
Leadership Public School	$2,115,540
Lincoln Elementary	$32,329,686
Lovonya DeJean Middle School	$33,188,054

Asset	Value
Madera Elementary	$9,203,597
Maintenance Shop	$3,173,149
Mira Vista Elementary	$22,029,476
Montalvin Manor Elementary	$22,453,080
Murphy Elementary	$7,853,228
Nutrition Center	$8,453,821
Nystrom Elementary	$16,805,354
Ohlone Elementary	5,368,063
Olinda Elementary	$6,320,781
Omega Continuation High	$720,852
Operations Department	$3,397,025
Peres Elementary	$40,348,699
Pinole Middle	$50,055,958
Pinole Valley High	$36,069,220
Portola Middle	$30,238,518
Pupil Services Center, North Campus, Transition Learning Center	$13,476,118
Richmond High	$65,044,837
Riverside Elementary	$21,680,569
Seaview Elementary	$5,519,711
Serra Adult Education	$4,348,002
Shannon Elementary	$6,411,940
Sheldon Elementary	$11,708,039
Sigma High	$396,560
Staff Development (Vista Hills) Vista High	$6,808,817
Stege Elementary	$9,124,924
Stewart Elementary	$12,995,499
Tara Hills Elementary	$9,559,720
Valley View Elementary	$6,134,669
Vehicle Storage & Repair	$1,232,700
Verde Elementary	$13,328,528
Warehouse/Maintenance/Operations	$7,167,293
Washington Elementary	$18,834,033
Wilson Elementary	$7,436,436
Total:	$697,502,350

35.3 CAPABILITY ASSESSMENT

35.3.1 Planning and Regulatory Capabilities

Jurisdictions develop plans and programs and implement rules and regulations to protect and serve residents. When effectively prepared and administered, these plans, programs and regulations can support the implementation of mitigation actions. The following existing codes, ordinances, policies, programs or plans are applicable to this hazard mitigation plan:

- **California Department of Public Health**—We work within the current laws and guidelines within the Department of Public Health for applicable projects.
- **California and US Environmental Protection Agencies**—Any applicable project is reviewed under the latest California and US statutes and Guidelines of the Environmental Protection Agencies.
- **California Code of Regulations**—Any applicable project is reviewed under the latest code of California regulations.
- **Federal Endangered Species Act**— Any applicable project is reviewed under the latest version of the Federal Endangered Species Act.
- **California Environmental Quality Act (CEQA)** — Any applicable project is reviewed under the 2016-California Environmental Quality Act Statute and Guidelines.
- **Field Act—**The West Contra Costa Unified School District ("District") facilities are constructed, modernized or altered under the supervision of the Division of State Architect ("DSA"). All facilities were constructed under the provisions of the Field Act which governs structural safety and school building design construction to the highest standards of seismic safety. The California Building Code governs all facilities construction. All DSA reviews for new construction and additions require review by the California Geological Survey ("CGS"). CGS reviews geotechnical and geo-hazard reports for conformance to state school policies found in the Education Code. For example, CGS reviews and approves geo-hazard reports related to liquefaction mitigation.
- **Site and Facility Review**—The District's sites and facilities are subject to review and approval by the California Department of Education ("CDE"). CDE certifies all sites, construction plans, and some renovations to existing sites for conformance to state standards in relation to site hazards. For example, CDE would certify site safety in relation to known natural hazards such as landslides, dam inundation, etc.
- **Toxic Substances Control**—The District is subject to review by the California Department of Toxic Substances Control ("DTSC") in relation to environmental hazards. Natural hazards subject to DTSC review include naturally occurring asbestos (NOA) which is found adjacent to fault zones in the District.
- **Local Jurisdiction**—The District is not subject to local jurisdiction, except in relation to local fire review for access of fire vehicles on sites and locations of hydrants. The District is not subject to local building ordinances or codes. The District is not subject to county ordinances, codes or policies—with the exception of Environmental Health Code enforcement.
- **Seismic Evaluations and Geotechnical/Geohazard Reports**—The District's Natural Hazards Mitigation Plans are all associated with Seismic Evaluations and Geotechnical/Geohazard Reports for specific school sites. These reports have been used to provide priority seismic hazard mitigations and upgrades to existing schools as a part of the District's local bond funded facilities modernization program. In addition, in relation to geohazards, the District has landslide mitigations underway at one site and slope stability mitigations anticipated at another site.

35.3.2 Fiscal, Administrative and Technical Capabilities

Fiscal capability is an indicator of a jurisdiction's ability to fulfill the financial needs associated with hazard mitigation projects. An assessment of fiscal capabilities is presented in Table 35-2. Administrative and technical capabilities represent a jurisdiction's staffing resources for carrying out the mitigation strategy. An assessment of administrative and technical capabilities is presented in Table 35-3.

35.3.3 Education and Outreach Capabilities

Outreach and education capability identifies the connection between government and community members, which opens a dialogue needed for a more resilient community. An assessment of education and outreach capabilities is presented in Table 35-4.

Table 35-2. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No
Federal Grant Programs	Yes
Other	N/A

Table 35-3. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Operations Division
Engineers or professionals trained in building or infrastructure construction practices	Yes	Operations Division
Planners or engineers with an understanding of natural hazards	Yes	Operations Division
Staff with training in benefit/cost analysis	Yes	Operations Division
Surveyors	Yes	Operations Division
Personnel skilled or trained in GIS applications	Yes	Operations Division
Scientist familiar with natural hazards in local area	Yes	Operations Division
Emergency manager	Yes	Operations Division
Grant writers	No	No
Other	No	N/A

Table 35-4. Education and Outreach

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe	No N/A
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe	Yes WCCUSD utilizes it's webpage to pass information and nonfictions.
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly specify	Yes WCCUSD School Board
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe	Yes WCCUSD Safety Department, Coordinator, Disaster Preparedness
Do you have any established warning systems for hazard events? • If yes, please briefly describe	Yes Website, Blackboard Connect and utilize CoCo County

35.3.4 Adaptive Capacity for Climate Change

Given the uncertainties associated with how hazard risk may change with a changing climate, a jurisdiction's ability to track such changes and adapt as needed is an important component of the mitigation strategy. Table 35-5 summarizes the District's adaptive capacity for climate change.

Table 35-5. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating[a]
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts Comments/Additional Information: *None provided*	Medium
Jurisdiction-level monitoring of climate change impacts Comments/Additional Information: *None provided*	Medium
Technical resources to assess proposed strategies for feasibility and externalities Comments/Additional Information: *None provided*	Medium
Jurisdiction-level capacity for development of greenhouse gas emissions inventory Comments/Additional Information: *None provided*	Medium
Capital planning and land use decisions informed by potential climate impacts Comments/Additional Information: *None provided*	Medium
Participation in regional groups addressing climate risks Comments/Additional Information: *None provided*	Medium
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes Comments/Additional Information: *None provided*	Medium
Identified strategies for greenhouse gas mitigation efforts Comments/Additional Information: *None provided*	Medium
Identified strategies for adaptation to impacts Comments/Additional Information: *None provided*	Medium
Champions for climate action in local government departments Comments/Additional Information: *None provided*	Medium
Political support for implementing climate change adaptation strategies Comments/Additional Information: *None provided*	Medium
Financial resources devoted to climate change adaptation Comments/Additional Information: *None provided*	Medium
Local authority over sectors likely to be negative impacted Comments/Additional Information: *None provided*	Low
Public Capacity	
Local residents knowledge of and understanding of climate risk Comments/Additional Information: *None provided*	Medium
Local residents support of adaptation efforts Comments/Additional Information: *None provided*	Medium
Local residents' capacity to adapt to climate impacts Comments/Additional Information: *None provided*	Low
Local economy current capacity to adapt to climate impacts Comments/Additional Information: *None provided*	Low
Local ecosystems capacity to adapt to climate impacts Comments/Additional Information: *None provided*	Medium

a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

35.4 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

35.4.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, the West Contra Costa Unified School District made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **July, 2016, Facilities Master Plan—** The Facilities Master Plan incorporates all of the current and future projects for the school district through 2020, to include mitigation measures.
- Hazard mitigation is incorporated in much of the standard operating procedure of the district as described in Section 35.3.1.

Resources listed in Section 35.10 were used to provide information on hazard events and local capabilities within the jurisdiction.

35.4.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, the West Contra Costa Unified School District will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan include actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- The Facilities Master Plan incorporates all of the current and future projects for the school district through 2020, to include mitigation measures. Information from the risk assessment will be incorporated as appropriate at the time of the next update.

35.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 35-6 lists past occurrences of natural hazards for which specific damage was recorded in the West Contra Costa Unified School District. Other hazard events that broadly affected the entire planning area, including the West Contra Costa Unified School District, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 35-6. Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Flash Flood (El Nino) - Wildcat Creek	NA	1997	Riverside Elementary $549,000
Landslide	NA	1968	Pinole Valley HS: $250,000
Earthquake (Loma Prieta)	FEMA-845	10/17/1989	Portola Middle School $1,000,000 El Portal Elementary School: $500,000

35.6 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. Noted vulnerabilities within the district include the following:

- Numerous campuses within or near proximity to the Hayward Fault
- Numerous campuses within the flood zone
- Numerous campuses within the liquefaction zone
- Many campuses within the hilly areas of West Contra Costa County at vulnerability to wildfire

35.7 HAZARD RISK RANKING

Table 35-7 presents a local ranking for the West Contra Costa Unified School District of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 35-7. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake	54	High
2	Flood	48	High
3	Landslide	36	Medium
3	Wildfire	36	Medium
4	Sea level rise	16	Medium
5	Dam and levee failure	12	Low
5	Severe weather	12	Low
6	Tsunami	8	Low
7	Drought	6	Low

35.8 STATUS OF PREVIOUS PLAN ACTIONS

Table 35-8 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 35-8. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update: Check if Yes	Carried Over to Plan Update: Enter Action #
Initiative 1—School Modernizations with Structural Upgrades 22 Elementary Sites, 5 Secondary—High School & Middle School Sites (Work completed at 18 Elementary, 1 High School)	x			
Comment: Campus construction has been completed.				
Initiative 2—Riverside Elementary School: Potential relocation of structures outside zone of failure along creek. Earthquake-induced Lateral Spreading--Slope Stability at Wildcat Creek			x	WCCUSD-17
Comment: Funding is not available to complete the project.				
Initiative 3—Pinole Valley High School. Potential relocation of structures away from identified Landslide area at rear of campus.			x	WCCUSD-18
Comment: The Hillside has been stabilized (2016) and the new campus is under construction.				
Initiative 4—Washington Elementary School. Foundation Remediation for Earthquake-induced Liquefaction hazard			x	WCCUSD-19
Comment: Funding is not available to complete the project				
Initiative 5—Portola Middle School Relocation outside of landslide zone: High ground motion. Main building identified as Most Vulnerable Category 2 School Building with collapse potential.	x			
Comment: New campus construction has been completed				
Initiative 6—Adams Middle School –High ground motion zone, collapse potential identified in Structural Evaluation. School Closed 2009. Demolition required.			x	WCCUSD-20
Comment: Funding is not available for this project.				
Initiative 7—Emergency Operations Center Upgrades to EOC Generator, Data Support Center	x			
Comment: October 2016.				
Initiative 8—Support County-wide initiatives identified in the 2011 Hazard Mitigation Plan.	x			
Comment: *County-wide initiatives were supported throughout the performance period of the 2011 plan and will continue to be supported through the performance period of the plan update*				
Initiative 9—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in the 2011 Hazard Mitigation Plan.	x		x	WCCUSD-2
Comment: *Plan maintenance protocols were supported throughout the performance period of the 2011 plan and will continue to be supported through the performance period of the plan update*				
Initiative 10—Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan		x		
Comment: *The District does not have a general plan of the type referred to by this initiative.*				

35.9 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 35-9 lists the actions that make up the West Contra Costa Unified School District hazard mitigation action plan. Table 35-10 identifies the priority for each action. Table 35-11 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 35-9. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline[b]
WCCUSD-1— Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	Operations Division	High	HMGP, PDM, FMA	Short-term
WCCUSD-2— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 16	Coordinator Disaster Preparedness and Safety	Low	Staff Time, General Funds	Short-term
WCCUSD-3—Cameron School -Modernize existing building and build new building mitigation for liquefaction and earthquake.						
New and Existing	Earthquake	1, 7, 15	Operations Division	High	Staff Time, General Funds, HMGP, PDM	Short-term
WCCUSD-4—Chavez Elementary School-Partial replacement for mitigation for earthquake hazard.						
Existing	Earthquake	1, 7, 15	Operations Division	High	Staff Time, General Funds, HMGP, PDM	Short-term
WCCUSD-5—Collins Elementary Full campus replacement mitigation for earthquake hazard.						
Existing	Earthquake	1, 7, 15	Operations Division	High	Staff Time, General Funds, HMGP, PDM	Short-term
WCCUSD-6—Crespi Elementary Partial campus replacement for liquefaction and earthquake						
Existing	Earthquake	1, 7, 15	Operations Division	High	Staff Time, General Funds, HMGP, PDM	Short-term
WCCUSD-7—Fairmount Elementary Full campus replacement for earthquake zone.						
New and Existing	Earthquake	1, 7, 15	Operations Division	High	Staff Time, General Funds, HMGP, PDM	Short-term
WCCUSD-8—Grant Elementary Full campus replacement for flood zone, liquefaction and earthquake.						
New and Existing	Earthquake	1, 7, 15	Operations Division	High	Staff Time, General Funds, HMGP, PDM, FMA	Short-term
WCCUSD-9—Highland Elementary Full campus replacement for liquefaction and earthquake.						
New and Existing	Earthquake	1, 7, 15	Operations Division	High	Staff Time, General Funds, HMGP, PDM	Short-term
WCCUSD-10—Kennedy High School-Partial replacement for flood zone, liquefaction and earthquake.						
Existing	Earthquake	1, 7, 15	Operations Division	High	Staff Time, General Funds, HMGP, PDM, FMA	Short-term
WCCUSD-11—Lake Elementary-Full replacement for flood zone, liquefaction and earthquake.						
New and Existing	Earthquake	1, 7, 15	Operations Division	High	Staff Time, General Funds, HMGP, PDM, FMA	Short-term
WCCUSD-12—Ohlone Elementary School-Partial Replacement for earthquake zone.						
Existing	Earthquake	1, 7, 15	Operations Division	High	Staff Time, General Funds, HMGP, PDM	Short-term
WCCUSD-13—Richmond High School-Partial Campus Replacement for flood zone, liquefaction and earthquake.						
Existing	Earthquake, Flood	1, 7, 15	Operations Division	High	Staff Time, General Funds, HMGP, PDM, FMA	Short-term
WCCUSD-14—Riverside Elementary School: Potential relocation of structures outside zone of failure along creek. Earthquake-induced Lateral Spreading-- Slope Stability at Wildcat Creek						
Existing	Earthquake, Flood, Landslide	1, 7, 15	Operations Division	High	Staff Time, General Funds, HMGP, PDM	Short-term

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency[a]	Estimated Cost	Sources of Funding	Timeline[b]
WCCUSD-15—Pinole Valley High School. Potential relocation of structures away from identified Landslide area at rear of campus.						
Existing	Landslide	1, 7, 15	Operations Division	High	Staff Time, General Funds, HMGP, PDM	Short-term
WCCUSD-16—Washington Elementary School. Foundation Remediation for Earthquake-induced Liquefaction hazard						
Existing	Earthquake	1, 7, 15	Operations Division	High	Staff Time, General Funds, HMGP, PDM	Short-term
WCCUSD-17—Adams Middle School –High ground motion zone, collapse potential identified in Structural Evaluation. School Closed 2009. Demolition required.						
Existing	Earthquake	1, 7, 15	Operations Division	High	Staff Time, General Funds, HMGP, PDM	Short-term

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.
b. Short-term generally indicates less than 5 years once funding has been received.

Table 35-10. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
WCCUSD-1	8	High	High	Yes	Yes	No	Medium	High
WCCUSD-2	3	Low	Low	Yes	No	Yes	High	Low
WCCUSD-3	3	High	High	Yes	Yes	No	Low	High
WCCUSD-4	3	High	High	Yes	Yes	No	Low	High
WCCUSD-5	3	High	High	Yes	Yes	No	Low	High
WCCUSD-6	3	High	High	Yes	Yes	No	Low	High
WCCUSD-7	3	High	High	Yes	Yes	No	Low	High
WCCUSD-8	3	High	High	Yes	Yes	No	Low	High
WCCUSD-9	3	High	High	Yes	Yes	No	Low	Medium
WCCUSD-10	3	High	High	Yes	Yes	No	Low	Medium
WCCUSD-11	3	High	High	Yes	Yes	No	Low	Medium
WCCUSD-12	3	High	High	Yes	Yes	No	Low	Medium
WCCUSD-13	3	High	High	Yes	Yes	No	Low	Medium
WCCUSD-14	3	High	High	Yes	Yes	No	Low	Medium
WCCUSD-15	3	High	High	Yes	Yes	No	Low	Medium
WCCUSD-16	3	High	High	Yes	Yes	No	Low	Medium
WCCUSD-17	3	High	High	Yes	Yes	No	Low	Medium

a. See the introduction to this volume for explanation of priorities.

Table 35-11. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	WCCUSD-2	WCCUSD-1						WCCUSD-2
Dam and Levee failure								
Drought								
Earthquake		WCCUSD-2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17						
Flood		WCCUSD-14, 15						
Landslide		WCCUSD-15, 16						
Severe weather								
Tsunami								
Wildfire								

a. See the introduction to this volume for explanation of mitigation types.

35.10 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed for this annex:

- The following were reviewed for risk information and potential mitigation actions:
  - DASSE Design Structural Engineers, Structural Evaluations of the Measure M Elementary Schools. 2002.
  - DASSE Design Structural Engineers, Structural Evaluations of the Measure D Secondary Schools. 2002.
  - Board of Education West Contra Costa Unified School District Facilities Master Plan Measure M, Measure D, and Measure J Bond Programs.
  - State of California, Division of State Architect, AB 300 List of Most Vulnerable School Facilities. 2003.
  - Alan Kropp & Associates, Portola Middle School Geotechnical Engineering Investigation and Consultation: Potential Earthquake Induced Landslide Hazard. January 2006.
  - Cal Engineering and Geology. Portola Middle School Geologic and Geotechnical Review of Kropp Study (Peer Review). April 2006
  - Alan Kropp & Associates, Geotechnical Peer Review and Geologic Hazard Screening for 17 Elementary School Sites. 2006.
  - Alan Kropp & Associates, Phase 1 Geotechnical and Geologic Hazards Study for Riverside Elementary, Washington Elementary, and Ellerhorst Elementary. 2006
  - Alan Kropp & Associates, Phase 2A Geotechnical and Geologic Hazards Study for Riverside Elementary, 2008.
  - Kleinfelder, Inc. Fault Rupture Study and Slope Stability Analysis for Pinole Valley High School. 2008.

- DASSE Design Structural Engineers, Charles Adams Middle School Academic Building Seismic Vulnerability Assessment. 2008.
- Alan Kropp & Associates, Probabilistic Seismic Hazard Assessment for Adams Middle School. 2009.
- Alan Kropp and Associates, Ground Motion Analysis Most Vulnerable Category 2 Buildings West Contra Costa Unified School District. July 2009.
- Thornton Tomasetti Structural Engineers. Seismic Vulnerability Assessment: Cameron Elementary School, El Cerrito CA. 2009.
- Thornton Tomasetti Structural Engineers. Seismic Vulnerability Study: Portola Middle School Main Classroom Building. 2009.

- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.

Contra Costa County Hazard Mitigation Plan

Appendix A. Planning Partner Expectations

A. Planning Partner Expectations

GROUPS INVOLVED IN THE PLANNING PROCESS

One of the goals of the multi-jurisdictional approach to hazard mitigation planning is to achieve compliance with the Disaster Mitigation Act (DMA) for all participating members in the planning effort. There are several different groups who will be involved in this process at different levels. In order to provide clarity, the following is a general breakdown of those groups:

- **The planning team—**The Tetra Tech team and CRESA staff responsible for the facilitation of the planning process and the plan's written development.
- **The steering committee—**Representative members from the planning partnership that serve as the oversight body, assuming responsibility for many of the planning milestones decisions prescribed for this process to help reduce the burden of time required by each planning partner.
- **The planning partners—**Jurisdictions and special purpose districts that are actually developing an annex to the regional plan.
- **The planning stakeholders—**The individuals, groups, businesses, academia, etc., from which the planning team gains information to support the various elements of the plan. This group may also be referred to as coordinating stakeholders.

DEFINITION OF PARTICIPATION

DMA compliance requires that participation be defined in order to maintain eligibility with respect to meeting the requirements that allow a jurisdiction or special purpose district to develop an annex to the base plan. To achieve compliance for *all* planning partners, the plan must clearly document how each planning partner that is seeking linkage to the plan participated in the plan's development. The best way to do this is to clearly define "participation." For this planning process, "participation" is defined by the following criteria:

ESTIMATED LEVEL OF EFFORT

It is estimated that the total time commitment to meet these "participation" requirements for a planning partner not participating on the steering committee would be approximately 36 to 46 hours over the 12 month period. Most of this time will be devoted to completing the jurisdictional annex template described below. This time may be reduced somewhat for special purpose districts.

DURATION OF THE PLANNING PROCESS

This process is expected to take 14 months to complete. It will be easy to become disconnected with the process objectives if you do not participate in some of these meetings to some degree.

PARTICIPATE IN THE PROCESS

As indicated, it must be documented in the plan that each planning partner "participated" in the process to the best of its capabilities. There is flexibility in defining "participation," which can vary based on the type of planning partner involved (i.e.: city or county vs. a special purpose district). However, the level of participation must be defined at the on-set of the planning process, and we must demonstrate the extent to which this level of participation has been met for each partner.

- **Complete administrative tasks.** Participation in this plan includes the following administrative tasks:
  - **Complete a letter of intent.** Provide a "Letter of Intent to participate" or a Resolution to participate to the planning team (see exhibit A).
  - **Designate points of contact.** Designate a primary and secondary point of contact for this effort. These designees will be listed as the hazard mitigation points of contact for your jurisdiction in the plan.
  - **Approve the steering committee.** The steering committee will be approved via an email vote.
- **Participate, as able, in additional opportunities**. Attendance or participation in the following opportunities will also be recorded. These records will be used to document participation for each planning partner. No thresholds will be established as minimum levels of participation for these events. However, each planning partner should attempt to attend all possible meetings and events:
  - Attend steering committee meetings.
  - Attend or host public meetings or open houses.
  - Participate in and advertise the public review and comment period prior to adoption.
- **Support the steering committee.** This planning process will utilize a steering committee that will assume responsibility for many of the planning milestones prescribed for this process to help reduce the burden of time required by each planning partner. This committee will be representative of the whole body. This committee will meet periodically (frequency to be determined by the committee, but likely to be monthly) throughout the process and provide direction and guidance to the planning team. Steering committee meetings are not mandatory meetings for all planning partners. If you are not on the committee, your attendance is not required; however, it is our hope that all planning partners will remain engaged with this process and attend meetings from time to time.
- **Support the public involvement strategy.** The planning team will also request support from the partnership during the implementation of the public involvement strategy developed by the steering committee. Support could be in the form of providing venues for public meetings, attending these meetings as meeting participants, providing technical support, providing access to mailing lists, providing existing public information materials, etc.
- **Participate in the critical facility update.** Each planning partner will be asked to update their facilities list for use during the risk assessment. If the list is not updated, Hazus default data will be utilized. Updating this list provides a much more detailed analysis.
- **Complete the jurisdictional annex template.*** Each planning partner must complete a jurisdictional annex template. This template will be distributed to the planning partnership in a phased approach to extend the level of effort over a series of months. Key components of the annex include the following:
  - **Attend the mandatory workshop.** There will be one ***mandatory*** workshop that all planning partners will be required to attend. This workshop will cover the proper completion of the jurisdictional annex template, which is the basis for each partner's jurisdictional chapter in the plan. Failure to have a representative at this workshop will disqualify the planning partner from participation in this effort. The schedule for this workshop will be such that all committed planning partners will be able to

attend. After participation in the mandatory template workshop, each partner will be required to complete their template and provide it to the planning team in the time frame established by the steering committee and planning team. Technical assistance in the completion of these templates will be available from the planning team. Failure to complete the template in the required time frame *may* lead to disqualification from the partnership.

- **Perform a capability assessment.** All planning partners will conduct a capability assessment. This assessment will require a review of existing documents (plans, studies and ordinances) as well as technical and financial capabilities pertinent to each jurisdiction that can support hazard mitigation. It should be noted that it is a viable mitigation action to increase a jurisdiction's capability.
- **Review the risk assessment**. Each partner will be asked to review the risk assessment and identify hazards and vulnerabilities specific to its jurisdiction. The planning team will provide the jurisdiction specific mapping and technical consultation to aid in this task, but the determination of risk and vulnerability will be up to each partner (through a facilitated process during the mandatory workshop).
- **Review county-wide mitigation recommendations.** Each partner will be asked to review and determine if the mitigation recommendations chosen in the parent plan will meet the needs of its jurisdiction.
- **Develop a mitigation action plan.** All planning partners will develop an action plan that identifies each project, who will oversee the task, how it will be financed and when it is estimated to occur. Projects within each jurisdiction consistent with the parent plan recommendations will need to be identified and prioritized, and reviewed to determine their benefits vs. costs.

- **Adopt the plan.**** The hazard mitigation plan must be formally adopted by each jurisdiction.

**Note: Templates and instructions to aid in the compilation and development of this information will be provided to all committed planning partners. Each partner will be asked to complete their templates in a timely manner and according to the timeline specified by the steering committee and the planning team.*

*** Note: Once this plan is completed, and FEMA approval has been received for each partner, maintaining that eligibility will be dependent upon each partner implementing the plan implementation-maintenance protocol identified in the plan.*

EXHIBIT A—EXAMPLE LETTER OF INTENT TO PARTICIPATE

Contra Costa County Hazard Mitigation Planning Partnership
Marcelle Indelicato
Senior Emergency Planner
Contra Costa County - Office of the Sheriff
Emergency Services Division
50 Glacier Drive
Martinez, CA 94553
925-313-9609
minde@so.cccounty.us

Contra Costa County Hazard Mitigation Planning Partnership,

Please be advised that the _____ (***insert City or district name***) is committed to participating in the update of the Contra Costa County Hazard Mitigation Plan. As the _____ (title, e.g., Chief Administrative Official) for this jurisdiction, I certify that I will commit all necessary resources in order to meet Partnership expectations as outlined in the "Planning Partners expectations" document provided by the planning team, in order to obtain Disaster Mitigation Act (DMA) compliance for our jurisdiction.

Mr./Ms. _____ will be our jurisdiction's primary point of contact for this process and they can be reached at ***(insert: address, phone number and e-mail address)***. Mr./Ms. _____ will be our jurisdiction's secondary point of contact for this process and they can be reached at ***(insert: address, phone number and e-mail address)***.

Sincerely,

_____

Contra Costa County Hazard Mitigation Plan

Appendix B. Procedures for Linking to Hazard Mitigation Plan

B. Procedures for Linking to Hazard Mitigation Plan

Not all eligible local governments are included in the Contra Costa County Hazard Mitigation Plan. Some or all of these non-participating local governments may choose to "link" to the Plan at some point to gain eligibility for programs under the federal Disaster Mitigation Act (DMA). The following "linkage" procedures define the requirements established by the planning team for dealing with an increase in the number of planning partners linked to this plan. No currently non-participating jurisdiction within the defined planning area is obligated to link to this plan. These jurisdictions can chose to do their own "complete" plan that addresses all required elements of Section 201.6 of Chapter 44 of the Code of Federal Regulations (44 CFR).

INCREASING THE PARTNERSHIP THROUGH LINKAGE

Eligibility

Eligible jurisdictions located in the planning area may link to this plan at any point during the plan's performance period (5 years after final approval). Eligibility will be determined by the following factors:

- The linking jurisdiction is a local government as defined by the Disaster Mitigation Act.
- The boundaries or service area of the linking jurisdiction is completely contained within the boundaries of the planning area established during the 2016 hazard mitigation plan development process.
- The linking jurisdiction's critical facilities were included in the critical facility and infrastructure risk assessment completed during the 2016 plan development process.

Requirements

It is expected that linking jurisdictions will complete the requirements outlined below and submit their completed template to the lead agency Contra Costa County Department of Community Development for review within six months of beginning the linkage process:

- The eligible jurisdiction requests a "Linkage Package" by contacting the Point of Contact (POC) for the plan:

  William R. Nelson
  Principal Planner
  Contra Costa County
  Department of Conservation and Development
  30 Muir Road, Martinez, CA 94553
  (925) 674-7791

- The POC will provide a linkage procedure package that includes linkage information and a linkage tool-kit:

- Linkage Information
  - Procedures for linking to the multi-jurisdictional hazard mitigation plan
  - Planning partner's expectations for linking jurisdictions
  - A sample "letter of intent" to link to the multi-jurisdictional hazard mitigation plan
  - A copy of Section 201.6 of 44 CFR, which defines the federal requirements for a local hazard mitigation plan.
- Linkage Tool-Kit
  - Copy of Volume 1 and 2 of the plan
  - A special purpose district or municipality template and instructions
  - A catalog of hazard mitigation alternatives
  - A sample resolution for plan adoption

- The new jurisdiction will be required to review both volumes of the Contra Costa County Hazard Mitigation Plan, which include the following key components for the planning area:
  - Goals and objectives
  - The planning area risk assessment
  - Comprehensive review of alternatives
  - Countywide actions
  - Plan implementation and maintenance procedures.

  Once this review is complete, the jurisdiction will complete its specific annex using the template and instructions provided by the POC.

- The development of the new jurisdiction's annex must not be completed by one individual in isolation. The jurisdiction must develop, implement and describe a public involvement strategy and a methodology to identify and vet jurisdiction-specific actions. The original partnership was covered under a uniform public involvement strategy and a process to identify actions that covered the planning area described in Volume 1 and Volume 2 of this plan. Since new partners were not addressed by these strategies, they will have to initiate new strategies and describe them in their annex. For consistency, new partners are encouraged to develop and implement strategies similar to those described in this plan.
- The public involvement strategy must ensure the public's ability to participate in the plan development process. At a minimum, the new jurisdiction must solicit public opinion on hazard mitigation at the onset of the linkage process and hold one or more public meetings to present the draft jurisdiction-specific annex for comment at least two weeks prior to adoption by the governing body. The POC will have resources available to aid in the public involvement strategy, including:
  - The questionnaire utilized in the plan development
  - Presentations from public meeting workshops and the public comment period
  - Press releases used throughout the planning process
  - The plan website.

- The methodology to identify actions should include a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard and a description of the process by which chosen actions were identified. As part of this process, linking jurisdictions should coordinate the selection of actions amongst the jurisdiction's various departments.

- Once their public involvement strategy and template are completed, the new jurisdiction will submit the completed package to the POC for a pre-adoption review to ensure conformance with the multi-jurisdictional plan format and linkage procedure requirements.
- The POC will review for the following:
  - Documentation of public involvement and action plan development strategies
  - Conformance of template entries with guidelines outlined in instructions
  - Chosen actions are consistent with goals, objectives and mitigation catalog of the Contra Costa County Hazard Mitigation Plan
  - A designated point of contact
  - A completed FEMA plan review crosswalk.
- Plans will be reviewed by the POC and submitted to California Governor's Office of Emergency Services (Cal OES) for review and approval.
- Cal OES will review plans for state compliance. Non-compliant plans are returned to the lead agency for correction. Compliant plans are forwarded to FEMA for review with annotation as to the adoption status.
- FEMA reviews the linking jurisdiction's plan in association with the approved plan to ensure DMA compliance. FEMA notifies the new jurisdiction of the results of review with copies to Cal OES and the approved plan lead agency.
- Linking jurisdiction corrects plan shortfalls (if necessary) and resubmits to Cal OES through the approved plan lead agency.
- For plans with no shortfalls from the FEMA review that have not been adopted, the new jurisdiction governing authority adopts the plan and forwards adoption resolution to FEMA with copies to lead agency and Cal OES.
- FEMA regional director notifies the new jurisdiction's governing authority of the plan's approval.

The new jurisdiction plan is then included with the multi-jurisdiction hazard mitigation plan and the linking jurisdiction is committed to participate in the ongoing plan maintenance strategy identified in Chapter 19, Volume 1 of the hazard mitigation plan.

DECREASING THE PARTNERSHIP

The eligibility afforded under this process to the planning partnership can be rescinded in two ways. First, a participating planning partner can ask to be removed from the partnership. This may be done because the partner has decided to develop its own plan or has identified a different planning process for which it can gain eligibility. A partner that wishes to voluntarily leave the partnership shall inform the POC of this desire in writing. This notification can occur any time during the calendar year. A jurisdiction wishing to pursue this avenue is advised to make sure that it is eligible under the new planning effort, to avoid any period of being out of compliance with the Disaster Mitigation Act.

After receiving this notification, the POC shall immediately notify both Cal OES and FEMA in writing that the partner in question is no longer covered by the Contra Costa County Hazard Mitigation Plan, and that the eligibility afforded that partner under this plan should be rescinded based on this notification.

The second way a partner can be removed from the partnership is by failure to meet the participation requirements specified in the "Planning Partner Expectations" package provided to each partner at the beginning of the process, or the plan maintenance and implementation procedures specified in Volume 1 of the plan. Each partner agreed to these terms by adopting the plan.

Eligibility status of the planning partnership will be monitored by the POC. The determination of whether a partner is meeting its participation requirements will be based on the following parameters:

- Are progress reports being submitted annually by the specified time frames?
- Are partners notifying the POC of changes in designated points of contact?
- Are the partners supporting the Steering Committee by attending designated meetings or responding to needs identified by the body?
- Are the partners continuing to be supportive as specified in the Planning Partners expectations package provided to them at the beginning of the process?

Participation in the plan does not end with plan approval. This partnership was formed on the premise that a group of planning partners would pool resources and work together to strive to reduce risk within the planning area. Failure to support this premise lessens the effectiveness of this effort. The following procedures will be followed to remove a partner due to the lack of participation:

- The POC will advise the Steering Committee of this pending action and provide evidence or justification for the action. Justification may include: multiple failures to submit annual progress reports, failure to attend meetings determined to be mandatory by the Steering Committee, failure to act on the partner's action plan, or inability to reach designated point of contact after a minimum of five attempts.
- The Steering Committee will review information provided by POC, and determine action by a vote. The Steering Committee will invoke the voting process established in the ground rules established during the formation of this body.
- Once the Steering Committee has approved an action, the POC will notify the planning partner of the pending action in writing via certified mail. This notification will outline the grounds for the action, and ask the partner if it is their desire to remain as a partner. This notification shall also clearly identify the ramifications of removal from the partnership. The partner will be given 30 days to respond to the notification.
- Confirmation by the partner that they no longer wish to participate or failure to respond to the notification shall trigger the procedures for voluntary removal discussed above.
- Should the partner respond that they would like to continue participation in the partnership, they must clearly articulate an action plan to address the deficiencies identified by the POC. This action plan shall be reviewed by the Steering Committee to determine whether the actions are appropriate to rescind the action. Those partners that satisfy the Steering Committee's review will remain in the partnership, and no further action is required.
- Automatic removal from the partnership will be implemented for partners where these actions have to be initiated more than once in a 5-year planning cycle.

Contra Costa County Hazard Mitigation Plan

Appendix C. Annex Instructions and Templates

INSTRUCTIONS FOR COMPLETING MUNICIPAL ANNEX TEMPLATE

The jurisdictional annex templates for the 2017 Contra Costa County Regional Hazard Mitigation Plan update will be completed in three phases. **This document provides instructions for completing all phases of the template for municipalities.**

If your jurisdiction completed and submitted Phase 1 and or Phase 2, Phase 3 has been added to the end of your document. Any planning team comments, questions or suggestions have been included as blue highlighted notes and/or comments. Any text edits were made with changes tracked for review. Any yellow highlights indicate areas where missing information should be filled in. Phase 3 instructions begin on page 7.

Municipality Annex:

This document provides instructions for completing **all phases** of the jurisdictional annex template for municipalities. **Templates should be completed by Friday, July 7, 2017.** Your completed template should be submitted to:

Kristen Gelino
Tetra Tech, Inc.
(917) 426-4594 or (646) 576-4029
E-mail: kristen.gelino@tetratech.com

If your jurisdiction did not complete Phase 1 and/or Phase 2, please complete all phases at this time.

The target timeline for phase completion is as follows:

- **Phase 1** – Jurisdictional profile
  - Deployed: early February
  - Due: early March
- **Phase 2** – Capability assessment
  - Deployed: Mid-March
  - Due: Mid-April
- **Phase 3** – Risk ranking and action plan development
  - Deployed: Mid-June
  - Workshop: June 7th and 14th
  - Due: Friday, July 7th

Any questions on completing the template should be directed to:

Kristen Gelino
Tetra Tech, Inc.
(917) 426-4594 or (646) 576-4029
E-mail: kristen.gelino@tetratech.com

A Note About Formatting:

The template for the annex is a Microsoft Word document in a format that will be used in the final plan. Partners are asked to use this template so that a uniform product will be completed for each partner.

Content should be entered within the yellow, highlighted text that is currently in the template, rather than creating text in another document and pasting it into the template. Text from another source will alter the style and formatting of the document.

The numbering in the document will be updated when completed annexes are combined into the final document. Please do not adjust any of this numbering.

PHASE 1 INSTRUCTIONS

CHAPTER TITLE

In the chapter title at the top of Page 1, type in the complete official name of your municipality (City of Pleasantville, West County, etc.). Please do not change the chapter number. Revise only the jurisdiction name.

HAZARD MITIGATION PLAN POINT OF CONTACT

Provide the name, title, mailing address, telephone number, and e-mail address for the primary point of contact for your jurisdiction. This should be the person responsible for monitoring, evaluating and updating the annex for your jurisdiction. This person should also be the principle liaison between your jurisdiction and the Steering Committee overseeing development of this plan.

In addition, designate an alternate point of contact. This would be a person to contact should the primary point of contact be unavailable or no longer employed by the jurisdiction.

Note: Both of these contacts should match the contacts that were designated in your jurisdiction's letter of intent to participate in this planning process. If you have changed the primary or secondary contact, please let the planning team know by inserting a comment into the document.

JURISDICTION PROFILE

Provide information specific to your jurisdiction as indicated, in a style similar to the example provided in the box below. This should be information that will not be provided in the overall mitigation plan document. For population data, use the most current population figure for your jurisdiction based on an official means of tracking (e.g., the U.S. Census or state office of financial management).

Example Jurisdiction Profile:

- **Date of Incorporation**—1858
- **Current Population**—17,289 as of July 2014 (2014 Department of Finance estimates)
- **Population Growth**—Based on state Department of Finance data, Smithburg has experienced a flat rate of growth. The population increased only 3.4% since 2010 and growth averaged 0.74% per year from 2000 to 2014.
- **Location and Description—**The City of Smithburg is on the Pacific coast, 760 miles north of Los Angeles and 275 miles north of San Francisco. The nearest seaport is Eureka, five miles south on Humboldt Bay. Smithburg is the home of Smithburg State University and is situated between the communities of Murphy to the north and Blue Lake to the east. It sits at the intersection of US Highway 101 and State Route 299.
- **Brief History**—The Smithburg area was settled during the gold rush in the 1850s as a supply center for miners. As the gold rush died down, timber and fishing became the area's major economic resource. Smithburg was incorporated in 1858 and by 1913 the Smithburg Teachers College, a predecessor to today's Smithburg State University was founded. Recently, the presence of the college has come to shape Smithburg's population into a young, liberal, and educated crowd. In 1981 Smithburg developed the Smithburg Marsh and Wildlife sanctuary, an environmentally friendly sewage treatment enhancement system.
- **Climate**—Smithburg's weather is typical of the Northern California coast, with mild summers and cool, wet winters. It rarely freezes in the winter and it is rarely hot in the summer. Annual average rainfall is over 40 inches, with 80% of that falling from November through April. The average year-round temperature is 59ºF. Humidity averages 72 to 87 percent. Prevailing winds are from the north, and average 5 mph.
- **Governing Body Format**—The City of Smithburg is governed by a five-member city council. The City consists of six departments: Finance, Environmental Services, Community Development, Public Works, Police and the City Manager's Office. The City has 13 commissions and task forces, which report to the City Council. The City Council assumes responsibility for the adoption of this plan; the City Manager will oversee its implementation.

Phase 2 Instructions

If your jurisdiction participated in a previously approved hazard mitigation plan, we have transferred relevant content to the Phase 2 portion of your annex. All pre-populated content should be reviewed for accuracy and completeness.

DEVELOPMENT TRENDS

Please note that we have made some modifications to the template based on our most current feedback from the State and FEMA. You may have already completed a portion of the development trends section during Phase 1. If so, we have moved the information you provided into the appropriate section of the document.

In the yellow-highlighted text that says "Describe trends in general," provide a brief description of your jurisdiction's recent development trends similar to the following example:

> Anticipated development levels for Smithburg are low to moderate, consisting primarily of residential development. The majority of recent development has been infill. Residentially, there has been a focus on affordable housing and a push for more secondary mother-in-law units on properties. The City of Smithburg adopted its general plan in July 2000. The plan focuses on issues of the greatest concern to the community. City actions, such as those relating to land use allocations, annexations, zoning, subdivision and design review, redevelopment, and capital improvements, must be consistent with the plan. Future growth and development in the City will be managed as identified in the general plan.

Complete the table titled "Recent and Expected Future Development Trends" to demonstrate the development that occurred during the past 5 years, including a description of any development which may be located within a hazard zone. Provide additional information on any anticipated development. Please note that we are specifically looking for development permits for new construction. If your jurisdiction does not have the ability to differentiate between permit types, please list the total number of permits and include a note or comment in the document indicating what you have provided.

If your jurisdiction does not have the ability to track the number of permits for each hazard area, please insert a qualitative description of where development has occurred.

CAPABILITY ASSESSMENT

Please note that it is unlikely that you will be able to complete all sections of the capability assessment on your own. You will likely need to reach out to other departments within your local government, such as planning, finance, public works, etc. It may be beneficial to provide these individuals with background information about this planning process, as you will want input from them again during Phase 3 of your annex development.

Legal and Regulatory Capability

In the table titled "Legal and Regulatory Capability," indicate "Yes" or "No" for each listed code, ordinance, requirement or planning document in each of the following columns:

- **Local Authority**—Enter "Yes" if your jurisdiction has prepared or adopted the identified item; otherwise, enter "No." If yes, then enter the code, ordinance number, or plan name and its date of adoption in the comments column. ***Note: If you are entering yes, please be sure that you are providing a comment with the appropriate code, ordinance or plan.***
- **Other Jurisdiction Authority**—Enter "Yes" if there are any regulations that may impact your jurisdiction that are enforced or administered by another agency (e.g., a state agency or special purpose

district) or if you know that there are any state or federal regulations or laws that would prohibit local implementation of the identified item; otherwise, enter "No." ***Note: If you answer yes, please indicate the other agency in the comments.***

- **State Mandated**—Enter "Yes" if state laws or other requirements enable or require the listed item to be implemented at the local level; otherwise, enter "No." ***Note: If you are entering yes, please be sure that you are providing a comment.***
- **Integration Opportunity**—Enter "Yes" if your jurisdiction has opportunities for integration of the code, ordinance or plan with the hazard mitigation plan. Consider entering "Yes" in the Integration Opportunity column if you answer "yes" to any of the following:

  - If you answered "Yes" in the Local Authority column for this code, ordinance or plan:

    - Does the code, ordinance or plan already address hazards and their potential impacts?
      - If so, should it be updated or revised to reflect new information about risk?
      - If not, will (or should) the code, ordinance or plan be updated over the performance period of the hazard mitigation plan (5 years)?
    - Does the code, ordinance or plan include specific projects that should be reviewed to incorporate hazard mitigation goals?
    - Does the code, ordinance or plan include specific projects that should be included as action items in the hazard mitigation action plan?

  - If you answered "No" in the Local Authority column for this code, ordinance or plan:

    - Will your jurisdiction develop the code, ordinance or plan during the performance period of the hazard mitigation plan?

  Note: Each capability with a "Yes" answer to Integration Opportunity will be discussed in more detail later in the annex. You may wish to keep notes when assessing the Integration Opportunity or review the "Integration with Other Planning Initiatives" section below.

- **Comments**—Enter the code number and adoption date for any local code indicated as being in place; provide other comments as appropriate to describe capabilities for each entry.
- For the categories "General Plan" and "Capital Improvement Plan," answer the specific questions shown, in addition to completing the four columns indicating level of capability.

Development and Permit Capabilities

Complete the table titled "Development and Permitting Capabilities." Examples of qualitative descriptions of buildout in the jurisdiction are as follows:

- The Town is close to being built out. Most new projects involve the demolition of an existing residence and construction of a new replacement residence. A few subdivisions are processed each year.
- There are five parcels of underdeveloped land within the city limits. According to the General Plan, the total potential units for these parcels is 33 units.

Fiscal Capability

Complete the table titled "Fiscal Capability" by indicating whether each of the listed financial resources is accessible to your jurisdiction. Enter "Yes" if the resource is fully accessible to your jurisdiction. Enter "No" if there are limitations or prerequisites that may hinder your eligibility for this resource.

Administrative and Technical Capability

Complete the table titled "Administrative and Technical Capability" by indicating whether your jurisdiction has access to each of the listed personnel resources. Enter "Yes" or "No" in the column labeled "Available?". If yes, then enter the department and position title in the right-hand column. If you have contract support staff with these capabilities, you can still answer "Yes." Indicate in the department column that this resource is provided through contract support.

Education and Outreach Capabilities

Complete the table titled "Education and Outreach" to indicate your jurisdiction's capabilities and existing efforts regarding natural hazard mitigation education and outreach.

National Flood Insurance Program Compliance

Complete the table titled "National Flood Insurance Program Compliance" by indicating your jurisdiction's capabilities related to each question in the table.

Classification in Hazard Mitigation Programs

Complete the table titled "Community Classifications" to indicate your jurisdiction's participation in various national programs related to natural hazard mitigation. For each program enter "Yes" or "No" in the second column to indicate whether your jurisdiction participates. If yes, then enter the classification that your jurisdiction has earned under the program in the third column and the date on which that classification was issued in the fourth column; enter "N/A" in the third and fourth columns if your jurisdiction is not participating.

Adaptive Capacity for Climate Change

Consider the climate change impact concerns identified for the planning area:

- Increased temperature
- Reduced precipitation
- Sea level rise – coastal inundation and erosion
- Public health – heat and air pollution
- Reduced agricultural productivity
- Inland flooding
- Reduced tourism.

With those impacts in mind, complete the table titled "Adaptive Capacity for Climate Change" by indicating that your jurisdiction's capacity for each listed criterion as follows:

- **High**—The capacity exists and is in use.
- **Medium**—The capacity may exist, but is not used or could use some improvement.
- **Low**—The capacity does not exist or could use substantial improvement.
- **Unsure**—Not enough information is known to assign a rating.

This is a subjective assessment, but providing a few words of explanation is useful. It is highly recommended that you complete this table with an internal planning team and that you review the results of the other capability assessment tables before completing.

INTEGRATION WITH OTHER PLANNING INITIATIVES

The goal of plan integration is to ensure that the potential impact of hazards is considered in planning for future development. FEMA recommends integration as follows:

- Integrate hazard mitigation plan goals with community objectives (e.g. incorporate the goals for risk reduction and safety into the policies of other plans).
- Use the risk assessment to inform plans and policies (e.g. incorporate risk assessment findings into land use plans, site plan review, emergency operations plans).
- Implement mitigation actions through existing mechanisms (e.g. include mitigation projects in the capital improvement plan).
- Think about mitigation before and after a disaster (e.g. build recovery planning on existing mitigation plans and goals).

After reviewing the plans, programs and ordinances identified in the capability assessment tables, identify all plans and programs that have already been integrated with the goals and recommendations of the hazard mitigation plan, and those that offer opportunities for future integration. The simplest way to do this is to review the Legal and Regulatory Capabilities table to see which items were marked as "Yes" under the Integration Opportunity column.

Existing Integration

List the items for which you entered "Yes" under the Integration Opportunity column because the plan or ordinance already addresses potential impacts or includes specific projects that should be included as action items in the mitigation action plan. Provide a brief description of how the plan or ordinance is integrated. Examples are as follows:

- **Capital Improvement Plan**—The capital improvement plan includes projects can help mitigate potential hazards. The City will act to ensure consistency between the hazard mitigation plan and the current and future capital improvement plans. The hazard mitigation plan may identify new possible funding sources for capital improvement projects and may result in modifications to proposed projects based on results of the risk assessment.
- **Building Code and Fire Code**—The City's adoption of the 2016 California Building and Fire codes incorporated local modifications to account for the climatic, topographic and geographic conditions that exist in the City.
- **General Plan 2030**—The general plan includes a "Safety, Services, and Infrastructure" element to protect the community from unreasonable risk by establishing policies and actions to avoid or minimize the following hazards:

  - Geologic and seismic hazards
  - Fire hazards
  - Hazardous materials
  - Flood control
  - Impacts from climate change.

- **Climate Action Plan**—The City's Climate Action Plan includes projects for reducing greenhouse gas emissions and adapting to likely impacts of climate change. These projects were reviewed to identify cross-planning initiates that serve both adaptation and mitigation objectives. ***Note: Any plans that fall into this category should be reviewed during the development of the mitigation strategy in Phase 3 and included as appropriate.***

Opportunities for Future Integration

List any remaining items that say "Yes" in the Integration Opportunity column in the Legal and Regulatory Capabilities and explain the process by which integration will occur. Examples follow:

- **Zoning Code**—The City of Smithburg is conducting a comprehensive update to its zoning code. The opportunity to incorporate additional mitigation and abatement measures will be contemplated for inclusion into the Code.
- **Capital Improvement Projects**—Capital improvement project proposals may take into consideration hazard mitigation potential as a means of evaluating project prioritization.
- **Post-Disaster Recovery Plan**—Smithburg does not have a recovery plan and intends to develop one as a mitigation planning action during the next five years. The plan will build on the mitigation goals and objectives identified in the mitigation plan.

After you have accounted for all items marked as "Yes" under the Integration Opportunity column, consider other programs you may have in place in your jurisdiction that include routine consideration and management of hazard risk. Examples of such programs may include: tree pruning programs, right-of-way mowing programs, erosion control or stream maintenance programs, etc. Please add any such programs to the integration discussion and provide a brief description of how these program manage (or could be adapted to manage) risk from hazards.

Phase 3 Instructions

If your jurisdiction participated in a previously approved hazard mitigation plan, we have transferred relevant content to the Phase 3 portion of your annex. All pre-populated content should be reviewed for accuracy and completeness.

JURISDICTION-SPECIFIC NATURAL EVENT HISTORY

In the table titled "Past Natural Hazard Events," list in chronological order (most recent first) any natural hazard event that has caused damage to your jurisdiction. Include the date of the event and the estimated dollar amount of damage it caused. You are welcome to include any events, but special attention should be made to include major storms and federally declared disasters. Please refer to the table below that lists Presidential Disaster Declarations for the County. We recommend including most large-scale disasters, unless you know that there were no impacts to your jurisdiction. Specifically, we recommend that you include these events if you have damage estimate information or can provide a brief description of impacts that occurred within your community. In addition to these events, please refer to the NOAA storm events database included in the tool kit. We recommend conducting a search for the name of your jurisdiction in order to identify events with known impacts. Other potential sources of damage information include:

- Preliminary damage estimates your jurisdiction filed with the county or state
- Insurance claims data
- Newspaper archives
- Other plans/documents that deal with emergency management (safety element of a comprehensive plan, emergency response plan, etc.)
- Resident input.

If you do not have estimates for dollars of damage caused, please list "Not Available" in the appropriate column or simply list a brief description of the damages (e.g. Main Street closed as a result of flooding, downed trees and residential damages). Please note that tracking such damages is a valid and useful mitigation action if your jurisdiction does not currently track such information.

Presidential Disaster Declarations for Contra Costa County		
Type of Event	**FEMA Disaster #**	**Declaration Date**
Severe Storms, Flooding, and Mudslides	DR-4301	2/14/2017
Severe Storms, Flooding, Mudslides, and Landslides	DR-1628	2/3/2006
Severe Winter Storms and Flooding	DR-1203	2/9/1998
Severe Storms, Flooding, Mud and Landslides	DR-1155	1/4/1997
Severe Winter Storms, Flooding Landslides, Mud Flow	DR-1046	3/12/1995
Severe Winter Storms, Flooding, Landslides, Mud Flows	DR-1044	1/10/1995
Severe Winter Storm, Mud and Land Slides, and Flooding	DR-979	2/3/1993
Loma Prieta Earthquake	DR-845	10/18/1989
Severe Storms and Flooding	DR-758	2/21/1986
Coastal Storms, Floods, Slides, and Tornadoes	DR-677	2/9/1983
Severe Storms, Flood, Mudslides, and High Tide	DR-651	1/7/1982
Torrential Rain, High Tide, and Winds	EM- 3078	2/01/1980
Drought	EM-3023	1/20/1977
Severe Storms and Flooding	DR-253	1/26/1969

Note: EM = Emergency Declaration; DR = Disaster Declaration

JURISDICTION-SPECIFIC VULNERABILITIES

Repetitive Loss Properties

A repetitive loss property is any property for which FEMA has paid two or more flood insurance claims in excess of $1,000 in any rolling 10-year period since 1978. In the space provided, Tetra Tech will insert the following information based on data provided by FEMA:

- The number of any FEMA-identified repetitive-loss properties in your jurisdiction.
- The number of any FEMA-identified severe-repetitive-loss properties in your jurisdiction.
- The number (if any) of repetitive-loss or severe-repetitive-loss properties in your jurisdiction that have been mitigated. Mitigated for this exercise means that flood protection has been provided to the structure.

Please note that if your jurisdiction has any repetitive loss properties, we would strongly encourage you to include a mitigation action that addresses mitigating these properties.

Other Vulnerabilities

We would strongly encourage you to review the results of the risk assessment included in the tool kit, your jurisdiction's natural events history, and any relevant public comments/input and develop a few sentences that discuss specific risks. You do not need to develop a sentence for every single parameter, but review the results and identify a few issues you would like to highlight. For example:

- Only about 2 percent of the jurisdiction's population is estimated to reside in the 1 percent annual chance flood hazard area; however, 45 percent of the population is estimated to reside in the 0.2 percent annual chance flood hazard area where flood insurance is generally not required.

- A magnitude 7.5 earthquake on the Smithburg Fault may produce nearly 1 million tons of structure debris.
- Over the past 10 years, the jurisdiction has experienced more than $6 million in estimated damages from severe storm events.
- More than 50 buildings are located in areas that will be permanently inundated with 12 inches of sea level rise.
- The results of the public survey indicated that 40 percent of Smithburg residents would not be able to be self-sufficient for 5 days following a major event.

In addition, please list any noted vulnerabilities in your jurisdiction related to hazard mitigation that may not be apparent from the risk assessment and other information provided. This may include things such as the following:

- An urban drainage issue that results in localized flooding every time it rains.
- An area of the community that frequently loses power due to a lack of tree maintenance.
- A critical facility, such as a police station, that is not equipped with a generator.
- A neighborhood that has the potential to have ingress and egress cut off as the result of a hazard event, such as a flood or earthquake (e.g. bridge only access).
- Substantial number of buildings in one area of the community are unreinforced masonry or soft-story construction.
- An area along the river is eroding and threatening public and/or private property.
- A large visitor population that may not be aware of tsunami risk.

Spending some time thinking about the results of the risk assessment and other noted vulnerabilities will be a big help in the development of your mitigation strategy.

HAZARD RISK RANKING

The risk ranking performed for the overall planning area is presented in the risk assessment section of the overall hazard mitigation plan. However, each jurisdiction has differing degrees of risk exposure and vulnerability and, therefore, needs to rank risk for its own area, using the same methodology as used for the overall planning area. The risk-ranking exercise assesses two variables for each hazard: its probability of occurrence; and its potential impact on people, property and the economy.

The risk ranking for each jurisdiction is included in the Risk Ranking Summary tab in the Loss Matrix included in the toolkit. Tetra Tech has filled in the results for each jurisdiction. If this risk ranking exercise generates results other that what you know based on substantiated data and documentation, you may alter the ranking based on this knowledge. If this is the case, please note this fact in your template and include what you believe the rank should be and why. For example, drought was ranked as low; however, the jurisdiction's economy is heavily reliant on water using industries, such as agriculture or manufacturing, so you believe it should be ranked as medium.

Also keep in mind that one of the purposes of this exercise is to support the selection and prioritization of actions in your plan. If you identify an action with a high priority that mitigates the risk of a hazard you have ranked low, that project may not be as competitive in the grant arena. On the other hand, you will need to have at least one true mitigation action for each hazard ranked as "high."

The instructions below describe the methodology for how these rankings were derived. Please review before providing any comments.

Risk Ranking Methodology

Review Risk Ranking in Template

Review the hazard risk ranking information that Tetra Tech has provided. The hazard with the highest risk rating is listed at the top of table titled "Hazard Risk Ranking" in your template and was given a rank of 1; the hazard with the second highest rating is listed second with a rank of 2; and so on. Two hazards with equal risk ratings were given the same rank. "High," Medium," and "Low" assignments were given for each hazard of concern based on the total score (probability x impact). It is important to note, that this is determined by the scores rather than assigning a certain number of hazards to each category.

When reviewing the risk ranking results, it is important to remember that this exercise is about categorizing hazards into broad levels of risk (e.g. high, medium, low). It is not an exercise in precision.

Review Risk Ranking in Loss Matrix

The following sections discuss the methodology used to develop the results included in your template. Please refer to the Loss Matrix provided in your tool kit in order to follow along.

Probability of Occurrence for Each Hazard

A probability factor is assigned based on how often a hazard is likely to occur. The probability of occurrence of a hazard event is generally based on past hazard events in an area, although weight can be given to expected future probability of occurrence based on established return intervals and changing climate conditions. For example, if your jurisdiction has experienced two damaging floods in the last 25 years, the probability of occurrence is high for flooding and scores a 3 under this category. If your jurisdiction has experienced no damage from landslides in the last 100 years, your probability of occurrence for landslide is low, and scores a 1 under this category. Each hazard was assigned a probability factor as follows:

- High—Hazard event is likely to occur within 25 years (Probability Factor = 3)
- Medium—Hazard event is likely to occur within 100 years (Probability Factor = 2)
- Low—Hazard event is not likely to occur within 100 years (Probability Factor = 1)
- None—If there is no exposure to a hazard, there is no probability of occurrence (Probability Factor = 0)

Potential Impacts of Each Hazard

The impact of each hazard is divided into three categories: impacts on people, impacts on property, and impacts on the economy. These categories are also assigned weighted values. Impact on people was assigned a weighting factor of 3, impact on property was assigned a weighting factor of 2 and impact on the economy was assigned a weighting factor of 1.

Impact factors for each category (people, property, economy) are described below:

- **People**—Values are assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. Impact factors were assigned as follows:
    - High—25 percent or more of the population is exposed to a hazard (Impact Factor = 3)
    - Medium—10 percent to 24 percent of the population is exposed to a hazard (Impact Factor = 2)
    - Low—9 percent or less of the population is exposed to the hazard (Impact Factor = 1)
    - No impact—None of the population is exposed to a hazard (Impact Factor = 0)

- **Property**—Values are assigned based on the percentage of the total ***property value exposed*** to the hazard event:
  - High—25 percent or more of the total replacement value is exposed to a hazard (Impact Factor = 3)
  - Medium—10 percent to 24 percent of the total replacement value is exposed to a hazard (Impact Factor = 2)
  - Low—9 percent or less of the total replacement value is exposed to the hazard (Impact Factor = 1)
  - No impact—None of the total replacement value is exposed to a hazard (Impact Factor = 0)

- **Economy**—Values were assigned based on the percentage of the total ***property value vulnerable*** to the hazard event. Values represent estimates of the loss from a major event of each hazard in comparison to the total replacement value of the property exposed to the hazard. For some hazards, such as wildfire and landslide, vulnerability may be considered to be the same or a portion of exposure due to the lack of loss estimation tools specific to those hazards.
  - High—Estimated loss from the hazard is 10 percent or more of the total replacement value (Impact Factor = 3)
  - Medium—Estimated loss from the hazard is 5 percent to 9 percent of the total replacement value (Impact Factor = 2)
  - Low—Estimated loss from the hazard is 4 percent or less of the total replacement value (Impact Factor = 1)
  - No impact—No loss is estimated from the hazard (Impact Factor = 0).

The following sections provide information on completing the risk ranking for your jurisdiction.

Impacts on People

The percent of the total population exposed to each hazard of concern with a defined extent and location (e.g. floodplain) can be found in the loss estimate matrix in the **green highlighted column.** For those hazards that do not have a defined extent and location (e.g. severe weather) the entire population is generally considered to be exposed. For the drought hazard, it is common for jurisdictions to list “low” or “none,” because all people in the planning area would be exposed to drought, but impacts to the health and safety of individuals are expected to be minimal.

Impacts on Property

The percent of the total value exposed to each hazard of concern with a defined extent and location (e.g. floodplain) can be found in the loss estimate matrix in the **blue highlighted column.** For those hazards that do not have a defined extent and location (e.g. severe weather) the entire building stock is generally considered to be exposed. For the drought hazard, it is common for jurisdictions to list “low” or “none,” because all structures in the planning area would be exposed to drought, but impacts to structures are expected to be minimal.

Impacts on the Economy

The loss estimates for each hazard of concern that was modeled (i.e. dam failure, flood, earthquake) can be found in the loss estimate matrix in the **purple highlighted column.** For those hazards that have a defined extent and location, but do not have modelled loss results, loss estimates can be the same as exposure or a portion thereof. For example, a large percentage of the building stock may be exposed to landslide or wildfire risk, but it would not be expected that one event that resulted in loss to all exposed structures would occur. For those hazards that do not have a defined extent and location (e.g. severe weather) the entire building stock is generally considered to be exposed, but impacts are generally considered to be “low.”

Risk Rating for Each Hazard

A risk rating for each hazard was determined by multiplying the assigned probability factor by the sum of the weighted impact factors for people, property and the economy:

Risk Rating = Probability Factor x Weighted Impact Factor {people + property + economy}

This is the number that is shown in the risk ranking table in your template.

STATUS OF PREVIOUS PLAN ACTIONS

Please note that this section only applies to jurisdictions that are conducting updates to previously approved hazard mitigation plans. If your jurisdiction has not previously participated in an approved plan, this section will not appear in your annex template. Also, please note that if you completed the Phase 2 annex, you likely already filled out this table. You will need to revisit this section to fill in the Action # section after competing your action plan in the following section.

All action items identified in prior mitigation planning efforts must be reconciled in this plan update. Action items must all be marked as ONE of the following; check the appropriate box (place an X) and provide the following information:

- **Completed—**If an action was completed during the performance period of the prior plan, please check the appropriate box and provide a date of completion in the comment section. If an action has been initiated and is an ongoing program (e.g. annual outreach event), you may mark it as completed and note that it is ongoing in the comments. When removing such actions from your action plan, please consider including them in the existing integration section above. If you have an action that addresses an ongoing program you would like to continue to include it in your action plan, please see the Carried Over to Plan Update section below.
- **Removed—**If action items are to be removed because they are no longer feasible, a reason must be given. Lack of funding does not mean that it is no longer feasible, unless the sole source of funding for an action is no longer available. Place a comment in the comment section explaining why the action is no longer feasible (e.g., “Action no longer considered feasible due to lack of political support.”). If the wording and/or intent of a previously identified action is unclear, this can be a reason for removal. A change in community priorities may also be a reason for removal and should be discussed in the comments.
- **Carried Over to Plan Update—**If an action is in progress, ongoing or has not been initiated and you would like to carry it over to the plan update, please check the “Check if Yes” column under “Carried Over to Plan Update.” Selecting this option indicates that the action will be included in the mitigation action plan for the 2017 plan. The last column “Enter Action #” will be addressed when you develop your actions plan in the following sections. You will need to revisit it after completing the action plan.

HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

This section is the heart of your jurisdictional annex. This is where you will identify the actions your jurisdiction would like to pursue with this plan. All of the work that you have done thus far should provide you with a plethora of ideas for actions. With this in mind, we recommend that you review the following and develop a list of potential actions:

Wording Your Action Descriptions:

Descriptions of your actions need not provide great detail. That will come when you apply for a project grant. Provide enough information to identify the project's scope and impact. The following are typical descriptions for an action plan action:

- **Action 1**—Address repetitive-loss properties. Through targeted mitigation, acquire, relocate or retrofit the five repetitive loss structures in the County as funding opportunities become available.
- **Action 2**—Perform a non-structural, seismic retrofit of City Hall.
- **Action 3**—Acquire floodplain property in the Smith subdivision.
- **Action 4**—Enhance the County flood warning capability by joining the NOAA "Storm Ready" program.

- **Capability Assessment Section of Annex**—Review the Legal and Regulatory Capability table, the Development and Permitting Capability table, the Fiscal Capability table, the Administrative and Technical Capability table, the Education and Outreach table, and the Community Classification table.
  - For any capability that you indicated that you did not have, ask yourself – should we have this capability? If yes, consider including an action to develop/acquire the capability.
  - Example: Ensure a staff person from public works and planning are trained in the use of FEMA's benefit-cost analysis software.
  - Review the Legal and Regulatory capabilities. If any have not been reviewed and updated a capability in more than 10 years, consider an action to review and update the capability and, as appropriate, incorporate hazard mitigation principles or information obtained in the risk assessment (Note: actions such as this should also be identified in the opportunities for future integration section). Also, consider including projects or actions that have been identified in other plans and programs such as Capital Improvement Plans, Strategic Plans, etc. as actions in this plan.
  - For any capability that you indicated you do have, consider how this capability can be leveraged to increase or improve hazard mitigation in the jurisdiction.

- **National Flood Insurance Program Compliance Table of this Annex**—Review the table and consider the following:
  - If you have no certified floodplain managers and you have flood risk, consider adding an action to provide key staff members with training appropriate to obtain certification.
  - If your flood damage prevention was last updated in or before 2004, you should identify an action to update your ordinance to ensure it is compliant with NFIP requirements.
  - If you have any outstanding NFIP compliance issues, be sure to add an action to address them.
  - If flood hazard maps do not adequately address the flood risk within your jurisdiction, consider actions to request new mapping or conduct studies.
  - If you don't participate in CRS or you would like to improve your classification, consider this as an action.
  - If the number of flood insurance polices in your jurisdiction is low relative to the number of structures in the floodplain, consider an action that will promote flood insurance in your jurisdiction.

- **Adaptive Capacity for Climate Change Section of this Annex**—Consider your responses to this section. For those criterion that you listed as medium or low, think of ways you could improve this rating (see adaptive capacity portion of the mitigation best practices catalog). For those criterion you listed as high, think about how you can leverage this capacity to improve or enhance mitigation or continue to improve this capacity. For those criterion that you were unable to provide responses for, consider ways you could improve your understanding of this capacity (see mitigation best practices).
- **Opportunities for Future Integration Section in this Annex**—Review the items you identified in this section. For those items that address land use include them in the prepopulated Action in your template that reads as follows: Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including _____. For other items listed in this section, consider an action that specifically says what the plan, code, ordinance etc. is and how it will be integrated.
- **Jurisdiction-Specific Vulnerabilities Section in this Annex—**Review the items that you have identified in this section and consider actions that will help reduce these vulnerabilities (see mitigation best practices catalog).
- **Mitigation Best Practices Catalog**—A catalog that includes FEMA and other agency identified best practices, steering committee and other stakeholder recommendations was developed as part of the plan development process and included in your tool kit. Review the catalog and identify those actions that your jurisdiction should consider including in its action plan.
- **Public Input**—Review input received during the process, specifically the public survey results included in your toolkit.
- **Prior Mitigation Planning Efforts**—If your jurisdiction participated in a previous hazard mitigation plan, please be sure to remember to include any actions that were identified as "carry over" actions. Once you have carried them over, return to the Status of Previous Actions table and record the new action number (see discussion below).

Be sure to consider the following factors in your selection of actions:

- Select actions that are consistent with the overall purpose, goals, and objectives of the hazard mitigation plan.
- Identify projects where benefits exceed costs.
- Include any project that your jurisdiction has committed to pursuing regardless of grant eligibility.
- Know what is and is not grant-eligible under the Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM) and Flood Mitigation Assistance (FMA) grants (see fact sheet provided in toolkit). Listing HMGP, PDM or FMA as a potential funding source for an ineligible project will be a red flag when this plan goes through review. If you have projects that are not HMGP, PDM or FMA grant eligible, but do mitigate part or all of the hazard and may be eligible for other grant programs sponsored by other agencies, include them in this section.
- You should identify at least one action for your highest ranked risk, but hazard-specific projects for every hazard are not required. If you have not identified an earthquake related project, and an earthquake occurs that causes damage in your jurisdiction, you are not discounted from HMGP project grant eligibility.

Recommended Actions

We recommend that every planning partner strongly consider the following actions. The specifics of these actions should be adjusted as needed for the particulars of each community. You will note that four of these actions have been prepopulated in your annex template. These four actions should be included in every annex and should not be removed.

- Where appropriate, support retro-fitting, purchase or relocation of structures located in high hazard areas and prioritize those structures that have experienced repetitive losses.
- Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions within the community.
- Actively participate in the plan maintenance protocols outlined in Volume I of the hazard mitigation plan.
- Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements:
    - Enforce the flood damage prevention ordinance.
    - Participate in floodplain identification and mapping updates.
    - Provide public assistance/information on floodplain requirements and impacts.
- Develop and implement a program to capture perishable data after significant events (e.g. high water marks, preliminary damage estimates, damage photos) to support future mitigation efforts including the implementation and maintenance of the hazard mitigation plan.
- Support the County-wide initiatives identified in Volume I of the hazard mitigation plan.
- Consider the development of a post-disaster recovery plan and a debris management plan.

Complete the Table

Complete the table titled "Hazard Mitigation Action Plan Matrix" for all the actions you have identified and would like to include in the plan:

- Enter the action number and description .
- Indicate whether the action mitigates hazards for new and/or existing assets.
- Identify the specific hazards the action will mitigate.
- Identify by number the mitigation plan objectives that the action addresses (see toolkit).
- Indicate who will be the lead in administering the project. This will most likely be a department within your jurisdiction (e.g. planning or public works). If you wish to indicate more than one department, please ensure that it is clear who the lead agency will be (i.e note with an *)
- Enter an estimated cost in dollars if known; otherwise, enter "High," "Medium" or "Low" as determined for the prioritization process described in the following section.
- Identify funding sources for the project. If it is a grant, include the funding sources for the cost share. Refer to your fiscal capability assessment to identify possible sources of funding.
- Indicate the time line as "short-term" (1 to 5 years) or "long-term" (5 years or greater) or ongoing (a continual program)

Action Item Numbering:

- Please use the following action item numbering conventions:
    - Antioch: A-1
    - Brentwood: B-1
    - Concord: C-1
    - Contra Costa County: CCC-1
    - Danville: D-1
    - El Cerrito: EC-1
    - Lafayette: L-1
    - Martinez: M-1
    - Moraga: MG-1
    - Orinda: O-1
    - Pleasant Hill: PH-1
    - Richmond: R-1
    - San Pablo: SP-1
    - San Ramon: SR-1
    - Walnut Creek: WC-1

Please see the table below for an example for the recommended initiatives above:

Example Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
EX-1—Where appropriate, support retro-fitting, purchase or relocation of structures located in high hazard areas and prioritize those structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	Planning	High	HMGP, PDM, FMA	Short-term
EX-2—Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions within the community.						
New and Existing	All Hazards	1, 4, 5, 7, 11, 12, 14, 17	Planning	Low	Staff Time, General Funds	Ongoing
EX-3—Develop and implement a program to capture perishable data after significant events (e.g. high water marks, preliminary damage estimates, damage photos) to support future mitigation efforts including the implementation and maintenance of the hazard mitigation plan.						
Existing	All Hazards	6, 8, 18	Emergency Management	Medium	Staff Time, General Funds	Short-term
EX-4—Support the County-wide initiatives identified in Volume I of the hazard mitigation plan.						
New and Existing	All Hazards	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 ,18	Lead Contact Department for Plan	Low	Staff Time, General Funds	Short-term
EX-5—Actively participate in the plan maintenance protocols outlined in Volume I of the hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 16	Lead Contact Department for Plan	Low	Staff Time, General Funds	Short-term
EX-6—Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: • Enforcement of the flood damage prevention ordinance • Participate in floodplain identification and mapping updates • Provide public assistance/information on floodplain requirements and impacts.						
New and Existing	Flood	3, 5, 6, 9, 10, 11, 15	Public Works	Low	Staff Time, General Funds	Ongoing
EX-7—Work with building officials to identify ways to improve the jurisdictions' BCEGS classification.						
New	Earthquake, Flood, Landslide, Severe weather, Tsunami, Wildfire	1, 5, 6, 7, 11	Building and Development Services	Low	Staff Time, General Funds	Short-term
EX-8—Develop a post-disaster recovery plan and a debris management plan.						
Existing	All Hazards	6, 13	Emergency Management	Medium	EMPG	Long-term
EX-9—Participate in programs such as Firewise, StormReady and the Community Rating System.						
New and Existing	Dam Failure, Flood, Severe weather, Wildfire	3, 6, 9, 17	Emergency Management* and Public Works	Low	Staff Time, General Funds	Short-term

*Identified Lead Agency

Prioritization of Mitigation Actions

Complete the information in the table titled "Mitigation Strategy Priority Schedule" as follows:

- **Action #**—Indicate the action number from the previous annex table (Hazard Mitigation Action Plan Matrix).
- **# of Objectives Met**—Enter the number of objectives the action will meet.
- **Benefits**—Enter "High," "Medium" or "Low" as follows:
  - High: Project will have an immediate impact on the reduction of risk exposure to life and property.
  - Medium: Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.
  - Low: Long-term benefits of the project are difficult to quantify in the short term.
- **Costs**—Enter "High," "Medium" or "Low" as follows:
  - High: Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.
  - Medium: Could budget for under existing work-plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
  - Low: Possible to fund under existing budget. Project is or can be part of an existing ongoing program.

  If you know the estimated cost of a project because it is part of an existing, ongoing program, indicate the amount.
- **Do Benefits Exceed the Cost?**—Enter "Yes" or "No." This is a qualitative assessment. Enter "Yes" if the benefit rating (high, medium or low) is the same as or higher than the cost rating (high benefit/high cost; high benefit/medium cost; medium benefit/low cost; etc.). Enter "No" if the benefit rating is lower than the cost rating (medium benefit/high cost, low benefit/medium cost; etc.)
- **Is the Project Grant-Eligible?**—Enter "Yes" or "No." Refer to the fact sheet on HMGP, PDM and FMA.
- **Can Project Be Funded Under Existing Program Budgets?**—Enter "Yes" or "No." In other words, is this action currently budgeted for, or would it require a new budget authorization or funding from another source such as grants?
- **Implementation Priority**— Enter "High," "Medium" or "Low" as follows:
  - High Priority—An initiative that meets multiple objectives, has benefits that exceed cost, has funding secured or is an ongoing project and meets eligibility requirements for a grant program. High priority initiatives can be completed in the short term (1 to 5 years). The key factors for high priority initiatives are that they have funding secured and can be completed in the short term.
  - Medium Priority—An initiative that meets multiple objectives, that has benefits that exceed costs, and for which funding has not yet been secured, but is eligible for funding. Initiative can be completed in the short term, once funding is secured. Medium priority projects will become high priority projects once funding is secured. The key factors for medium priority initiatives are that they are eligible for funding, but do not yet have funding secured, and they can be completed within the short term.
  - Low Priority—An initiative that will mitigate the risk of a hazard, that has benefits that do not exceed the costs or are difficult to quantify, for which funding has not been secured, that is not eligible for grant funding, and for which the time line for completion is long term (1 to 10 years). Low priority initiatives may be eligible for grant funding from other programs that have not yet been identified.

Low priority projects are generally "blue-sky" or "wish-list." projects. Financing is unknown, and they can be completed over a long term.

- **Grant Pursuit Priority**— Enter "High," "Medium" or "Low" as follows:
  - High Priority—An initiative that has been identified as meeting grant eligibility requirements, assessed to have high benefits, is listed as high or medium priority, and where local funding options are unavailable or where dedicated funds could be utilized for projects that are not eligible for grant funding.
  - Medium Priority—An initiative that has been identified as meeting grant eligibility requirements, assessed to have medium or low benefits, is listed as medium or low priority, and where local funding options are unavailable.
  - Low Priority—An initiative that has not been identified as meeting grant eligibility requirements, or has low benefits.

This prioritization is a simple way to determine that your identified actions meet one of the primary objectives of the Disaster Mitigation Act. It is not the detailed benefit/cost analysis required for HMGP/PDM /FMA project grants. The prioritization will identify any projects whose probable benefits will not exceed the probable costs. Those initiatives identified as high-priority grant funding initiatives should be closely reviewed for consideration when grant funding opportunities arise.

Note: If a jurisdiction wishes to identify a project as high priority that is outside of the prioritization scheme for high priorities. A note indicting so should be inserted and a rationale should be provided.

Please see the example below based off the recommended initiatives:

Table 0-9. Mitigation Strategy Priority Schedule

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
EX-1	8	High	High	Yes	Yes	No	Medium	High
EX-2	8	Medium	Low	Yes	No	Yes	High	Low
EX-3	3	Low	Medium	No	No	Maybe	Low	Low
EX-4	18	Low	Low	Yes	No	Yes	High	Low
EX-5	3	Low	Low	Yes	No	Yes	High	Low
EX-6	7	Medium	Low	Yes	No	Yes	High	Low
EX-7	6	Medium	Low	Yes	No	Yes	High	Low
EX-8	2	Medium	Medium	Yes	Yes	No	Medium	High
EX-9	4	Medium	Low	Yes	No	Yes	High	Low

a. See the introduction to this volume for explanation of priorities

Analysis of Mitigation Actions

Complete the table titled "Analysis of Mitigation Actions" summarizing the mitigation actions by hazard of concern and the following eight mitigation types. Please note that an action can be more than one mitigation type:

- **Prevention**—Government, administrative or regulatory actions that influence the way land and buildings are developed to reduce hazard losses. Includes planning and zoning, floodplain laws, capital improvement programs, open space preservation, and stormwater management regulations.
- **Property Protection**—Modification of buildings or structures to protect them from a hazard or removal of structures from a hazard area. Includes acquisition, elevation, relocation, structural retrofit, storm shutters, and shatter-resistant glass.
- **Public Education and Awareness**—Actions to inform residents and elected officials about hazards and ways to mitigate them. Includes outreach projects, real estate disclosure, hazard information centers, and school-age and adult education.
- **Natural Resource Protection**—Actions that minimize hazard loss and preserve or restore the functions of natural systems. Includes sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, wetland restoration and preservation, and green infrastructure.
- **Emergency Services**—Actions that protect people and property during and immediately after a hazard event. Includes warning systems, emergency response services, and the protection of essential facilities.
- **Structural Projects**—Actions that involve the construction of structures to reduce the impact of a hazard. Includes dams, setback levees, floodwalls, retaining walls, and safe rooms.
- **Climate Resilient**—Actions that incorporate methods to mitigate and/or adapt to the impacts of climate change. Includes aquifer storage and recovery activities, incorporating future conditions projections in project design or planning, or actions that specifically address jurisdiction-specific climate change risks, such as sea level rise or urban heat island effect.
- **Community Capacity Building**—Actions that increase or enhance local capabilities to adjust to potential damage, to take advantage of opportunities, or to respond to consequences. Includes staff training, memorandums of understanding, development of plans and studies, and monitoring programs.

This exercise demonstrates that the jurisdiction has selected a comprehensive range of actions.

Please see the example below based off the recommended initiatives, but please note that these recommendations are heavy on generalized actions on the prevention spectrum and light in other areas and specificity. Planning partners should aim to identify at least one action in each category (although this is not required) and should make sure there is at least one action to address "high" ranked hazards:

Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	EX-2, 3, 4, 5	EX-1	EX-4		EX-8			EX-3, 4, 8, 9
Dam and Levee Failure	EX-6	EX-6	EX-6					
Drought								
Earthquake	EX-7	EX-7						

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
Flood	EX-6, 7	EX-6, 7	EX-6	EX-9				
Landslide	EX-7	EX-7						
Severe weather	EX-7	EX-7, 9			EX-9			
Tsunami	EX-7	EX-7						
Wildfire	EX-7	EX-7, 9	EX-9	EX-9				

FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

In this section, identify any future studies, analyses, reports, or surveys your jurisdiction needs to better understand its vulnerability to identified or currently unidentified risks. These could be needs based on federal or state agency mandates. Please note that this section is optional.

ADDITIONAL COMMENTS

Use this section to add any additional information pertinent to hazard mitigation and your jurisdiction not covered in this template. Please note that this section is optional.

REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

This section should describe what resources you used to complete the annex and how you used them. Several items are started for you, but please be sure to update and enhance any descriptions. This may seem trivial or unimportant, but it is a requirement to pass the state and FEMA review process.

NEXT STEPS

After all jurisdictions have submitted their annexes, the draft plan will be submitted for public comment. Following the public comment period and any revisions responsive to public comment, the plan will be submitted to the California Governor's Office of Emergency Services (Cal OES) for review. After their review and approval, Cal OES will submit the plan to FEMA Region IX for plan review and approval. At that point planning partners will be asked to begin making preparations to formally adopt the plan. Each participating planning partner must have the governing board of their jurisdiction adopt via resolution or ordinance. Once FEMA has reviewed the plan and issued an approved pending adoption (APA) notice, planning partners will be asked to go forth and adopt the plan. Once adopted, planning partners will submit adoption information to Tetra Tech, who will submit the proof of adoption to FEMA. Once such adoption has been received, FEMA will issue final approval via a letter for those planning partners who have adopted the plan. It is very important to understand that approval is not final until proof of adoption has been received by FEMA and they have issued a letter specifically naming your jurisdiction. More information on the review and approval process, along with adoption support materials, will be provided at a later date.

1. JURISDICTION NAME

1.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Name, Title
Street Address
City, State ZIP
Telephone: xxx-xxx-xxxx
e-mail Address: xxx@xxx.xxx

Alternate Point of Contact
Name, Title
Street Address
City, State ZIP
Telephone: xxx-xxx-xxxx
e-mail Address: xxx@xxx.xxx

1.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation**—
- **Current Population**—
- **Population Growth**—
- **Location and Description**—
- **Brief History**—
- **Climate**—
- **Governing Body Format**—___[general description]___. The __[name of adopting body]___ assumes responsibility for the adoption of this plan; __[name of oversight agency]__ will oversee its implementation.

1.3 DEVELOPMENT TRENDS

_DESCRIBE TRENDS IN GENERAL__.

Table 1-1 summarizes development trends in the performance period since development of the previous hazard mitigation plan and expected future development trends.

Table 1-1. Recent and Expected Future Development Trends

Criterion	Response					
Has your jurisdiction annexed any land since the development of the previous hazard mitigation plan? • If yes, give the estimated area annexed and estimated number of parcels or structures.	Yes/No _____					
Is your jurisdiction expected to annex any areas during the performance period of this plan? • If yes, please describe land areas and dominant uses. • If yes, who currently has permitting authority over these areas?	Yes/No _____ _____					
Are any areas targeted for development or major redevelopment in the next five years? • If yes, please briefly describe, including whether any of the areas are in known hazard risk areas	Yes/No _____					
How many building permits were issued in your jurisdiction since the development of the previous hazard mitigation plan?		2011	2012	2013	2014	2015
	Single Family	__	__	__	__	__
	Multi-Family	__	__	__	__	__
	Other (commercial, mixed use, etc.)	__	__	__	__	__
Please provide the number of permits for each hazard area or provide a qualitative description of where development has occurred.	• Special Flood Hazard Areas: # • Landslide: # • High Liquefaction Areas: # • Tsunami Inundation Area: # • Wildfire Risk Areas: #					
Please describe the level of buildout in the jurisdiction, based on your jurisdiction's buildable lands inventory. If no such inventory exists, provide a qualitative description.	_____					

1.4 CAPABILITY ASSESSMENT

Jurisdiction Name has performed an inventory and analysis of existing capabilities, plans, programs and policies that enhance its ability to implement mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of legal and regulatory capabilities is presented in Table 1-2.
- Development and permitting capabilities are presented in Table 1-3.
- An assessment of fiscal capabilities is presented in Table 1-4.
- An assessment of administrative and technical capabilities is presented in Table 1-5.
- An assessment of education and outreach capabilities is presented in Table 1-6.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 1-7.
- Classifications under various community mitigation programs are presented in Table 1-8.
- The community's adaptive capacity for the impacts of climate change is presented in Table 1-9.

Table 1-2. Legal and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Zoning Code *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Subdivisions *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Stormwater Management *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Post-Disaster Recovery *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Real Estate Disclosure *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Growth Management *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Site Plan Review *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Environmental Protection *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Flood Damage Prevention *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Emergency Management *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Climate Change *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Other: *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Planning Documents				
General Plan *Is the plan compliant with Assembly Bill 2140?* *Yes/No* *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Capital Improvement Plan *How often is the plan updated?* _____ *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Floodplain or Watershed Plan *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Stormwater Plan *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Urban Water Management Plan *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Habitat Conservation Plan *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Economic Development Plan *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Shoreline Management Plan *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Community Wildfire Protection Plan *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Forest Management Plan *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Climate Action Plan *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Comprehensive Emergency Management Plan *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Threat & Hazard Identification & Risk Assessment (THIRA) *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Post-Disaster Recovery Plan *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Continuity of Operations Plan *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Public Health Plan *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No
Other: *Comment:*	Yes/No	Yes/No	Yes/No	Yes/No

Table 1-3. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? • If no, who does? If yes, which department?	Yes/No _____
Does your jurisdiction have the ability to track permits by hazard area?	Yes/No
Does your jurisdiction have a buildable lands inventory?	Yes/No

Table 1-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes/No
Capital Improvements Project Funding	Yes/No
Authority to Levy Taxes for Specific Purposes	Yes/No
User Fees for Water, Sewer, Gas or Electric Service	Yes/No- If yes, please specify
Incur Debt through General Obligation Bonds	Yes/No
Incur Debt through Special Tax Bonds	Yes/No
Incur Debt through Private Activity Bonds	Yes/No
Withhold Public Expenditures in Hazard-Prone Areas	Yes/No
State-Sponsored Grant Programs	Yes/No
Development Impact Fees for Homebuyers or Developers	Yes/No
Other	Yes/No (if yes, please specify)

Table 1-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes/No	Insert appropriate information
Engineers or professionals trained in building or infrastructure construction practices	Yes/No	Insert appropriate information
Planners or engineers with an understanding of natural hazards	Yes/No	Insert appropriate information
Staff with training in benefit/cost analysis	Yes/No	Insert appropriate information
Surveyors	Yes/No	Insert appropriate information
Personnel skilled or trained in GIS applications	Yes/No	Insert appropriate information
Scientist familiar with natural hazards in local area	Yes/No	Insert appropriate information
Emergency Manager	Yes/No	Insert appropriate information
Grant writers	Yes/No	Insert appropriate information
Other	Yes/No	Insert appropriate information

Table 1-6. Education and Outreach Capability

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes/No
Do you have personnel skilled or trained in website development?	Yes/No
Do you have hazard mitigation information available on your website? • If yes, please briefly describe.	Yes/No Insert appropriate information
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe.	Yes/No Insert appropriate information
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly describe.	Yes/No Insert appropriate information
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe.	Yes/No Insert appropriate information
Do you have any established warning systems for hazard events? • If yes, please briefly describe.	Yes/No Insert appropriate information

Table 1-7. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Insert appropriate information
Who is your floodplain administrator? (department/position)	Insert appropriate information
Are any certified floodplain managers on staff in your jurisdiction?	Yes/No
What is the date that your flood damage prevention ordinance was last amended?	Insert appropriate information
Does your floodplain management program meet or exceed minimum requirements? • If exceeds, in what ways?	Meets/Exceeds Insert appropriate information
When was the most recent Community Assistance Visit or Community Assistance Contact?	Insert appropriate information
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? • If so, please state what they are.	Yes/No Insert appropriate information
Do your flood hazard maps adequately address the flood risk within your jurisdiction? • If no, please state why.	Yes/No Insert appropriate information

Criterion	Response
Does your floodplain management staff need any assistance or training to support its floodplain management program? • If so, what type of assistance/training is needed?	Yes/No Insert appropriate information
Does your jurisdiction participate in the Community Rating System (CRS)? • If yes, is your jurisdiction interested in improving CRS Classification? • Is your jurisdiction interested in joining the CRS program?	Yes/No Yes/No Yes/No
How many flood insurance policies are in force in your jurisdiction?[a] • What is the insurance in force? • What is the premium in force?	Insert appropriate information $_____ $_____
How many total loss claims have been filed in your jurisdiction?[a] • How many claims are still open/were closed without payment? • What were the total payments for losses?	Insert appropriate information Insert appropriate information $_____

a. According to FEMA statistics as of MONTH XX, 201X

Table 1-8. Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	Yes/No	_____	Date
Building Code Effectiveness Grading Schedule	Yes/No	_____	Date
Public Protection	Yes/No	_____	Date
Storm Ready	Yes/No	_____	Date
Firewise	Yes/No	_____	Date

Table 1-9. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts	High/Medium/Low
Comment:	
Jurisdiction-level monitoring of climate change impacts	High/Medium/Low
Comment:	
Technical resources to assess proposed strategies for feasibility and externalities	High/Medium/Low
Comment:	
Jurisdiction-level capacity for development of greenhouse gas emissions inventory	High/Medium/Low
Comment:	
Capital planning and land use decisions informed by potential climate impacts	High/Medium/Low
Comment:	
Participation in regional groups addressing climate risks	High/Medium/Low
Comment:	
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes	High/Medium/Low
Comment:	
Identified strategies for greenhouse gas mitigation efforts	High/Medium/Low
Comment:	
Identified strategies for adaptation to impacts	High/Medium/Low
Comment:	

Criterion	Jurisdiction Rating
Champions for climate action in local government departments	High/Medium/Low
Comment:	
Political support for implementing climate change adaptation strategies	High/Medium/Low
Comment:	
Financial resources devoted to climate change adaptation	High/Medium/Low
Comment:	
Local authority over sectors likely to be negative impacted	High/Medium/Low
Comment:	
Public Capacity	
Local residents knowledge of and understanding of climate risk	High/Medium/Low
Comment:	
Local residents support of adaptation efforts	High/Medium/Low
Comment:	
Local residents' capacity to adapt to climate impacts	High/Medium/Low
Comment:	
Local economy current capacity to adapt to climate impacts	High/Medium/Low
Comment:	
Local ecosystems capacity to adapt to climate impacts	High/Medium/Low
Comment:	

1.5 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

1.5.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, Jurisdiction Name made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **Plan or Program Name**—Description
- **Plan or Program Name**—Description
- **Plan or Program Name**—Description
- **Plan or Program Name**—Description
- **Plan or Program Name**—Description
- **Plan or Program Name**—Description

Resources listed in Section 1.13 were used to provide information for this annex on hazard events and local capabilities within the jurisdiction.

1.5.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, Jurisdiction Name will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan in actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Plan or Program Name**—Description
- **Plan or Program Name**—Description
- **Plan or Program Name**—Description
- **Plan or Program Name**—Description
- **Plan or Program Name**—Description
- **Plan or Program Name**—Description

1.6 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 1-10 lists past occurrences of natural hazards for which specific damage was recorded in Jurisdiction Name. Other hazard events that broadly affected the entire planning area, including Jurisdiction Name, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 1-10. Past Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____

1.7 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for the jurisdiction.

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: XX
- Number of FEMA-identified Severe-Repetitive-Loss Properties: XX
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: XX

Other noted vulnerabilities include the following:

- Insert as appropriate.
- Insert as appropriate.
- Insert as appropriate.

1.8 HAZARD RISK RANKING

Table 1-11 presents a local ranking for Jurisdiction Name of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 1-11. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	_____	_____	High/Medium/Low
2	_____	_____	High/Medium/Low
3	_____	_____	High/Medium/Low
4	_____	_____	High/Medium/Low
5	_____	_____	High/Medium/Low
6	_____	_____	High/Medium/Low
7	_____	_____	High/Medium/Low
8	_____	_____	High/Medium/Low
9	_____	_____	High/Medium/Low

a. Based on the level of detail conducted in the risk assessment, the risk ranking for this hazard is focused solely on dam failure impacts. See Chapter 6.4 of Volume 1 for combined dam inundation list on which this assessment is based.
b. Haywired M7.05 event was used to assign probability and impacts
c. 1-percent annual chance event was used to assign probability and impacts
d. 2100 upper range estimates and extreme tide are used to assign probability and impacts
e. Very High and High severity zones were used to assign probability and impacts
f. There is no mapped risk within the jurisdiction; however, a score was given due to potential impacts to people and the economy from smoke

1.9 STATUS OF PREVIOUS PLAN ACTIONS

Table 1-12 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 1-12. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update: Check if Yes	Carried Over to Plan Update: Enter Action #
Insert Action Text				Action#
Comment:				

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update: Check if Yes	Carried Over to Plan Update: Enter Action #
Insert Action Text *Comment:*				Action#
Insert Action Text *Comment:*				Action#
Insert Action Text *Comment:*				Action#
Insert Action Text *Comment:*				Action#
Insert Action Text *Comment:*				Action#
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Insert Action Text *Comment:*				Action#
Insert Action Text *Comment:*				Action#

1.10 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 1-13 lists the actions that make up the Jurisdiction Name hazard mitigation action plan. Table 1-14 identifies the priority for each action. Table 1-15 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 1-13. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
Action #— Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	TBD	High	HMGP, PDM, FMA	Short-term
Action #— Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including _____						
New and Existing	All Hazards	1, 4, 5, 7, 11, 12, 14, 17	TBD	Low	Staff Time, General Funds	Ongoing
Action #— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 16	TBD	Low	Staff Time, General Funds	Short-term

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
Action #—Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: • Enforce the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts.						
New and Existing	Flood	3, 5, 6, 9, 10, 11, 15	TBD	Low	Staff Time, General Funds	Ongoing
Action #—Description						
Action #—Description						
Action #—Description						
Action #—Description						
Action #—Description						
Action #—Description						
Action #—Description						
Action #—Description						
Action #—Description						
Action #—Description						
Action #—Description						
Action #—Description						
Action #—Description						

Note: * = Identified lead agency

Table 1-14. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
TBD	8	High	High	Yes	Yes	No	Medium	High
TBD	8	Medium	Low	Yes	No	Yes	High	Low
TBD	3	Low	Low	Yes	No	Yes	High	Low
TBD	7	Medium	Low	Yes	No	Yes	High	Low

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]

a. See the introduction to this volume for explanation of priorities.

Table 1-15. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards								
Dam and Levee **failure**								
Drought								
Earthquake								
Flood								
Landslide								
Severe weather								
Tsunami								
Wildfire								

a. See the introduction to this volume for explanation of mitigation types.

1.11 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

Insert text, if any; otherwise, delete section

1.12 ADDITIONAL COMMENTS

Insert text, if any; otherwise, delete section

1.13 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Jurisdiction Name Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **Jurisdiction Name Flood Damage Prevention Ordinance**—The flood damage prevention ordinance was reviewed for compliance with the National Flood Insurance Program.
- <INSERT PLAN/PROGRAM AND DESCRIPTION OF HOW IT WAS USED>
- <INSERT PLAN/PROGRAM AND DESCRIPTION OF HOW IT WAS USED>
- <INSERT PLAN/PROGRAM AND DESCRIPTION OF HOW IT WAS USED>
- <INSERT PLAN/PROGRAM AND DESCRIPTION OF HOW IT WAS USED>
- **Technical Reports and Information—**The following **o**utside resources and references were reviewed:
    - **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.
    - <INSERT DOCUMENT AND DESCRIPTION OF HOW IT WAS USED>

Tetra Tech Will Insert Jurisdiction-Specific Hazard Maps Prepared for This Plan

INSTRUCTIONS FOR COMPLETING SPECIAL PURPOSE DISTRICT ANNEX TEMPLATE

The jurisdictional annex templates for the 2017 Contra Costa County Hazard Mitigation Plan update will be completed in three phases. **This document provides instructions for completing all phases of the template for special purpose districts.**

If your jurisdiction completed and submitted Phase 1 and Phase 2, Phase 3 has been added to the end of your document. Any planning team comments, questions or suggestions have been included as blue highlighted notes and/or comments. Any text edits were made with changes tracked for review. Any yellow highlights indicate areas where missing information should be filled in. Phase 3 instructions begin on page 6.

If your jurisdiction did not complete Phase 1 and/or Phase 2, please complete all phases at this time.

The target timeline for phase completion is as follows:

- **Phase 1** – Jurisdictional profile
  - Deployed: early February
  - Due: early March
- **Phase 2** – Capability assessment
  - Deployed: Mid-March
  - Due: Mid-April
- **Phase 3** – Risk ranking and action plan development
  - Deployed: Mid-June
  - Workshop: June 7th and 14th
  - Due: Friday, July 7th

Any questions on completing the template should be directed to:

Kristen Gelino
Tetra Tech, Inc.
(917) 426-4594 or (646) 576-4029
E-mail: kristen.gelino@tetratech.com

Special Purpose District Annex:

This document provides instructions for completing **all phases** of the jurisdictional annex template for special purpose districts. **Templates should be completed by Friday, July 7, 2017.** Your completed template should be submitted to:

Kristen Gelino
Tetra Tech, Inc.
(917) 426-4594 or (646) 576-4029
E-mail: kristen.gelino@tetratech.com

A Note About Formatting:

The template for the annex is a Microsoft Word document in a format that will be used in the final plan. Partners are asked to use this template so that a uniform product will be completed for each partner.

Content should be entered within the yellow, highlighted text that is currently in the template, rather than creating text in another document and pasting it into the template. Text from another source will alter the style and formatting of the document.

The numbering in the document will be updated when completed annexes are combined into the final document. Please do not adjust any of this numbering.

Phase 1 Instructions

CHAPTER TITLE

In the chapter title at the top of Page 1, type in the complete official name of your district (e.g. West County Fire Protection District #1, Johnsonville Flood Protection District, etc.). Please do not change the chapter number. Revise only the jurisdiction name.

HAZARD MITIGATION PLAN POINT OF CONTACT

Please provide the name, title, mailing address, telephone number, and e-mail address for the primary point of contact for your jurisdiction. This should be the person responsible for monitoring, evaluating and updating the annex for your jurisdiction. This person should also be the principle liaison between your jurisdiction and the Steering Committee overseeing development of this plan.

In addition, designate an alternate point of contact. This would be a person to contact should the primary point of contact be unavailable or no longer employed by the jurisdiction.

Note: Both of these contacts should match the contacts that were designated in your jurisdiction's letter of intent to participate in this planning process. If you have changed the primary or secondary contact, please let the planning team know by inserting a comment into the document.

JURISDICTION PROFILE

Overview

Please provide a brief summary description of your jurisdiction. Please be sure to include:

- the purpose of the jurisdiction,
- the date of inception,
- the type of organization,
- the number of employees,
- the mode of operation (i.e., how operations are funded),
- a description of who the district's customers are,
- an overview of current service area trends, including an approximation of current users/subscribers,
- a summary description of previous growth trends in service area, and anticipated future increase/decrease in services (if applicable),
- an approximation of area served in square miles,
- a geographical decription of the service area, and
- the type of governing body, and who has adoptive authority.

Example Jurisdiction Narrative Profile:

The Johnsonville Community Services District is a special district created in 1952 to provide water and sewer service to the unincorporated area east of the City of Smithburg known as Johnsonville. The District's designated service area expanded throughout the years to include other unincorporated areas of Jones County: Creeks Corner, Jones Hill, Fields Landing, King Salmon, and Freshwater. A five-member elected Board of Directors governs the District. The Board assumes responsibility for the adoption of this plan; the General Manager will oversee its implementation. As of April 30, 2016, the District serves 7,305 water connections and 6,108 sewer connections, with a current staff of 21. Funding comes primarily through rates and revenue bonds.

Provide information similar to the example provided in the box above. This should be information that is specific to your jurisdiction and will not be provided in the overall, planning area-wide mitigation plan document.

Fire Districts should complete the yellow highlighted portions of the following sentence that is included in the annex: The District participates/does not participate in the Public Protection Class Rating System and currently has a rating of #.

All other types of special purpose districts should delete this sentence.

ASSETS

Please provide an approximate value for the noted areas within the table. Include the sum total value for identified assets for each section in the "Total" line for the section.

Property

Provide an approximate value for the land owned by the District.

Critical Infrastructure and Equipment

List types of equipment an infrastructure owned by the District that are used in times of emergency or, if incapacitated, has the potential to severely impact the service area. Provide an approximate **aggregate replacement value** for each type. For water and sewer, include mileage of pipeline under this category.

Critical Facilities

List types of district structures vital to maintain services to the designated service area. Provide an approximate **aggregate replacement value** for each line. The Steering Committee has decided upon the following definition of Critical Facilities for this planning process:

> Critical facilities and infrastructure are those assets, systems, and networks, whether physical or virtual, considered so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination, per the Department of Homeland Security. For this hazard mitigation plan, the 16 critical infrastructure sectors as defined by the Department of Homeland Security will be used. The 16 sectors are:
>
> - Chemical
> - Commercial Facilities
> - Communications
> - Critical Manufacturing
> - Dams
> - Defense Industrial Base
> - Emergency Services
> - Energy
> - Financial Services
> - Food and Agriculture
> - Government Facilities
> - Healthcare and Public Health
> - Information Technology
> - Nuclear Reactors, Materials, and Waste
> - Transportation Systems
> - Water and Wastewater Systems.

Please use this definition as a guideline when selecting critical facilities.

SAMPLE COMPLETED TABLE – SPECIAL DISTRICT ASSETS	
Asset	Value
Property	
11.5 Acres	$5,750,000
Critical Infrastructure and Equipment	
Total length of pipe 40 miles ($1.32 million per mile X 40 miles)	$52,800,000
4 Emergency Generators	$250,000
Total:	**$53,050,000**
Critical Facilities	
2 Administrative Buildings	$2,750,000
4 Pump Station Buildings	$377,000
Total:	**$3,127,000**

Phase 2 Instructions

If your jurisdiction participated in a previously approved hazard mitigation plan, we have transferred relevant content to the Phase 2 portion of your annex. All pre-populated content should be reviewed for accuracy and completeness.

CAPABILITY ASSESSMENT

Planning and Regulatory Capability

List any federal, state, local or district laws, ordinances, codes and policies that govern your jurisdiction that include elements related to hazard mitigation. List any other plans, studies or other documents that address hazard mitigation issues for your jurisdiction. Please provide the date of last update. A few examples follow:

- **District Design Standards**—Last updated 2010.
- **Capital Improvement Program**—Updated and approved annually, covers 5 year timeframe.
- **Emergency Operations Plan**—Last updated 2000.
- **Facility Maintenance Manual**—Last updated 1990.
- **California Building Code**—Last updated 2016.
- **California State Division of State Architects—**Review and approval of all building and site design features is required prior to construction.
- **Habitat Conservation Plan**—All development impacting critical habitat must meet federal and state requirements pertaining to the protection of endangered species.

Fiscal, Administrative and Technical Capabilities

Fiscal Capability

Complete the table titled "Fiscal Capability" by indicating whether each of the listed financial resources is accessible to your jurisdiction. Enter "Yes" if the resource is fully accessible to your jurisdiction. Enter "No" if there are limitations or prerequisites that may hinder your eligibility for this resource.

Administrative and Technical Capability

Complete the table titled "Administrative and Technical Capability" by indicating whether your jurisdiction has access to each of the listed personnel resources. Enter "Yes" or "No" in the column labeled "Available?". If yes, then enter the department and position title in the right-hand column. If you have contract support staff with these capabilities, you can still answer "Yes." Indicate in the department column that this resource is provided through contract support.

Education and Outreach Capabilities

Complete the table titled "Education and Outreach" to indicate your jurisdiction's capabilities and existing efforts regarding natural hazard mitigation education and outreach.

Adaptive Capacity for Climate Change

Consider the climate change impact concerns identified for the planning area:

- Increased temperature
- Reduced precipitation
- Sea level rise – coastal inundation and erosion
- Public health – heat and air pollution
- Reduced agricultural productivity
- Inland flooding
- Reduced tourism.

With those impacts in mind, complete the table titled "Adaptive Capacity for Climate Change" by indicating that your jurisdiction's capacity for each listed criterion as follows:

- **High**—The capacity exists and is in use.
- **Medium**—The capacity may exist, but is not used or could use some improvement.
- **Low**—The capacity does not exist or could use substantial improvement.
- **Unsure**—Not enough information is known to assign a rating.

This is a subjective assessment, but providing a few words of explanation is useful. It is highly recommended that you complete this table with an internal planning team and that you review the results of the other capability assessment tables before completing.

INTEGRATION WITH OTHER PLANNING INITIATIVES

The goal of plan integration is to ensure that the potential impact of hazards is considered in planning for future development. FEMA recommends integration as follows:

- Integrate hazard mitigation plan goals with community objectives (e.g. incorporate the goals for risk reduction and safety into the policies of other plans).
- Use the risk assessment to inform plans and policies (e.g. incorporate risk assessment findings into land use plans, site plan review, emergency operations plans).
- Implement mitigation actions through existing mechanisms (e.g. include mitigation projects in the capital improvement plan).
- Think about mitigation before and after a disaster (e.g. build recovery planning on existing mitigation plans and goals).

After reviewing the plans, programs and ordinances identified in the capability assessment, identify all plans and programs that have already been integrated with the goals and recommendations of the hazard mitigation plan, and those that offer opportunities for future integration.

Existing Integration

Provide a brief description of how the plan or ordinance is integrated. Examples are as follows:

- **Capital Improvement Plan**—The capital improvement plan includes projects can help mitigate potential hazards. The District will act to ensure consistency between the hazard mitigation plan and the current and future capital improvement plans. The hazard mitigation plan may identify new possible funding sources for capital improvement projects and may result in modifications to proposed projects based on results of the risk assessment.
- **Emergency Operations Plan**—The results of the risk assessment were used in the development of the emergency operations plan.
- **Facilities Plan**—The results of the risk assessment and mapped hazard areas are used in facility planning for the district. Potential sites are reviewed for hazard risks and appropriate mitigation measures are considered in building and site design.

Opportunities for Future Integration

List any plans or program that offer the potential for future integration and describe the process by which integration will occur. Examples follow:

- **Capital Improvement Projects**—Capital improvement project proposals may take into consideration hazard mitigation potential as a means of evaluating project prioritization.
- **Post-Disaster Recovery Plan**—The District does not have a recovery plan and intends to develop one as a mitigation planning action during the next five years. The plan will build on the mitigation goals and objectives identified in the mitigation plan.

Consider other programs you may have in place in your jurisdiction that include routine consideration and management of hazard risk. Examples of such programs may include: tree pruning programs, right-of-way mowing programs, erosion control or stream maintenance programs, etc. Please add any such programs to the integration discussion and provide a brief description of how these program manage (or could be adapted to manage) risk from hazards.

Phase 3 Instructions

If your jurisdiction participated in a previously approved hazard mitigation plan, we have transferred relevant content to the Phase 3 portion of your annex. All pre-populated content should be reviewed for accuracy and completeness.

JURISDICTION-SPECIFIC NATURAL EVENT HISTORY

In the table titled "Past Natural Hazard Events," list in chronological order (most recent first) any natural hazard event that has caused damage to your jurisdiction. Include the date of the event and the estimated dollar amount of damage it caused. You are welcome to include any events, but special attention should be made to include major storms and federally declared disasters. Please refer to the table below that lists Presidential Disaster Declarations for the County. We recommend including most large-scale disasters, unless you know that there were no impacts to your jurisdiction. Specifically, we recommend that you include these events if you have damage estimate

information or can provide a brief description of impacts that occurred within your community. In addition to these events, please refer to the NOAA storm events database included in the tool kit. We recommend conducting a search for the name of your jurisdiction or those jurisdictions in your service area in order to identify events with known impacts. Other potential sources of damage information include:

- Preliminary damage estimates your jurisdiction filed with the county or state
- Insurance claims data
- Newspaper archives
- Other plans/documents that deal with emergency management (safety element of a comprehensive plan, emergency response plan, etc.)
- Resident input.

If you do not have estimates for dollars of damage caused, please list "Not Available" in the appropriate column or simply list a brief description of the damages (e.g. Power out to 35,000 customers for 24 hours). Please note that tracking such damages, is a valid and useful mitigation action if your jurisdiction does not currently track such information.

Presidential Disaster Declarations for Contra Costa County

Type of Event	FEMA Disaster #	Declaration Date
Severe Storms, Flooding, and Mudslides	DR-4301	2/14/2017
Severe Storms, Flooding, Mudslides, and Landslides	DR-1628	2/3/2006
Severe Winter Storms and Flooding	DR-1203	2/9/1998
Severe Storms, Flooding, Mud and Landslides	DR-1155	1/4/1997
Severe Winter Storms, Flooding Landslides, Mud Flow	DR-1046	3/12/1995
Severe Winter Storms, Flooding, Landslides, Mud Flows	DR-1044	1/10/1995
Severe Winter Storm, Mud and Land Slides, and Flooding	DR-979	2/3/1993
Loma Prieta Earthquake	DR-845	10/18/1989
Severe Storms and Flooding	DR-758	2/21/1986
Coastal Storms, Floods, Slides, and Tornadoes	DR-677	2/9/1983
Severe Storms, Flood, Mudslides, and High Tide	DR-651	1/7/1982
Torrential Rain, High Tide, and Winds	EM- 3078	2/01/1980
Drought	EM-3023	1/20/1977
Severe Storms and Flooding	DR-253	1/26/1969

Note: EM = Emergency Declaration; DR = Disaster Declaration

JURISDICTION-SPECIFIC VULNERABILITIES

We would strongly encourage you to review the results of the risk assessment included in the tool kit, your jurisdiction's natural events history, and any relevant public comments/input and develop a few sentences that discuss specific risks. You do not need to develop a sentence for every single parameter, but review the results and identify a few issues you would like to highlight. For example:

- One of the District's wastewater treatment plants is located in an area likely to be permanently inundated by sea level rise by 2030.
- Three of the District's five fire stations are located in very high landslide risk areas.

- The vast majority of the service area for the district is located on high liquefaction potential soils, which has the potential to severely disrupt service for an extended period following even a moderate earthquake event.
- The District headquarters is more likely than not to be extensively damaged during a Smithburg fault M7.0 event.

In addition, please list any noted vulnerabilities in your jurisdiction related to hazard mitigation that may not be apparent from the risk assessment and other information provided. This may include things such as the following:

- An area of the community that frequently loses power due to a lack of tree maintenance.
- A critical facility, such as a police station, that is not equipped with a generator.
- A neighborhood that has the potential to have ingress and egress cut off as the result of a hazard event, such as a flood or earthquake (e.g. bridge only access).

Spending some time thinking about the results of the risk assessment and other noted vulnerabilities will be a big help in the development of your mitigation strategy.

HAZARD RISK RANKING

The risk ranking performed for the overall planning area is presented in the risk assessment section of the overall hazard mitigation plan. However, each jurisdiction has differing degrees of risk exposure and vulnerability and, therefore, needs to rank risk for its own area, using the same methodology as used for the overall planning area. The risk-ranking exercise assesses two variables for each hazard: its probability of occurrence; and its potential impact on people, property and the economy.

Tetra Tech has brought forward the risk ranking results from the 2011 plan for each jurisdiction that participated in that planning effort. For those jurisdictions that did not participate in the 2011 planning effort, a draft risk ranking using the parameters outlined below has been developed for each planning partner. If this risk ranking exercise generates results other that what you know based on substantiated data and documentation, you may alter the ranking based on this knowledge. If this is the case, please note this fact in your template and include what you believe the rank should be and why. For example, drought was ranked as low; however, the jurisdiction is a water supply district, so you believe it should be ranked as high.

Also keep in mind that one of the purposes of this exercise is to support the selection and prioritization of actions in your plan. If you identify an action with a high priority that mitigates the risk of a hazard you have ranked low, that project may not be as competitive in the grant arena. On the other hand, you will need to have at least one true mitigation action for each hazard ranked as “high.”

The instructions below describe the methodology for how these rankings were derived. Please review before providing any comments.

Risk Ranking Methodology

Review Risk Ranking in Template

Review the hazard risk ranking information that Tetra Tech has provided. The hazard with the highest risk rating is listed at the top of table titled “Hazard Risk Ranking” in your template and was given a rank of 1; the hazard with the second highest rating is listed second with a rank of 2; and so on. Two hazards with equal risk ratings were given the same rank. “High,” Medium,” and “Low” assignments were given for each hazard of concern based on the total score (probability x impact). It is important to note, that this is determined by the scores rather than assigning a certain number of hazards to each category.

When reviewing the risk ranking results, it is important to remember that this exercise is about categorizing hazards into broad levels of risk (e.g. high, medium, low). It is not an exercise in precision.

Review Risk Ranking in Loss Matrix

The following sections discuss the methodology used to develop the results included in your template. Please refer to the risk assessment results provided for more information.

Probability of Occurrence for Each Hazard

A probability factor is assigned based on how often a hazard is likely to occur. The probability of occurrence of a hazard event is generally based on past hazard events in an area, although weight can be given to expected future probability of occurrence based on established return intervals and changing climate conditions. For example, if your jurisdiction has experienced two damaging floods in the last 25 years, the probability of occurrence is high for flooding and scores a 3 under this category. If your jurisdiction has experienced no damage from landslides in the last 100 years, your probability of occurrence for landslide is low, and scores a 1 under this category. Each hazard was assigned a probability factor as follows:

- High—Hazard event is likely to occur within 25 years (Probability Factor = 3)
- Medium—Hazard event is likely to occur within 100 years (Probability Factor = 2)
- Low—Hazard event is not likely to occur within 100 years (Probability Factor = 1)
- None—If there is no exposure to a hazard, there is no probability of occurrence (Probability Factor = 0)

Potential Impacts of Each Hazard

The impact of each hazard is divided into three categories: impacts on people, impacts on property, and impacts on the economy. These categories are also assigned weighted values. Impact on people was assigned a weighting factor of 3, impact on property was assigned a weighting factor of 2 and impact on the economy was assigned a weighting factor of 1.

Impact factors for each category (people, property, economy) are described below:

- **People**—Values are assigned based on the percentage of the total ***population exposed*** in your service area to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. Impact factors were assigned as follows:

  - High—25 percent or more of the population is exposed to a hazard (Impact Factor = 3)
  - Medium—10 percent to 24 percent of the population is exposed to a hazard (Impact Factor = 2)
  - Low—9 percent or less of the population is exposed to the hazard (Impact Factor = 1)
  - No impact—None of the population is exposed to a hazard (Impact Factor = 0)

- **Property**—Values are assigned based on the percentage of the total ***district assets exposed*** to the hazard event:

  - High—25 percent or more of the total replacement value of assets is exposed to a hazard (Impact Factor = 3)
  - Medium—10 percent to 24 percent of the total replacement value of assets is exposed to a hazard (Impact Factor = 2)
  - Low—9 percent or less of the total replacement value of assets is exposed to the hazard (Impact Factor = 1)

- No impact—None of the total replacement value is exposed to a hazard (Impact Factor = 0)

- **Operations**—Impact on operations is assessed based on estimates of how long it will take your jurisdiction to become 100-percent operable after a hazard event. The estimated functional downtime for critical facilities has been estimated by Hazus (see toolkit) or subjectively assigned an impact as follows:

  - High—Functional downtime of 365 days or more (Impact Factor = 3)
  - Medium—Functional downtime of 180 to 364 days (Impact Factor = 2)
  - Low—Functional downtime of 180 days or less (Impact Factor = 1)
  - No impact—No functional downtime is estimated from the hazard (Impact Factor = 0).

Risk Rating for Each Hazard

A risk rating for each hazard was determined by multiplying the assigned probability factor by the sum of the weighted impact factors for people, property and the economy:

Risk Rating = Probability Factor x Weighted Impact Factor {people + property + economy}

This is the number that is shown in the risk ranking table in your template.

STATUS OF PREVIOUS PLAN ACTIONS

Please note that this section only applies to jurisdictions that are conducting updates to previously approved hazard mitigation plans. If your jurisdiction has not previously participated in an approved plan, this section will not appear in your annex template. Also, please note that if you completed the Phase 2 annex, you likely already filled out this table. You will need to revisit this section to fill in the Action # section after competing your action plan in the following section.

All action items identified in prior mitigation planning efforts must be reconciled in this plan update. Action items must all be marked as ONE of the following; check the appropriate box (place an X) and provide the following information:

- **Completed—**If an action was completed during the performance period of the prior plan, please check the appropriate box and provide a date of completion in the comment section. If an action has been initiated and is an ongoing program (e.g. annual outreach event), you may mark it as completed and note that it is ongoing in the comments. When removing such actions from your action plan, please consider including them in the existing integration section above. If you have an action that addresses an ongoing program you would like to continue to include it in your action plan, please see the Carried Over to Plan Update section below.
- **Removed—**If action items are to be removed because they are no longer feasible, a reason must be given. Lack of funding does not mean that it is no longer feasible, unless the sole source of funding for an action is no longer available. Place a comment in the comment section explaining why the action is no longer feasible (e.g., "Action no longer considered feasible due to lack of political support."). If the wording and/or intent of a previously identified action is unclear, this can be a reason for removal. A change in community priorities may also be a reason for removal and should be discussed in the comments.
- **Carried Over to Plan Update—**If an action is in progress, ongoing or has not been initiated and you would like to carry it over to the plan update, please check the "Check if Yes" column under "Carried Over to Plan Update." Selecting this option indicates that the action will be included in the mitigation action plan for the 2017 plan. The last column "Enter Action #" will be addressed when you develop

your actions plan in the following sections. You will need to revisit it after completing the action plan.

HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

This section is the heart of your jurisdictional annex. This is where you will identify the actions your jurisdiction would like to pursue with this plan. All of the work that you have done thus far should provide you with a plethora of ideas for actions. With this in mind, we recommend that you review the following and develop a list of potential actions:

Wording Your Action Descriptions:

Descriptions of your actions need not provide great detail. That will come when you apply for a project grant. Provide enough information to identify the project's scope and impact. The following are typical descriptions for an action plan action:

- **Action 1**—Address repetitive-loss properties. Through targeted mitigation, acquire, relocate or retrofit the nine pump stations that have been repetitively damaged.
- **Action 2**—Perform a non-structural, seismic retrofit of the administrative building.
- **Action 3**—Develop a schedule to underground overhead powerlines.

- **Capability Assessment Section of Annex**—Review the Planning and Regulatory Capability table, the Fiscal Capability table, the Administrative and Technical Capability table, and the Education and Outreach table.
  - For any capability that you indicated that you did not have, ask yourself – should we have this capability? If yes, consider including an action to develop/acquire the capability.
  - Example: Ensure a staff person is trained in the use of FEMA's benefit-cost analysis software.
  - Review the Legal and Regulatory capabilities. If you have not reviewed and updated a capability in more than 10 years, consider an action to review and update the capability and, as appropriate, incorporate hazard mitigation principles or information obtained in the risk assessment (Note: actions such as this should also be identified in the opportunities for future integration section). Also, consider including projects or actions that have been identified in other plans and programs such as Capital Improvement Plans, Strategic Plans, etc. as actions in this plan.
  - For any capability that you indicated you do have, consider how this capability can be leveraged to increase or improve hazard mitigation in the jurisdiction.
- **Adaptive Capacity for Climate Change Section of this Annex**—Consider your responses to this section. For those criterion that you listed as medium or low, think of ways you could improve this rating (see adaptive capacity portion of the mitigation best practices catalog). For those criterion you listed as high, think about how you can leverage this capacity to improve or enhance mitigation or continue to improve this capacity. For those criterion that you were unable to provide responses for, consider ways you could improve your understanding of this capacity (see mitigation best practices).
- **Opportunities for Future Integration Section in this Annex**—Review the items you identified in this section. Consider an action that specifically says what the plan, code, ordinance etc. is and how it will be integrated.
- **Jurisdiction-Specific Vulnerabilities Section in this Annex**—Review the items that you have identified in this section and consider actions that will help reduce these vulnerabilities (see mitigation best practices catalog).
- **Mitigation Best Practices Catalog**—A catalog that includes FEMA and other agency identified best practices, steering committee and other stakeholder recommendations was developed as part of the plan

development process and included in your tool kit. Review the catalog and identify those actions that your jurisdiction should consider including in its action plan.

- **Public Input**—Review input received during the process, specifically the public survey results included in your toolkit.
- **Prior Mitigation Planning Efforts**—If your jurisdiction participated in a previous hazard mitigation plan, please be sure to remember to include any actions that were identified as "carry over" actions. Once you have carried them over, return to the Status of Previous Actions table and record the new action number (see discussion below).

Be sure to consider the following factors in your selection of actions:

- Select actions that are consistent with the overall purpose, goals, and objectives of the hazard mitigation plan.
- Identify projects where benefits exceed costs.
- Include any project that your jurisdiction has committed to pursuing regardless of grant eligibility.
- Know what is and is not grant-eligible under the Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM) and Flood Mitigation Assistance (FMA) grants (see fact sheet provided in toolkit). Listing HMGP, PDM or FMA as a potential funding source for an ineligible project will be a red flag when this plan goes through review. If you have projects that are not HMGP, PDM or FMA grant eligible, but do mitigate part or all of the hazard and may be eligible for other grant programs sponsored by other agencies, include them in this section.
- You should identify at least one action for your highest ranked risk, but hazard-specific projects for every hazard are not required. If you have not identified an earthquake related project, and an earthquake occurs that causes damage in your jurisdiction, you are not discounted from HMGP project grant eligibility.

Recommended Actions

We recommend that every planning partner strongly consider the following actions. The specifics of these actions should be adjusted as needed for the particulars of each jurisdiction. You will note that two of these actions have been prepopulated in your annex template. These two actions should be included in every annex and should not be removed.

- Where appropriate, support retro-fitting, purchase or relocation of structures located in high hazard areas, prioritizing structures that have experienced repetitive losses.
- Integrate the hazard mitigation plan into other plans, ordinances and programs within the community.
- Actively participate in the plan maintenance protocols outlined in Volume I of the hazard mitigation plan.

- Develop and implement a program to capture perishable data after significant events (e.g. high water marks, preliminary damage estimates, damage photos) to support future mitigation efforts including the implementation and maintenance of the hazard mitigation plan.
- Support the County-wide initiatives identified in Volume I of the hazard mitigation plan.
- Consider the development of a post-disaster recovery plan and a debris management plan.

Complete the Table

Complete the table titled "Hazard Mitigation Action Plan Matrix" for all the actions you have identified and would like to include in the plan:

- Enter the action number and description .
- Indicate whether the action mitigates hazards for new and/or existing assets.
- Identify the specific hazards the action will mitigate.
- Identify by number the mitigation plan objectives that the action addresses (see toolkit).
- Indicate who will be the lead in administering the project. This will most likely be a department within your jurisdiction (e.g. planning or public works). If you wish to indicate more than one department, please ensure that it is clear who the lead agency will be (i.e note with an *)
- Enter an estimated cost in dollars if known; otherwise, enter "High," "Medium" or "Low" as determined for the prioritization process described in the following section.
- Identify funding sources for the project. If it is a grant, include the funding sources for the cost share. Refer to your fiscal capability assessment to identify possible sources of funding.
- Indicate the time line as "short-term" (1 to 5 years) or "long-term" (5 years or greater) or ongoing (a continual program)

Action Item Numbering:

- Please use the following action item numbering conventions:
  - Antioch Unified School District: AUSD-1
  - Bethel Island Municipal Improvement District: BIMID-1
  - Central Contra Costa Sanitary District: CCCSD-1
  - Contra Costa County Fire Protection District: CCCFPD-1
  - Contra Costa County Flood Control and Water Conservation: CCCFCWCD-1
  - Contra Costa County Office of Education: CCOE-1
  - Contra Costa Water District: CCWD-1
  - Crockett Community Services District: CRCSD-1
  - Delta Diablo Sanitation District: DDSD-1
  - Diablo Water District: DWD-1
  - Dublin San Ramon Services District: DSRSD-1
  - Ironhouse Sanitary District: ISD-1
  - Kensington Fire Protection District: FFPD-1
  - Kensington Police Protection and Community Services District: KPPCSD-1
  - Moraga-Orinda Fire Protection District: MOFPD-1
  - Pleasant Hill Recreation and Park District: PHRPD-1
  - Reclamation District 800, Byron Tract: RD800-1
  - Reclamation District 830, Jersey Island: RD830-1
  - Rodeo/Hercules Fire Protection District: RHFPD-1
  - San Ramon Geological Hazard Abatement District: SRGHAD-1
  - San Ramon Valley Fire Protection District: SRVFPD-1
  - San Ramon Valley USD: SRVUSD-1
  - Tri Delta Transit: ECCTA-1
  - West Contra Costa Unified School District: WCCUSD-1

Please see the table below for an example for the recommended initiatives above:

Example Action Plan Matrix						
Applies to new or existing assets	**Hazards Mitigated**	**Objectives Met**	**Lead Agency**	**Estimated Cost**	**Sources of Funding**	**Timeline**
EX-1— Where appropriate, support retro-fitting, purchase or relocation of structures located in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	Planning	High	HMGP, PDM, FMA	Short-term
EX-2—Integrate the hazard mitigation plan into other plans, ordinances and programs within the community.						
New and Existing	All Hazards	1, 4, 5, 7, 11, 12, 14, 17	Planning	Low	Staff Time, General Funds	Ongoing
EX-3—Develop and implement a program to capture perishable data after significant events (e.g. high water marks, preliminary damage estimates, damage photos) to support future mitigation efforts including the implementation and maintenance of the hazard mitigation plan.						
Existing	All Hazards	6, 8, 18	Emergency Management	Medium	Staff Time, General Funds	Short-term
EX-4—Support the County-wide initiatives identified in Volume I of the hazard mitigation plan.						
New and Existing	All Hazards	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 ,18	Lead Contact Department for Plan	Low	Staff Time, General Funds	Short-term
EX-5—Actively participate in the plan maintenance protocols outlined in Volume I of the hazard mitigation plan.						
New and Existing	All Hazards	3, 8, 16	Lead Contact Department for Plan	Low	Staff Time, General Funds	Short-term
EX-7—Develop a post-disaster recovery plan and a debris management plan.						
Existing	All Hazards	6, 13	Emergency Management	Medium	EMPG	Long-term
*Identified Lead Agency						

Prioritization of Mitigation Actions

Complete the information in the table titled "Mitigation Strategy Priority Schedule" as follows:

- **Action #**—Indicate the action number from the previous annex table (Hazard Mitigation Action Plan Matrix).
- **# of Objectives Met**—Enter the number of objectives the action will meet.
- **Benefits**—Enter "High," "Medium" or "Low" as follows:
  - High: Project will have an immediate impact on the reduction of risk exposure to life and property.
  - Medium: Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.
  - Low: Long-term benefits of the project are difficult to quantify in the short term.
- **Costs**—Enter "High," "Medium" or "Low" as follows:
  - High: Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.

- Medium: Could budget for under existing work-plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
- Low: Possible to fund under existing budget. Project is or can be part of an existing ongoing program.

If you know the estimated cost of a project because it is part of an existing, ongoing program, indicate the amount.

- **Do Benefits Exceed the Cost?**—Enter "Yes" or "No." This is a qualitative assessment. Enter "Yes" if the benefit rating (high, medium or low) is the same as or higher than the cost rating (high benefit/high cost; high benefit/medium cost; medium benefit/low cost; etc.). Enter "No" if the benefit rating is lower than the cost rating (medium benefit/high cost, low benefit/medium cost; etc.)
- **Is the Project Grant-Eligible?**—Enter "Yes" or "No." Refer to the fact sheet on HMGP, PDM and FMA.
- **Can Project Be Funded Under Existing Program Budgets?**—Enter "Yes" or "No." In other words, is this action currently budgeted for, or would it require a new budget authorization or funding from another source such as grants?
- **Implementation Priority**— Enter "High," "Medium" or "Low" as follows:

  - High Priority—An initiative that meets multiple objectives, has benefits that exceed cost, has funding secured or is an ongoing project and meets eligibility requirements for a grant program. High priority initiatives can be completed in the short term (1 to 5 years). The key factors for high priority initiatives are that they have funding secured and can be completed in the short term.
  - Medium Priority—An initiative that meets multiple objectives, that has benefits that exceed costs, and for which funding has not yet been secured, but is eligible for funding. Initiative can be completed in the short term, once funding is secured. Medium priority projects will become high priority projects once funding is secured. The key factors for medium priority initiatives are that they are eligible for funding, but do not yet have funding secured, and they can be completed within the short term.
  - Low Priority—An initiative that will mitigate the risk of a hazard, that has benefits that do not exceed the costs or are difficult to quantify, for which funding has not been secured, that is not eligible for grant funding, and for which the time line for completion is long term (1 to 10 years). Low priority initiatives may be eligible for grant funding from other programs that have not yet been identified. Low priority projects are generally "blue-sky" or "wish-list." projects. Financing is unknown, and they can be completed over a long term.

- **Grant Pursuit Priority**— Enter "High," "Medium" or "Low" as follows:

  - High Priority—An initiative that has been identified as meeting grant eligibility requirements, assessed to have high benefits, is listed as high or medium priority, and where local funding options are unavailable or where dedicated funds could be utilized for projects that are not eligible for grant funding.
  - Medium Priority—An initiative that has been identified as meeting grant eligibility requirements, assessed to have medium or low benefits, is listed as medium or low priority, and where local funding options are unavailable.
  - Low Priority—An initiative that has not been identified as meeting grant eligibility requirements, or has low benefits.

This prioritization is a simple way to determine that your identified actions meet one of the primary objectives of the Disaster Mitigation Act. It is not the detailed benefit/cost analysis required for HMGP/PDM /FMA project grants. The prioritization will identify any projects whose probable benefits will not exceed the probable costs. Those initiatives identified as high-priority grant funding initiatives should be closely reviewed for consideration when grant funding opportunities arise.

Note: If a jurisdiction wishes to identify a project as high priority that is outside of the prioritization scheme for high priorities. A note indicting so should be inserted and a rationale should be provided.

Please see the example below based off the recommended initiatives:

Table 0-9. Mitigation Strategy Priority Schedule

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
EX-1	8	High	High	Yes	Yes	No	Medium	High
EX-2	8	Medium	Low	Yes	No	Yes	High	Low
EX-3	3	Low	Medium	No	No	Maybe	Low	Low
EX-4	18	Low	Low	Yes	No	Yes	High	Low
EX-5	3	Low	Low	Yes	No	Yes	High	Low
EX-6	2	Medium	Medium	Yes	Yes	No	Medium	High

a. See the introduction to this volume for explanation of priorities

Analysis of Mitigation Actions

Complete the table titled "Analysis of Mitigation Actions" summarizing the mitigation actions by hazard of concern and the following eight mitigation types. Please note that an action can be more than one mitigation type:

- **Prevention**—Government, administrative or regulatory actions that influence the way land and buildings are developed to reduce hazard losses. Includes planning and zoning, floodplain laws, capital improvement programs, open space preservation, and stormwater management regulations.
- **Property Protection**—Modification of buildings or structures to protect them from a hazard or removal of structures from a hazard area. Includes acquisition, elevation, relocation, structural retrofit, storm shutters, and shatter-resistant glass.
- **Public Education and Awareness**—Actions to inform residents and elected officials about hazards and ways to mitigate them. Includes outreach projects, real estate disclosure, hazard information centers, and school-age and adult education.
- **Natural Resource Protection**—Actions that minimize hazard loss and preserve or restore the functions of natural systems. Includes sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, wetland restoration and preservation, and green infrastructure.
- **Emergency Services**—Actions that protect people and property during and immediately after a hazard event. Includes warning systems, emergency response services, and the protection of essential facilities.
- **Structural Projects**—Actions that involve the construction of structures to reduce the impact of a hazard. Includes dams, setback levees, floodwalls, retaining walls, and safe rooms.
- **Climate Resilient**—Actions that incorporate methods to mitigate and/or adapt to the impacts of climate change. Includes aquifer storage and recovery activities, incorporating future conditions projections in

project design or planning, or actions that specifically address jurisdiction-specific climate change risks, such as sea level rise or urban heat island effect.

- **Community Capacity Building**—Actions that increase or enhance local capabilities to adjust to potential damage, to take advantage of opportunities, or to respond to consequences. Includes staff training, memorandums of understanding, development of plans and studies, and monitoring programs.

This exercise demonstrates that the jurisdiction has selected a comprehensive range of actions.

Please see the example below based off the recommended initiatives, but please note that these recommendations are heavy on generalized actions on the prevention spectrum and light in other areas and specificity. Planning partners should aim to identify at least one action in each category (although this is not required) and should make sure there is at least one action to address "high" ranked hazards:

Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	EX-2, 3, 4, 5	EX-1	EX-4		EX-8			EX-3, 4, 6
Dam and Levee Failure								
Drought								
Earthquake								
Flood								
Landslide								
Severe weather								
Tsunami								
Wildfire								

FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

In this section, identify any future studies, analyses, reports, or surveys your jurisdiction needs to better understand its vulnerability to identified or currently unidentified risks. These could be needs based on federal or state agency mandates. Please note that this section is optional.

ADDITIONAL COMMENTS

Use this section to add any additional information pertinent to hazard mitigation and your jurisdiction not covered in this template. Please note that this section is optional.

REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

This section should describe what resources you used to complete the annex and how you used them. Several items are started for you, but please be sure to update and enhance any descriptions. This may seem trivial or unimportant, but it is a requirement to pass the state and FEMA review process.

NEXT STEPS

After all jurisdictions have submitted their annexes, the draft plan will be submitted for public comment. Following the public comment period and any revisions responsive to public comment, the plan will be submitted to the California Governor's Office of Emergency Services (Cal OES) for review. After their review and approval, Cal OES will submit the plan to FEMA Region IX for plan review and approval. At that point planning partners will be asked to begin making preparations to formally adopt the plan. Each participating planning partner must have the governing board of their jurisdiction adopt via resolution or ordinance. Once FEMA has reviewed the plan and issued an approved pending adoption (APA) notice, planning partners will be asked to go forth and adopt the plan. Once adopted, planning partners will submit adoption information to Tetra Tech, who will submit the proof of adoption to FEMA. Once such adoption has been received, FEMA will issue final approval via a letter for those planning partners who have adopted the plan. It is very important to understand that approval is not final until proof of adoption has been received by FEMA and they have issued a letter specifically naming your jurisdiction. More information on the review and approval process, along with adoption support materials, will be provided at a later date.

1. DISTRICT NAME

1.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Name, Title
Street Address
City, State ZIP
Telephone: xxx-xxx-xxxx
e-mail Address: xxx@xxx.xxx

Alternate Point of Contact
Name, Title
Street Address
City, State ZIP
Telephone: xxx-xxx-xxxx
e-mail Address: xxx@xxx.xxx

1.2 JURISDICTION PROFILE

1.2.1 Overview

Insert Narrative Profile Information, per Instructions. The __[name of adopting body]___ assumes responsibility for the adoption of this plan; __[name of oversight agency]__ will oversee its implementation.

For fire districts please be sure to include the following sentence (Non-fire Special Purpose Districts may delete the sentence):

The District participates/does not participate in the Public Protection Class Rating System and currently has a rating of #.

1.2.2 Service Area and Trends

The district serves a population of _ population_. Its service area covers an area of _area_.

Insert summary description of service trends.

1.2.3 Assets

Table 1-1 summarizes the critical assets of the district and their value.

Table 1-1. Special Purpose District Assets

Asset	Value
Property	
number acres of land	$_value_
Critical Infrastructure and Equipment	
description	$_value_
description	$_value_
description	$_value_
description	$_value_
description	$_value_
Total:	*$_value_*
Critical Facilities	
description	$_value_
description	$_value_
description	$_value_
description	$_value_
description	$_value_
description	$_value_
Total:	*$_value_*

1.3 CAPABILITY ASSESSMENT

1.3.1 Planning and Regulatory Capabilities

Jurisdictions develop plans and programs and implement rules and regulations to protect and serve residents. When effectively prepared and administered, these plans, programs and regulations can support the implementation of mitigation actions. Table 1-2 summarizes existing codes, ordinances, policies, programs or plans that are applicable to this hazard mitigation plan.

Table 1-2. Planning and Regulatory Capability

	Date of Most Recent Update	Comment
Name of code, ordinance, policy, program or plan	_____	_____
Name of code, ordinance, policy, program or plan	_____	_____
Name of code, ordinance, policy, program or plan	_____	_____
Name of code, ordinance, policy, program or plan	_____	_____
Name of code, ordinance, policy, program or plan	_____	_____

1.3.2 Fiscal, Administrative and Technical Capabilities

Fiscal capability is an indicator of a jurisdiction's ability to fulfill the financial needs associated with hazard mitigation projects. An assessment of fiscal capabilities is presented in Table 1-3. Administrative and technical capabilities represent a jurisdiction's staffing resources for carrying out the mitigation strategy. An assessment of administrative and technical capabilities is presented in Table 1-4.

Table 1-3. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	Yes/No
Authority to Levy Taxes for Specific Purposes	Yes/No
User Fees for Water, Sewer, Gas or Electric Service	Yes/No
Incur Debt through General Obligation Bonds	Yes/No
Incur Debt through Special Tax Bonds	Yes/No
Incur Debt through Private Activity Bonds	Yes/No
State-Sponsored Grant Programs	Yes/No
Development Impact Fees for Homebuyers or Developers	Yes/No
Federal Grant Programs	Yes/No
Other	Yes/No (if yes, please specify)

Table 1-4. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes/No	Insert appropriate information
Engineers or professionals trained in building or infrastructure construction practices	Yes/No	Insert appropriate information
Planners or engineers with an understanding of natural hazards	Yes/No	Insert appropriate information
Staff with training in benefit/cost analysis	Yes/No	Insert appropriate information
Surveyors	Yes/No	Insert appropriate information
Personnel skilled or trained in GIS applications	Yes/No	Insert appropriate information
Scientist familiar with natural hazards in local area	Yes/No	Insert appropriate information
Emergency manager	Yes/No	Insert appropriate information
Grant writers	Yes/No	Insert appropriate information
Other	Yes/No	Insert appropriate information

1.3.3 Education and Outreach Capabilities

Outreach and education capability identifies the connection between government and community members, which opens a dialogue needed for a more resilient community. An assessment of education and outreach capabilities is presented in Table 1-5.

Table 1-5. Education and Outreach

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes/No
Do you have personnel skilled or trained in website development?	Yes/No
Do you have hazard mitigation information available on your website? • If yes, please briefly describe	Yes/No Insert appropriate information
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe	Yes/No Insert appropriate information
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly specify	Yes/No Insert appropriate information

Criterion	Response
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe	Yes/No Insert appropriate information
Do you have any established warning systems for hazard events? • If yes, please briefly describe	Yes/No Insert appropriate information

1.3.4 Adaptive Capacity for Climate Change

Given the uncertainties associated with how hazard risk may change with a changing climate, a jurisdiction's ability to track such changes and adapt as needed is an important component of the mitigation strategy. Table 1-6 summarizes the District's adaptive capacity for climate change.

Table 1-6. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts	High/Medium/Low
Comment:	
Jurisdiction-level monitoring of climate change impacts	High/Medium/Low
Comment:	
Technical resources to assess proposed strategies for feasibility and externalities	High/Medium/Low
Comment:	
Jurisdiction-level capacity for development of greenhouse gas emissions inventory	High/Medium/Low
Comment:	
Capital planning and land use decisions informed by potential climate impacts	High/Medium/Low
Comment:	
Participation in regional groups addressing climate risks	High/Medium/Low
Comment:	
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes	High/Medium/Low
Comment:	
Identified strategies for greenhouse gas mitigation efforts	High/Medium/Low
Comment:	
Identified strategies for adaptation to impacts	High/Medium/Low
Comment:	
Champions for climate action in local government departments	High/Medium/Low
Comment:	
Political support for implementing climate change adaptation strategies	High/Medium/Low
Comment:	
Financial resources devoted to climate change adaptation	High/Medium/Low
Comment:	
Local authority over sectors likely to be negative impacted	High/Medium/Low
Comment:	
Public Capacity	
Local residents knowledge of and understanding of climate risk	High/Medium/Low
Comment:	

Criterion	Jurisdiction Rating
Local residents support of adaptation efforts	High/Medium/Low
Comment:	
Local residents' capacity to adapt to climate impacts	High/Medium/Low
Comment:	
Local economy current capacity to adapt to climate impacts	High/Medium/Low
Comment:	
Local ecosystems capacity to adapt to climate impacts	High/Medium/Low
Comment:	

1.4 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved though the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

1.4.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, District Name made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **Plan or Program Name**—Description
- **Plan or Program Name**—Description
- **Plan or Program Name**—Description
- **Plan or Program Name**—Description
- **Plan or Program Name**—Description

Resources listed in Section 1.12 were used to provide information on hazard events and local capabilities within the jurisdiction.

1.4.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, District Name will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan include actions related to plan integration, and progress on these actions will be reported through the progress reporting process described in Volume 1. New opportunities for integration also will be identified as part of the annual progress report. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Plan or Program Name**—Description
- **Plan or Program Name**—Description
- **Plan or Program Name**—Description
- **Plan or Program Name**—Description
- **Plan or Program Name**—Description

1.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 1-7 lists past occurrences of natural hazards for which specific damage was recorded in District Name. Other hazard events that broadly affected the entire planning area, including District Name, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 1-7. Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____
Insert event type	_____	Date	$_____

1.6 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. Noted vulnerabilities within the district include the following:

- Insert as appropriate.
- Insert as appropriate.
- Insert as appropriate.

1.7 HAZARD RISK RANKING

Table 1-8 presents a local ranking for District Name of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 1-8. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	_____	_____	High/Medium/Low
2	_____	_____	High/Medium/Low
3	_____	_____	High/Medium/Low
4	_____	_____	High/Medium/Low
5	_____	_____	High/Medium/Low

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
6	_____	_____	High/Medium/Low
7	_____	_____	High/Medium/Low
8	_____	_____	High/Medium/Low
9	_____	_____	High/Medium/Low

1.8 STATUS OF PREVIOUS PLAN ACTIONS

Table 1-9 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 1-9. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
Insert Action Text *Comment:*				Action#
Insert Action Text *Comment:*				Action#
Insert Action Text *Comment:*				Action#
Insert Action Text *Comment:*				Action#
Insert Action Text *Comment:*				Action#
Insert Action Text *Comment:*				Action#
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Insert Action Text *Comment:*				Action#
Insert Action Text *Comment:*				Action#
Insert Action Text *Comment:*				Action#
Insert Action Text *Comment:*				Action#
Insert Action Text *Comment:*				Action#

1.9 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 1-10 lists the actions that make up the District Name hazard mitigation action plan. Table 1-11 identifies the priority for each action. Table 1-12 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 1-10. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
Action #— Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	TBD	TBD	High	HMGP, PDM, FMA	Short-term
Action #— Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
New and Existing	All Hazards	TBD	TBD	Low	Staff Time, General Funds	Short-term
Action #—Description						
Action #—Description						
Action #—Description						
Action #—Description						
Action #—Description						
Action #—Description						
Action #—Description						
Action #—Description						
Action #—Description						
Action #—Description						
Action #—Description						
Action #—Description						
Action #—Description						
Action #—Description						

Note: * = Indicates lead agency

Table 1-11. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
TBD	8	High	High	Yes	Yes	No	Medium	High
TBD	3	Low	Low	Yes	No	Yes	High	Low

a. See the introduction to this volume for explanation of priorities.

Table 1-12. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]						
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient
All hazards							
Dam and Levee **failure**							
Drought							
Earthquake							
Flood							
Landslide							
Severe weather							
Tsunami							
Wildfire							

a. See the introduction to this volume for explanation of mitigation types.

1.10 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

Insert text, if any; otherwise, delete section

1.11 ADDITIONAL COMMENTS

Insert text, if any; otherwise, delete section

1.12 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- <INSERT PLAN/PROGRAM AND DESCRIPTION OF HOW IT WAS USED>
- <INSERT PLAN/PROGRAM AND DESCRIPTION OF HOW IT WAS USED>
- <INSERT PLAN/PROGRAM AND DESCRIPTION OF HOW IT WAS USED>
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.