



Chapter 5 Mitigation Strategy

Requirement §201.6(c)(3) and §201.7(c)(3): [The plan shall include] a mitigation strategy that provides the jurisdiction’s blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

This section describes the mitigation strategy process and mitigation action plan for this Butte County Local Hazard Mitigation Plan (LHMP) Update. It describes how the County and participating jurisdictions met the following requirements from the 10-step planning process:

- Planning Step 6: Set Goals
- Planning Step 7: Review Possible Activities
- Planning Step 8: Draft an Action Plan

5.1 Mitigation Strategy: Overview

The results of the planning process, the risk assessment, the goal setting, the identification of mitigation actions, and the hard work of the Hazard Mitigation Planning Committee (HMPC) led to the mitigation strategy and mitigation action plan for this LHMP Update. As part of the LHMP Update process, a comprehensive review and update of the mitigation strategy portion of the 2014 LHMP was conducted by the HMPC. Some of the initial goals and objectives from the 2014 Butte County LHMP were refined and reaffirmed, some goals were deleted, and others were added. The end result was a new set of goals, reorganized to reflect the completion of or progress towards the 2014 actions, the updated risk assessment and the new priorities of this 2019 LHMP Update. To support the new LHMP goals, the mitigation actions from 2014 were reviewed and assessed for their value in reducing risk and vulnerability to the Planning Area from identified hazards and evaluated for their inclusion in this LHMP Update (See Chapter 2 What’s New). Section 5.2 below identifies the new goals and objectives of this LHMP Update and Section 5.4 details the new mitigation action plan.

Taking all of the above into consideration, the HMPC developed the following umbrella mitigation strategy for this LHMP Update:

- Communicate the hazard information collected and analyzed through this planning process as well as HMPC success stories so that the community better understands what can happen where and what they themselves can do to be better prepared.
- Implement the action plan recommendations of this Plan.
- Use existing rules, regulations, policies, and procedures already in existence.
- Monitor multi-objective management opportunities so that funding opportunities may be shared and packaged and broader constituent support may be garnered.

5.1.1. Continued Compliance with NFIP

Given the flood hazard in the Planning Area, an emphasis will be placed on continued compliance with the National Flood Insurance Program (NFIP) by all communities. Detailed below is a description of Butte County’s flood management program to ensure continued compliance with the NFIP. Also to be considered are the numerous flood mitigation actions contained in this LHMP Update that support the ongoing efforts by the County to minimize the risk and vulnerability of the community to the flood hazard and to enhance their overall floodplain management program. A summary of the flood management programs and continued compliance with the NFIP for the incorporated communities are detailed in their jurisdictional annexes.

Butte County’s Flood Management Program

Butte County has participated in the Regular Phase of the NFIP since 1989. Since then, the County has administered floodplain management regulations that meet the minimum requirements of the NFIP. Under that arrangement, residents and businesses paid the same flood insurance premium rates as most other communities in the country.

The Community Rating System (CRS) was created in 1990. It is designed to recognize floodplain management activities that go above and beyond the NFIP’s minimum requirements. If a community implements public information, mapping, regulatory, loss reduction and/or flood preparedness activities and submits the appropriate documentation to FEMA, then its residents can qualify for a flood insurance premium rate reduction. The County does not currently participate in the CRS program, but may evaluate the overall value of joining CRS in the future during the implementation phase of this LHMP Update.

Presently, the County manages its floodplains in compliance with NFIP requirements and implements a floodplain management program designed to protect the people and property of the County. Floodplain regulations are a critical element in local floodplain management and are a primary component in the County’s participation in the NFIP. As well, the County’s floodplain management activities apply to existing and new development areas, implementing flood protection measures for structures and maintaining drainage systems to help reduce the potential of flooding within the County.

The County will continue to manage their floodplains in continued compliance with the NFIP. An overview of the County’s NFIP status and floodplain management program are discussed on Table 5-1.

Table 5-1 Unincorporated Butte County NFIP Status

NFIP Topic	Comments
Insurance Summary	
How many NFIP policies are in the community? What is the total premium and coverage?	1,518 policies \$1,314,575 in premiums \$378,498,100 in flood coverage
How many claims have been paid in the community? What is the total amount of paid claims? How many of the claims were for substantial damage?	181 paid losses \$3,416,356.71 in paid claims 10 substantial damage claims

NFIP Topic	Comments
How many structures are exposed to flood risk within the community?	4,083 in 1% annual chance 14,868 in 0.2% annual chance
Number of Repetitive and Severe Repetitive Loss Properties	29 Repetitive Loss 2 Severe Repetitive Loss
Describe any areas of flood risk with limited NFIP policy coverage	South County – especially around Palermo
Staff Resources	
Is the Community Floodplain Administrator or NFIP Coordinator certified?	Y
Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability)	permit review, inspections
What are the barriers to running an effective NFIP program in the community, if any?	Finding qualified staff. Current staff person is retiring.
Compliance History	
Is the community in good standing with the NFIP?	Yes
Are there any outstanding compliance issues (i.e., current violations)?	No
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?	CAV 3/23/2015
Is a CAV or CAC scheduled or needed?	No
Regulation	
When did the community enter the NFIP?	8/9/1989
Are the FIRMs digital or paper?	Digital
Do floodplain development regulations meet or exceed FEMA or State minimum requirements? If so, in what ways?	Meet minimum requirements. County code chapter 26, article 4 is Flood Hazard Prevention and Article 5 is special permit zone II Levee and building regulations.
Provide an explanation of the permitting process.	There is a 3 phase permitting process, an elevation certificate must be submitted then there is a pre-construction inspection certificate, an under construction inspection and certification and final inspection and certification when the construction is complete where the floor must be a minimum of 1 foot above BFE.
Community Rating System (CRS)	
Does the community participate in CRS?	No
What is the community's CRS Class Ranking?	N/A
What categories and activities provide CRS points and how can the class be improved?	N/A
Does the plan include CRS planning requirements?	N/A

Source: FEMA/Butte County

5.1.2. Integration of Mitigation with Post Disaster Recovery and Mitigation Strategy Funding Opportunities

Hazard Mitigation actions are essential to weaving long-term resiliency into all community recovery efforts so that at-risk infrastructure, development, and other community assets are stronger and more resilient for the next severe storm event. Mitigation measures to reduce the risk and vulnerability of a community to future disaster losses can be implemented in advance of a disaster event and also as part of post-disaster recovery efforts.

Mitigation applied to recovery helps communities become more resilient and sustainable. It is often most efficient to fund all eligible infrastructure mitigation through FEMA's Public Assistance mitigation program if the asset was damaged in a storm event. Mitigation work can be added to project worksheets if they can be proven to be cost-beneficial.

Integration of mitigation into post disaster recovery efforts should be considered by all communities as part of their post disaster redevelopment and mitigation policies and procedures. As detailed in Section 4.4, the Capability Assessment for the unincorporated County and in the Annex's for the other participating jurisdictions, post-disaster redevelopment and mitigation policies and procedures are evaluated and updated as part of the Emergency Operations Plan (EOP) updates and other emergency management plans for each community.

These EOP's, through its policies and procedures, seek to mitigate the effects of hazards, prepare for measures to be taken which will preserve life and minimize damage, enhance response during emergencies and provide necessary assistance, and establish a recovery system in order to return the community to their normal state of affairs. Mitigation is emphasized as a major component of recovery efforts.

Mitigation Strategy Funding Opportunities

An understanding of the various funding streams and opportunities will enable the communities to match identified mitigation projects with the grant programs that are most likely to fund them. Additionally, some of the funding opportunities can be utilized together. Mitigation grant funding opportunities available pre- and post- disaster include the following.

FEMA HMA Grants

Cal OES administers three main types of HMA grants: (1) Hazard Mitigation Grant Program, (2) Pre-Disaster Mitigation Program, and (3) Flood Mitigation Assistance Program. Eligible applicants for the HMA include state and local governments, certain private non-profits, and federally recognized Indian tribal governments. While private citizens cannot apply directly for the grant programs, they can benefit from the programs if they are included in an application sponsored by an eligible applicant

FEMA Public Assistance Section 406 Mitigation

The Robert T. Stafford Disaster Relief and Emergency Assistance Act provides FEMA the authority to fund the restoration of eligible facilities that have sustained damage due to a presidentially declared disaster. The

regulations contain a provision for the consideration of funding additional measures that will enhance a facility's ability to resist similar damage in future events.

Community Development Block Grants

The California Department of Housing and Community Development administers the State's Community Development Block Grant (CDBG) program with funding provided by the U.S. Department of Housing and Urban Development. The program is available to all non-entitlement communities that meet applicable threshold requirements. All projects must meet one of the national objectives of the program – projects must benefit 51 percent low- and moderate-income people, aid in the prevention or clearance of slum and blight, or meet an urgent need. Grant funds can generally be used in federally declared disaster areas for CDBG eligible activities including the replacement or repair of infrastructure and housing damaged during, or as a result of, the declared disaster.

Small Business Loans

SBA offers low-interest, fixed-rate loans to disaster victims, enabling them to repair or replace property damaged or destroyed in declared disasters. It also offers such loans to affected small businesses to help them recover from economic injury caused by such disasters. Loans may also be increased up to 20 percent of the total amount of disaster damage to real estate and/or leasehold improvements to make improvements that lessen the risk of property damage by possible future disasters of the same kind.

Increased Cost of Compliance

Increased Cost of Compliance (ICC) coverage is one of several resources for flood insurance policyholders who need additional help rebuilding after a flood. It provides up to \$30,000 to help cover the cost of mitigation measures that will reduce flood risk. ICC coverage is a part of most standard flood insurance policies available under NFIP.

5.2 Goals and Objectives

Requirement §201.6(c)(3)(i) and §201.7(c)(3)(i): [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

Up to this point in the planning process, the HMPC has organized resources, assessed hazards and risks, and documented mitigation capabilities. The resulting goals, objectives, and mitigation actions were developed based on these tasks. The HMPC held a series of meetings and exercises designed to achieve a collaborative mitigation strategy as described further throughout this section. Appendix C documents the information covered in these mitigation strategy meetings, including information on the goals development and the identification and prioritization of mitigation alternatives by the HMPC.

During the initial goal-setting meeting, the HMPC reviewed the results of the hazard identification, vulnerability assessment, and capability assessment. This analysis of the risk assessment identified areas where improvements could be made and provided the framework for the HMPC to formulate planning goals and objectives and to develop the mitigation strategy for the Butte County Planning Area.

Goals were defined for the purpose of this mitigation plan as broad-based public policy statements that:

- Represent basic desires of the community;
- Encompass all aspects of community, public and private;
- Are nonspecific, in that they refer to the quality (not the quantity) of the outcome;
- Are future-oriented, in that they are achievable in the future; and
- A time-independent, in that they are not scheduled events.

Goals are stated without regard to implementation. Implementation cost, schedule, and means are not considered. Goals are defined before considering how to accomplish them so that they are not dependent on the means of achievement. Goal statements form the basis for objectives and actions that will be used as means to achieve the goals. Objectives define strategies to attain the goals and are more specific and measurable.

HMPC members were provided with the list of goals from the 2014 LHMP as well as a list of other sample goals to consider. The team was told that they could use, combine, or revise the statements provided or develop new ones, keeping the risk assessment in mind. Each member was given three index cards and asked to write a goal statement on each. Goal statements were collected and grouped into similar themes and displayed on the wall of the meeting room. The goal statements were then further grouped into similar topics. New goals from the HMPC were discussed until the team came to consensus. Some of the statements were determined to be better suited as objectives or actual mitigation actions and were set aside for later use. Next, the HMPC developed objectives that summarized strategies to achieve each goal.

Based on the risk assessment review and goal setting process, the HMPC identified the following goals and objectives, which provide the direction for reducing future hazard-related losses within the Butte County Planning Area.

Goal 1: Minimize risk and vulnerability of the community to hazards and reduce damages and protect lives, properties, and public health in Butte County

- Focus on the hazards that have the biggest impact on life safety
- Reduce the incidence of negative human consequences produced by a disaster
- Minimize economic and financial impacts
- Protect and preserve natural resources and the environment to preserve “our” way of life.
- Minimize impacts to both existing and future development

Goal 2: Provide protection for critical facilities, infrastructure, and services from hazard impacts.

- Protect/harden critical facilities, infrastructure, and lifeline utilities
- Minimize interruption of essential services
- Minimize effect of Public Safety Power Shutoff (PSPS) on critical infrastructure and services
- Provide for continuity of operations and essential services before, during, and after disasters
- Increase jurisdictional and statewide coordination to improve disaster response capabilities for designated critical facilities (shelters) such as the Butte County Fairground

Goal 3: Increase public awareness of the risk and vulnerability of the community to hazards and promote personal awareness and responsibility

- Minimize damage to communities from disaster events through public awareness
- Enhance public outreach, education and preparedness to include all hazards of concern
- Educate residents and visitors on personal responsibility and self-reliance prior to, during, and after a disaster
- Train and educate public on actions to take during different emergencies
- Enhance public communications to keep public well informed during disasters
- Increase public's awareness and involvement in communities' mitigation projects

Goal 4: Increase communities' ability to be prepared for, respond to, and recover from a disaster event

- Improve/upgrade multi-agency mass warning and notification systems/Develop effective community warning systems for catastrophic events
- Implement better technology and processes for communication with public
- Increase inter-agency coordination and develop interagency mitigation and disaster response capabilities for major disasters
- Increase use of shared resources and facilities
- Increase and foster mutual aid to enhance and ensure desired response actions
- Provide staff and volunteers with education, training, and support to assist with disaster response
- Build and maximize GIS resources (platform, access, education)
- Minimize damage to communities from disaster events through comprehensive community planning at every stage to address all populations
- Enhance and participate in regional planning efforts in preparation for large events
- Improve communities' circulation, ingress and egress, and primary and secondary evacuation routes during disasters.
- Provide strategies and options for shelter in place at public facilities and parks for remote areas or if evacuation routes are blocked
- Actively prepare and practice (exercise) disaster plans to ensure effective implementation
- Provide effective and swift disaster recovery services (human and animals), resources, and relief

Goal 5: Reduce fire severity and intensity in Butte County and surrounding lands

- Reduce life safety issues, property loss, and damages associated with wildfires
- Prevent and reduce wildfire ignitions and wildfire-related losses
- Implement a fuels management strategy for fuels reduction by all landowners on both public and private lands
- Manage and reduce large fuel loads on non-grazed agricultural and grass lands
- Minimize danger of evacuation on roadways by reducing adjacent fuels
- Ongoing updates to Community Wildfire Protection Plans and Evacuation Routes (Projects?)

Goal 6: Coordinate land use development with LHMP and General Plan

- Consider and address priority hazards of concern in future land use planning and development

- Integrate regional and local climate change adaption planning efforts into future land use planning and development

Goal 7: Increase community resiliency to climate change’s influence on disasters

- Integrate climate change into mitigation efforts for natural hazards with a focus on high loss disasters such as flood and wildfire

Goal 8: Ensure AB 2140 compliance

- Incorporate the LHMP Update into the Safety Element of the General Plan

Goal 9: Maintain FEMA eligibility/position the communities for grant funding.

- Monitor and communicate available grant programs, timelines, and processes to all communities.
- Educate jurisdictions/Annexes on how to utilize the LHMP during grant applications

5.3 Identification and Analysis of Mitigation Actions

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

In order to identify and select mitigation actions to support the mitigation goals, each hazard identified in Section 4.1 was evaluated at the completion of the risk assessment as part of the second prioritization process to determine which hazards were priorities for mitigation strategy planning. Only those hazards that were determined to be a priority hazard for each participating jurisdiction were considered further in the development of hazard-specific mitigation actions. Those hazards not considered a priority for mitigation strategy development were eliminated from further consideration because the risk of a hazard event in the County is unlikely, the vulnerability of the county is low, or capabilities are already in place to mitigate negative impacts. Further, the resulting mitigation strategy presented in this Chapter focuses on those mitigation actions that each jurisdiction has the authority, resources, and capacity to consider for implementation over the next 5-years covered by this LHMP Update.

Table 5-2 and Table 5-3 provide a listing of priority hazards by jurisdiction to be addressed in the mitigation strategy portion of this Plan.

Table 5-2 Butte County Planning Area: Mitigation Action Priority Hazards by Jurisdiction – Unincorporated County and Incorporated Jurisdictions

Priority Hazards for Mitigation Action Development	Butte County	Biggs	Chico	Gridley	Oroville	Paradise
Climate Change	X					
Dam Failure	X	X	X		X	
Drought & Water shortage	X		X	X	X	X

Priority Hazards for Mitigation Action Development	Butte County	Biggs	Chico	Gridley	Oroville	Paradise
Earthquake and Liquefaction	X	X	X		X	X
Floods: 100/200/500 year	X	X	X		X	
Floods: Localized Stormwater	X	X	X		X	X
Hazardous Materials Transportation	X	X	X	X		
Invasive Species: Aquatic	X					
Invasive Species: Pests/Plants	X					X
Landslide, Mudslide, and Debris Flow	X		X			X
Levee Failure	X	X	X		X	
Severe Weather: Extreme Heat	X	X	X		X	X
Severe Weather: Freeze and Winter Storm	X	X	X		X	X
Severe Weather: Heavy Rain and Storms (Hail, Lightning)	X	X	X		X	X
Severe Weather: Wind and Tornado	X	X	X			X
Stream Bank Erosion	X					
Volcano						
Wildfire	X	X	X	X	X	X

Table 5-3 Butte County Planning Area: Mitigation Action Priority Hazards by Jurisdiction – Special Districts

Priority Hazards for Mitigation Action Development	PID	TWSD	DID	NYWD	FRRPD	FSC	LOAPUD	PRRPD	SFWPA
Climate Change		X			X			X	X
Dam Failure	X	X			X			X	X
Drought & Water shortage	X	X	X	X	X			X	X
Earthquake and Liquefaction	X	X	X	X	X			X	X
Floods: 100/200/500 year		X			X		X		X
Floods: Localized Stormwater	X	X	X	X	X		X	X	X
Hazardous Materials Transportation			X		X			X	
Invasive Species: Aquatic		X			X				
Invasive Species: Pests/Plants					X				
Landslide, Mudslide, and Debris Flow				X	X			X	
Levee Failure		X			X				

Priority Hazards for Mitigation Action Development	PID	TWSD	DID	NYWD	FRRPD	FSC	LOAPUD	PRRPD	SFWPA
Severe Weather: Extreme Heat					X			X	
Severe Weather: Freeze and Winter Storm	X		X	X	X		X	X	
Severe Weather: Heavy Rain and Storms (Hail, Lightning)	X	X			X		X	X	
Severe Weather: Wind and Tornado					X		X	X	
Stream Bank Erosion		X			X				X
Volcano									
Wildfire	X	X	X	X	X	X	X	X	X

It is important to note, however, that all the Hazards Addressed in this plan are included in the countywide multi-hazard public awareness mitigation action as well as in other multi-hazard, emergency management actions, and other hazard-specific actions, providing benefits to all participating jurisdictions to this Plan.

Once it was determined which hazards warranted the development of specific mitigation actions, the HMPC analyzed viable mitigation options that supported the identified goals and objectives. The HMPC was provided with the following list of categories of mitigation actions, which originate from the Community Rating System:

- Prevention
- Property protection
- Structural projects
- Natural resource protection
- Emergency services
- Public information

The HMPC was provided with examples of potential mitigation actions for each of the above categories. The HMPC was also instructed to consider both future and existing buildings in considering possible mitigation actions. A facilitated discussion then took place to examine and analyze the options. Appendix C provides a detailed review and discussion of the six mitigation categories to assist in the review and identification of possible mitigation activities or projects. Also utilized in the review of possible mitigation measures is FEMA’s publication on Mitigation Ideas, by hazard type. Prevention type mitigation alternatives were discussed for each of the priority hazards. This was followed by a brainstorming session that generated a list of preferred mitigation actions by hazard.

5.3.1. Prioritization Process

Once the mitigation actions were identified, the HMPC was provided with several decision-making tools, including FEMA's recommended prioritization criteria, STAPLEE sustainable disaster recovery criteria; Smart Growth principles; and others, to assist in deciding why one recommended action might be more important, more effective, or more likely to be implemented than another. STAPLEE stands for the following:

- Social: Does the measure treat people fairly? (e.g., different groups, different generations)
- Technical: Is the action technically feasible? Does it solve the problem?
- Administrative: Are there adequate staffing, funding, and other capabilities to implement the project?
- Political: Who are the stakeholders? Will there be adequate political and public support for the project?
- Legal: Does the jurisdiction have the legal authority to implement the action? Is it legal?
- Economic: Is the action cost-beneficial? Is there funding available? Will the action contribute to the local economy?
- Environmental: Does the action comply with environmental regulations? Will there be negative environmental consequences from the action?

In accordance with the DMA requirements, an emphasis was placed on the importance of a benefit-cost analysis in determining action priority. Other criteria used to assist in evaluating the benefit-cost of a mitigation action includes:

- Contribution of the action to save life or property
- Availability of funding and perceived cost-effectiveness
- Available resources for implementation
- Ability of the action to address the problem

In addition to reviewing and incorporating select actions from the 2014 LHMP, the committee also considered and defined numerous new actions, including those actions and projects identified as a result of the Camp Fire, and submitted as part of FEMA's HMGP opportunities. A comprehensive review of mitigation measures was performed using the criteria (alternatives and selection criteria) in Appendix C.

With these criteria in mind, HMPC members were each given a set of nine colored dots, three each of red, blue, and green. The dots were assigned red for high priority (worth five points), blue for medium priority (worth three points), and green for low priority (worth one point). The team was asked to use the dots to prioritize actions with the above criteria in mind. The point score for each action was totaled. Appendix C contains the total score given to each identified mitigation action.

The process of identification and analysis of mitigation alternatives allowed the HMPC to come to consensus and to prioritize recommended mitigation actions. During the voting process, emphasis was placed on the importance of a benefit-cost review in determining project priority; however, this was not a quantitative analysis. The team agreed that prioritizing the actions collectively enabled the actions to be ranked in order of relative importance and helped steer the development of additional actions that meet the more important objectives while eliminating some of the actions which did not garner much support.

Benefit-cost was also considered in greater detail in the development of the Mitigation Action Plan detailed below in Section 5.4. The cost-effectiveness of any mitigation alternative will be considered in greater detail

through performing benefit-cost project analyses when seeking FEMA mitigation grant funding for eligible actions associated with this Plan.

Recognizing the limitations in prioritizing actions from multiple jurisdictions and departments and the regulatory requirement to prioritize by benefit-cost to ensure cost-effectiveness, the HMPC decided to pursue actions that contributed to saving lives and property as first and foremost, with additional consideration given to the benefit-cost aspect of a project. This process drove the development of a determination of a high, medium, or low priority for each mitigation action, and a comprehensive prioritized mitigation action plan for the Butte County Planning Area.

5.4 Mitigation Action Plan

Requirement §201.6(c)(3)(iii) and §201.7(c)(3)(iii): [The mitigation strategy section shall include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

This mitigation action plan was developed to present the recommendations developed by the HMPC for how the Butte County Planning Area can reduce the risk and vulnerability of people, property, infrastructure, and natural and cultural resources to future disaster losses. Emphasis was placed on both future and existing development. This mitigation action plan summarizes who is responsible for implementing each of the prioritized actions as well as when and how the actions will be implemented. Each action summary also includes a discussion of the benefit-cost review conducted to meet the regulatory requirements of the Disaster Mitigation Act.

Table 5-4 identifies all mitigation actions for all participating jurisdictions to this LHMP Update. For each mitigation action item included in Table 5-4, a detailed mitigation implementation strategy has been developed. Only those actions where the County is the lead jurisdiction are detailed further in this section. Actions specific to other participating jurisdictions, or where other jurisdictions are taking the lead, are detailed in each respective jurisdictional annex to this Plan.

The mitigation action plan detailed below contains both new action items developed for this LHMP Update as well as old actions that were yet to be completed from the 2014 Plan. Table 5-4 indicates whether the action is new or from the 2014 LHMP and Chapter 2 contains the details for each 2014 mitigation action item indicating whether a given action item has been completed, deleted, or deferred.

As described throughout this LHMP Update, Butte County has many risks and vulnerabilities to identified hazards. Although many possible mitigation actions, as detailed in Appendix C, were brainstormed and prioritized during the mitigation strategy meetings, the resulting mitigation strategy presented in this Chapter 5 of this LHMP focuses only on those mitigation actions that are both reasonable and realistic for the community to consider for implementation over the next 5-years covered by this Plan. Thus, only a portion of the actions identified in Appendix C have been carried forward into the mitigation strategy presented in Table 5-4. Although many good ideas were developed during the mitigation action brainstorming process, the reality of determining which priority actions to develop and include in this

LHMP Update came down to the actual priorities of communities, individuals and departments based in part on department direction, staffing, and available funding. The overall value of the mitigation action table in Appendix C is that it represents a wide-range of mitigation actions that can be consulted and developed for this LHMP Update during annual plan reviews and the formal 5-year update process.

It is also important to note that Butte County and the participating jurisdictions have numerous existing, detailed action descriptions, which include benefit-cost estimates, in other planning documents, such as stormwater and drainage plans, fire plans, and capital improvement budgets and reports. These actions are considered to be part of this plan, and the details, to avoid duplication, should be referenced in their original source document. The HMPC also realizes that new needs and priorities may arise as a result of a disaster or other circumstances and reserves the right to support new actions, as necessary, as long as they conform to the overall goals of this Plan.

Further, it should be clarified that the actions included in this mitigation strategy are subject to further review and refinement; alternatives analyses; and reprioritization due to funding availability and/or other criteria. The participating communities are not obligated by this document to implement any or all of these projects. Rather this mitigation strategy represents the desires of the community to mitigate the risks and vulnerabilities from identified hazards. The actual selection, prioritization, and implementation of these actions will also be further evaluated in accordance with the mitigation categories and criteria contained in Appendix C.

It should be noted that many of the projects submitted by each jurisdiction in Table 5-4 benefit all jurisdictions whether or not they are the lead agency. Further, many of these mitigation efforts are collaborative efforts among multiple local, state, and federal agencies. In addition, the public outreach action, as well as many of the emergency services actions, apply to all hazards regardless of hazard priority. Collectively, this multi-jurisdictional mitigation strategy includes only those actions and projects which reflect the actual priorities and capacity of each jurisdiction to implement over the next 5-years covered by this Plan.

Table 5-4 Butte County Planning Area Mitigation Actions

Action Title	Jurisdictions Benefitting from Action (s)	New Action/ 2014 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Type
Butte County						
Multi-Hazard Actions						
Action 1.Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	Butte County and all participating jurisdictions	2014 Action	X	X		Prevention
Action 2.Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness	Butte County and all participating jurisdictions	New Action	X	X	X	Prevention Public Information
Action 3.Countywide Alert and Notification System	Butte County and all participating jurisdictions	2014 Action	X	X		Emergency Services
Action 4.Mass Notification of Emergency/Evacuation Notification	Butte County and all participating jurisdictions	New Action	X	X		Emergency Services
Action 5.Butte County Fairground Emergency Generator(s) Installation	Butte County and all participating jurisdictions	New Action	X	X		Emergency Services
Action 6. Butte County Fairground Emergency Shelter Operation Plan	Butte County and all participating jurisdictions	New Action	X	X		Emergency Services
Action 7.Butte County Fairground WIFI Upgrade	Butte County and all participating jurisdictions	New Action	X	X		Emergency Services
Action 8.Butte County Fairground Emergency Shelter Facility	Butte County and all participating jurisdictions	New Action	X	X		Emergency Services
Action 9.Critical Facility Back Up Power	Butte County and all participating jurisdictions	New Action	X	X	X	Prevention Emergency Services Property Protection Structural Projects
Action 10. Critical Facility and Infrastructure Back Up Power and Light Towers	Butte County and all participating jurisdictions	New Action	X	X		Prevention Emergency Services Property Protection Structural Projects
Action 11. Post-Disaster Building Code Compliance	Butte County	New Action	X	X		Prevention

Action Title	Jurisdictions Benefitting from Action (s)	New Action/ 2014 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Type
Action 12. Cohasset Road Improvements	Butte County	New Action	X	X	X	Property Protection Structural Projects Emergency Services
Action 13. Concow Culvert Upsizing, Guardrail and Road Widening	Butte County	New Action	X	X	X	Property Protection Structural Projects Emergency Services
Action 14. Evacuation Routes	Butte County and all participating jurisdictions	New Action	X	X	X	Emergency Services
Action 15. Honey Run Rd. and Centerville Rd. Culvert Upsizing and Road Widening	Butte County	New Action	X	X	X	Property Protection Structural Projects Emergency Services
Action 16. Portable Message Boards	Butte County and all participating jurisdictions	New Action	X	X	X	Emergency Services
Climate Change Actions						
Action 17. Climate Change (Greenhouse Gas reduction measures and adaptation/resilience)	Butte County and all participating jurisdictions	New Action	X	X		Prevention Public Information
Drought Actions						
Action 18. Drought Planning	Butte County and all participating jurisdictions	New Action	X	X		Prevention Public Information
Earthquake and Liquefaction Actions						
Action 19. Identify and Mitigate Un-Reinforced Masonry Buildings in the County	Butte County	2014 Action	X			Property Protection Structural Projects
Flood, Localized Flood, Levee Failure, Dam Failure; Streambank Erosion, and Heavy Rains and Storm Actions						
Action 20. Nord Localized Flooding	Butte County	2014 Action	X		X	Property Protection Structural Projects
Action 21. Water on Road Warning signs on River Road at Brick House	Butte County	2014 Action	X	X	X	Property Protection
Action 22. Rock Creek and Keefer Slough and Flood Control	Butte County and all participating jurisdictions	2014 Action	X	X	X	Property Protection Structural Projects Natural Resource Protection

Action Title	Jurisdictions Benefitting from Action (s)	New Action/ 2014 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Type
Action 23. Palermo Drainage Study	Butte County and all participating jurisdictions	2014 Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 24. Reinforce Nelson Road at its crossing of the Western Canal	Butte County and all participating jurisdictions	2014 Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 25. Little Chico Creek 200- and 100-year Flood Protection Study	Butte County and all participating jurisdictions	2014 Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 26. Lindo Chanel 200- and 100-year Flood Protection Study	Butte County and all participating jurisdictions	2014 Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 27. Feather River West Levee Improvement Project	Butte County and all participating jurisdictions	2014 Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 28. Chico Creek-Mud Creek Levees System Study to Provide 200 Year Flood Protection Levels	Butte County and all participating jurisdictions	2014 Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 29. 3B's Overflow Structure Construction	Butte County and all participating jurisdictions	2014 Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 30. Big Chico Creek 100- and 200-year Flood Protection Study	Butte County and all participating jurisdictions	2014 Action	X	X	X	Property Protection Structural Projects Natural Resource Protection

Action Title	Jurisdictions Benefitting from Action (s)	New Action/ 2014 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Type
Action 31. Keefer Slough to Mud Creek Flood Mitigation	Butte County	New Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 32. Rock and Sand Creek Flood Mitigation	Butte County	New Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 33. Rock Creek and Keefer Slough Flood Mitigation	Butte County	2014 Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 34. Flood Control at Cherokee Canal	Butte County	New Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 35. Community Rating System	Butte County	New Action	X	X	X	Prevention Public Information
Action 36. Butte County Drainage and Culvert Improvements	Butte County	New Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 37. Palermo Drainage Study	Butte County	New Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 38. Rock Creek and Keefer Slough Flood Control	Butte County	New Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 39. Streamflow Gage	Butte County	New Action	X	X	X	Prevention

Action Title	Jurisdictions Benefitting from Action (s)	New Action/ 2014 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Type
Hazardous Materials Actions						
Action 40. Hazardous Materials Transportation Mitigation	Butte County and all participating jurisdictions	New Action	X	X		Prevention Property Protection
Invasive Species Actions						
Action 41. Marine/Aquatic Invasive Species Survey/ Surveillance Project	Butte County and all participating jurisdictions	2014 Action	X	X		Prevention Natural Resource Protection
Action 42. Foreign Animal Disease Rapid Response Quarantine Program	Butte County and all participating jurisdictions	2014 Action	X	X		Prevention Natural Resource Protection
Action 43. Fire Break Maintenance / Broom Eradication Project	Butte County and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection
Action 44. California DWR Red Sesbania (Sesbania punicea) Removal and Flood Mitigation Project	Butte County and all participating jurisdictions	2014 Action	X	X	X	Prevention Property Protection Natural Resource Protection
Landslide and Debris Flow Actions						
Action 45. Slope Stabilization, Erosion Protection and Control	Butte County and all participating jurisdictions	New Action	X	X		Prevention Property Protection Natural Resource Protection
Severe Weather Actions						
Action 46. Tree Mitigation	Butte County and all participating jurisdictions	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 47. Extreme Heat Planning	Butte County and all participating jurisdictions	New Action	X	X		Prevention Property Protection Natural Resource Protection

Action Title	Jurisdictions Benefitting from Action (s)	New Action/ 2014 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Type
Wildfire Actions (including Drought and Water Shortage, High Winds, Extreme Heat, Invasive Species)						
Action 48. Upper Ridge Fuels Reduction Project	Butte County and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection
Action 49. Upper Ridge Fuels Reduction Maintenance	Butte County and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection
Action 50. Concow/Yankee Hill Fuels Reduction Project	Butte County and all participating jurisdictions	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 51. Concow/Yankee Hill Fuels Reduction Maintenance Project	Butte County and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection
Action 52. Berry Creek Fuels Reduction Project	Butte County and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection
Action 53. Berry Creek Fuels Reduction Maintenance Project	Butte County and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection
Action 54. Butte Meadows Fuels Reduction Project	Butte County and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection
Action 55. Cohasset Fuels Reduction Project	Butte County and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection

Action Title	Jurisdictions Benefitting from Action (s)	New Action/ 2014 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Type
Action 56. Cohasset Fuels Reduction Maintenance Project	Butte County and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection
Action 57. Forest Ranch Fuels Reduction Project	Butte County and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection
Action 58. Forest Ranch Fuels Reduction Maintenance Project	Butte County and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection
Action 59. Feather Falls Fuels Reduction Project	Butte County and all participating jurisdictions	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 60. Feather Falls Fuels Reduction Maintenance Project	Butte County and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection
Action 61. Forbestown Fuels Reduction Project	Butte County and all participating jurisdictions	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 62. Forbestown Fuels Reduction Maintenance Project	Butte County and all participating jurisdictions	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 63. Eave Vent Replacement/Education Project	Butte County and Paradise	New Action	X	X		Property Protection
Action 64. Firewise Communities and Education Program	Butte County and all participating jurisdictions	New Action	X	X		Prevention Property Protection Natural Resource Protection

Action Title	Jurisdictions Benefitting from Action (s)	New Action/ 2014 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Type
Action 65. Fuels Reduction Chipper Program	Butte County and all participating jurisdictions	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 66. Residents Assistance Program - Fuels Reduction and Defensible Space	Butte County and all participating jurisdictions	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 67. Camp Fire Hazard Tree Removal - Fuels Reduction	Butte County and all participating jurisdictions	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 68. CA Department of Water Resources Fuel Load Management Plan	Butte County and all Participating Jurisdictions	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 69. Refuge Areas	Butte County and all Participating Jurisdictions	New Action	X	X		Emergency Services
City of Biggs						
Multi-Hazard Actions						
Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	City of Biggs	2014 Action	X	X		Prevention
Action 2. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness	City of Biggs	2014 Action	X	X	X	Public Information
Flood and Localized Flood Actions						
Action 3. Storm Water Management Plan Update	City of Biggs	New Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection

Action Title	Jurisdictions Benefitting from Action (s)	New Action/ 2014 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Type
Action 4. Storm Water improvement projects	City of Biggs	New Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
City of Chico						
Multi-Hazard Actions						
Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	City of Chico	2014 Action	X	X		Prevention
Action 2. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness	City of Chico	2014 Action	X	X	X	Public Information
Action 3. Chico Municipal Airport Generator	City of Chico	New Action	X	X		Prevention Property Protection Emergency Services
Action 4. Chico Fire Station 2 Generator	City of Chico	New Action	X	X		Property Protection Emergency Services
Action 5. Intelligent Transportation System (ITS)	City of Chico	New Action	X	X		Prevention
Flood, Localized Flood, Levee Failure, and Dam Failure Actions						
Action 6. Bruce Road Bridge Retrofit	City of Chico	New Action	X	X	X	Property Protection Structural Projects
Action 7. BD Drainage Ditch @ Fair Street Detention Pond	City of Chico	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 8. De-silt drainage channels from just north of 5-mile through Chico City Limits	City of Chico	New Action	X	X	X	Prevention Property Protection Natural Resource Protection

Action Title	Jurisdictions Benefitting from Action (s)	New Action/ 2014 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Type
Wildfire Actions						
Action 9. Lindo Channel Defensible Space Project	City of Chico	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 10. Upper Bidwell Park Fuel Reduction	City of Chico	New Action	X	X		Prevention Property Protection Natural Resource Protection
City of Gridley						
Multi-Hazard Actions						
Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	City of Gridley	2014 Action	X	X		Prevention
Action 2. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness	City of Gridley	2014 Action	X	X		Public Information
Drought and Water Shortage Actions						
Action 3. Groundwater Well Contamination	City of Gridley	2014 Action	X	X		Property Protection
Action 4. Drought and Water Shortage Education	City of Gridley	New Action	X	X		Public Information
Action 5. Generators for Pumps during Power Loss and PSPS	City of Gridley	New Action	X	X		Prevention Property Protection Emergency Services
Flood and Localized Flood						
Action 6. Continue to Improve Drainage System	City of Gridley	2014 Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Hazardous Materials Actions						
Action 7. Hazardous Material Transportation Plan	City of Gridley	New Action	X	X		Prevention

Action Title	Jurisdictions Benefitting from Action (s)	New Action/ 2014 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Type
Volcano Actions						
Action 8. Volcano Mitigation	City of Gridley	New Action	X	X		Property Protection
Wildfire Actions						
Action 9.Continued Weed Abatement Program	City of Gridley	2014 Action	X	X		Property Protection
Action 10. Wildfire Mitigation	City of Gridley	New Action	X	X		Prevention Property Protection Natural Resource Protection
City of Oroville						
Multi-Hazard Actions						
Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	City of Oroville	2014 Action	X	X		Prevention
Action 2. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness	City of Oroville	2014 Action	X	X	X	Public Information
Action 3. City Infrastructure Protection	City of Oroville	2014 Action	X	X		Property Protection
Action 4. Planning for Mass Evacuation-Notifications Early Warning System	City of Oroville	2014 Action	X	X		Prevention Emergency Services
Action 5. Weed Abatement	City of Oroville	2014 Action	X	X		Property Protection
Action 6. Public Safety Power Shut-off (PSPS)	City of Oroville	New Action	X	X		Prevention
Action 7.Community Development (Code Enforcement) post disaster recovery projects.	City of Oroville	New Action	X	X		Prevention
Action 8.Flood Sewage Commission-Oroville Region (SC-OR)	City of Oroville	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Town of Paradise						
Multi-Hazard Actions						
Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	Town of Paradise	2014 Action	X	X		Prevention

Action Title	Jurisdictions Benefitting from Action (s)	New Action/ 2014 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Type
Action 2. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness	Town of Paradise	2014 Action	X	X		Public Information
Action 3. Early Warning System	Town of Paradise	New action	X	X		Emergency Services
Action 4. Public Works Signs	Town of Paradise	New action	X	X		Emergency Services Public Information
Flood and Localized Flood Actions						
Action 5. Storm Drain Master Plan	Town of Paradise	New action	X	X	X	Prevention Property Protection Natural Resource Protection
Landslide, Mudslide, and Debris Flow Actions						
Action 6. Reseeding Program	Town of Paradise	New action	X	X		Property Protection Natural Resource Protection
Wildfire Actions						
Action 7. Building Inspectors	Town of Paradise	New action	X	X		Prevention Property Protection Natural Resource Protection
Action 8. Standing Burnt Tree Removal	Town of Paradise	New action	X	X		Prevention Property Protection Natural Resource Protection
Action 9. Chipper Program	Town of Paradise	New action	X	X		Prevention Property Protection Natural Resource Protection
Action 10. Commercial Ignition Resistant Improvement Program	Town of Paradise	New action	X	X		Prevention Property Protection Natural Resource Protection

Action Title	Jurisdictions Benefitting from Action (s)	New Action/ 2014 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Type
Action 11. Education and Outreach Program	Town of Paradise	New action	X	X		Public Information
Action 12. Generator for Fire Station #82	Town of Paradise	New action	X	X		Property Protection Emergency Services
Action 13. Fire Station #3	Town of Paradise	New action	X	X		Prevention Property Protection
Action 14. Residential Ignition Resistant Improvement Program	Town of Paradise	New action	X	X		Prevention Property Protection
Action 15. Firewise Communities and Education Program	Town of Paradise/Butte County/FSC	New action	X	X		Prevention Property Protection Natural Resource Protection
Action 16. Fuels Reduction Chipper Program	Town of Paradise/Butte County/FSC	New action	X	X		Prevention Property Protection Natural Resource Protection
Action 17. Residents Assistance Program - Fuels Reduction and Defensible Space	Town of Paradise/Butte County/FSC	New action	X	X		Prevention Property Protection Natural Resource Protection
Action 18. Camp Fire Hazard Tree Removal - Fuels Reduction	Town of Paradise/Butte County/FSC	New action	X	X		Prevention Property Protection Natural Resource Protection
Paradise Irrigation District						
Action 1. Hydraulic Modeling Pipe Replacement Program	PID	2014 Action	X	X		Prevention Property Protection Structural Projects
Action 2. Drought Water Supply	PID	2014 Action	X	X		Prevention Property Protection
Action 3. Magalia Dam Replacement	PID	2014 Action	X	X	X	Prevention Property Protection Structural Projects

Action Title	Jurisdictions Benefitting from Action (s)	New Action/ 2014 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Type
Action 4. Install Bladder Dam in the Paradise Lake Spillway	PID	2014 Action	X	X	X	Prevention Property Protection Structural Projects
Action 5. Service Line Replacement	PID	New Action	X	X		Prevention Property Protection Structural Projects
Action 6. B-Reservoir Replacement	PID	New Action	X	X	X	Prevention Property Protection Structural Projects
Action 7. A-Zone Pipeline and Generator	PID	New Action	X	X		Prevention Property Protection Structural Projects Emergency Services
Action 8. Water Shed Fuel Reduction	PID	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 9. Backup Portable Generators	PID	New Action	X	X		Prevention Property Protection Emergency Services
Action 10. Earthquake Vulnerability Assessment on Water Distribution Infrastructure	PID	New Action	X	X		Prevention Property Protection Structural Projects
Thermalito Water and Sewer District						
Action 1. Management of Fuels and non-Native Flora Intrusion	TWSD	2014 action	X	X		Prevention Property Protection Natural Resource Protection
Action 2. Steel Main Replacement	TWSD	New action	X	X		Property Protection Structural Projects
Action 3. Well Emergency Generators	TWSD	New action	X	X		Property Protection Emergency Services

Action Title	Jurisdictions Benefitting from Action (s)	New Action/ 2014 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Type
Action 4. Toleman Ravine Sewer Crossing	TWSD	New action	X	X		Property Protection Structural Projects
Durham Irrigation District						
Action 1. Pipe Replacement Program for Water Redundancy and Fire Flows	DID	New action	X	X		Prevention Property Protection Structural Projects
Action 2. Well Improvements Station #3	DID	New action	X	X		Property Protection Structural Projects
North Yuba Water District						
Action 1. Ditch to Pipe Replacement Project	NYWD	New action	X	X		Property Protection Structural Projects
Action 2. Public Education and Outreach Information Program	NYWD	New action	X	X		Public Information
Action 3. Update to the NYWD Flood Plan	NYWD	New action	X	X	X	Prevention Property Protection Natural Resource Protection
Feather River Rec and Park District						
Action 1. Riverbend Park Mitigation	FRRPD	New action	X	X		Property Protection Natural Resource Protection
Action 2. Feather River Trail Mitigation	FRRPD	New action	X	X		Property Protection Natural Resource Protection
Action 3. Palermo Park – Storm Water Mitigation Plan	FRRPD	New action	X	X	X	Prevention Property Protection Natural Resource Protection

Action Title	Jurisdictions Benefitting from Action (s)	New Action/ 2014 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Type
Butte County Fire Safe Council						
Action 1. Upper Ridge Fuels Reduction Project	Fire Safe Council, Butte County, and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection
Action 2. Upper Ridge Fuels Reduction Maintenance	Fire Safe Council, Butte County, and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection
Action 3. Concow/Yankee Hill Fuels Reduction Project	Fire Safe Council, Butte County, and all participating jurisdictions	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 4. Concow/Yankee Hill Fuels Reduction Maintenance Project	Fire Safe Council, Butte County, and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection
Action 5. Berry Creek Fuels Reduction Project	Fire Safe Council, Butte County, and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection
Action 6. Berry Creek Fuels Reduction Maintenance Project	Fire Safe Council, Butte County, and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection
Action 7. Butte Meadows Fuels Reduction Project	Fire Safe Council, Butte County, and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection
Action 8. Cohasset Fuels Reduction Project	Fire Safe Council, Butte County, and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection

Action Title	Jurisdictions Benefitting from Action (s)	New Action/ 2014 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Type
Action 9. Cohasset Fuels Reduction Maintenance Project	C Fire Safe Council, Butte County, and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection
Action 10. Forest Ranch Fuels Reduction Project	Fire Safe Council, Butte County, and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection
Action 11. Forest Ranch Fuels Reduction Maintenance Project	Fire Safe Council, Butte County, and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection
Action 12. Feather Falls Fuels Reduction Project	Fire Safe Council, Butte County, and all participating jurisdictions	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 13. Feather Falls Fuels Reduction Maintenance Project	Fire Safe Council, Butte County, and all participating jurisdictions	2014 Action	X	X		Prevention Property Protection Natural Resource Protection
Action 14. Forbestown Fuels Reduction Project	Fire Safe Council, Butte County, and all participating jurisdictions	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 15. Forbestown Fuels Reduction Maintenance Project	Fire Safe Council, Butte County, and all participating jurisdictions	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 16. Firewise Communities and Education Program	Fire Safe Council, Butte County, and all participating jurisdictions	New Action	X	X		Prevention Public Education

Action Title	Jurisdictions Benefitting from Action (s)	New Action/ 2014 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Type
Action 17. Fuels Reduction Chipper Program	Fire Safe Council, Butte County, and all participating jurisdictions	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 18. Residents Assistance Program - Fuels Reduction and Defensible Space	Fire Safe Council, Butte County, and all participating jurisdictions	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 19. Camp Fire Hazard Tree Removal - Fuels Reduction	Fire Safe Council, Butte County, and all participating jurisdictions	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 20. Defensible Space and Hazardous Fuels Reduction Program - Butte County WUI	Fire Safe Council, Butte County, and all participating jurisdictions	New Action	X	X		Prevention Property Protection Natural Resource Protection
Lake Oroville Area Public Utility District						
Action 1. Lake Oroville Area Public Utility District Stress Testing	LOAPUD	New Action	X	X		Prevention
Action 2. Lake Oroville Area Public Utility District Backup Generators	LOAPUD	New Action	X	X		Prevention Emergency Services
Action 3. Lake Oroville Area Public Utility District Overflow Capacity at Lift Stations	LOAPUD	New Action	X	X	X	Prevention
Action 4. Lake Oroville Area Public Utility District Emergency Fueling	LOAPUD	New Action	X	X		Prevention Emergency Services
Action 5. Lake Oroville Area Public Utility District Mooretown Lift Station Flood Impact Analysis	LOAPUD	New Action	X	X	X	Prevention Property Protection
Action 6. Lake Oroville Area Public Utility District Portable Backup Generators	LOAPUD	New Action	X	X		Prevention Emergency Services

Action Title	Jurisdictions Benefitting from Action (s)	New Action/ 2014 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Type
Paradise Recreation and Park District						
Action 1. Enhance and Add (Property Acquisition or Easements) for Existing Parks to Improve Fuels Management, Road Connectivity and Access and Recreation	PRPD	New Action	X	X		Prevention Property Protection Structural Projects Natural Resource Protection Emergency Services
Action 2. Develop a Community Buffer (Rim and Watershed) Park Feasibility Study and Plans and Complete Initial Acquisitions.	PRPD	New Action	X	X		Prevention Property Protection Structural Projects Natural Resource Protection Emergency Services
Action 3. Acquire Land and Develop the Camp Fire Park and Community Buffer (Sunrise/Sunset Rim and Watershed) Parks.	PRPD	New Action	X	X		Prevention Property Protection Structural Projects Natural Resource Protection Emergency Services
Action 4. Acquire and Develop Community Centers and Sport Fieldhouse/Auditorium Complex	PRPD	New Action	X	X		Prevention Property Protection Structural Projects Natural Resource Protection
Action 5. Develop Magalia Park (Lakeridge) and Community Center.	PRPD	New Action	X	X		Prevention Property Protection Structural Projects Natural Resource Protection
Action 6. Concow and Yankee Hill Community Center	PRPD	New Action	X	X		Prevention Property Protection Structural Projects

Action Title	Jurisdictions Benefitting from Action (s)	New Action/ 2014 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Type
Action 7. Butte Creek Canyon Park Expansion and Development	PRPD	New Action	X	X		Prevention Property Protection Structural Projects Natural Resource Protection
Action 8. Extend Butte County Rail Trail project and Expand Fuels Management Projects	PRPD	New Action	X	X		Prevention Property Protection Structural Projects Natural Resource Protection
Action 9. Anticipated watershed protection projects and enhancement of recreation resources	PRPD	New Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 10. Economic Development, Watershed Protection, and Restoration and Fire Protection Camp	PRPD	New Action	X	X		Prevention Property Protection Structural Projects Natural Resource Protection
Action 11. Study of Land-use and Appropriate Park Development in the Concow/Yankee Hill/Feather River Canyon Region	PRPD	New Action	X	X		Prevention Property Protection Structural Projects Natural Resource Protection
Action 12. Examine District Facilities for preparedness and roles during emergencies	PRPD	New Action	X	X		Prevention Property Protection Structural Projects
Action 13. Develop Community Programs to Improve Resiliency	PRPD	New Action	X	X		Prevention
Action 14. Invasive Plants	PRPD	New Action	X	X		Prevention Property Protection

Action Title	Jurisdictions Benefitting from Action (s)	New Action/ 2014 Action	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Type
South Feather Water and Power Agency						
Action 1. Wildfire threat to the surrounding areas of Miners Ranch Reservoir and Miners Ranch Treatment Plant	SFWPA	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 2. Earthquake Vulnerability Assessment on Water Transmission Infrastructure	SFWPA	New Action	X	X		Prevention Property Protection
Action 3. Localized Drainage Issues	SFWPA	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 4. Increase capacity at Miner Ranch Reservoir to offset the impact of an outage along the Miners Ranch Canal.	SFWPA	New Action	X	X	X	Prevention Property Protection Natural Resource Protection

Multi-Hazard Actions

Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan

Hazards Addressed: Multi-hazard (Climate Change, Dam Failure, Drought & Water shortage, Earthquake and Liquefaction, Floods: 100/200/500 year, Floods: Localized Stormwater, Hazardous Materials Transportation, Invasive Species: Aquatic, Invasive Species: Pests/Plants, Landslide, Mudslide, and Debris Flow, Levee Failure, Severe Weather: Extreme Heat, Severe Weather: Freeze and Winter Storm, Severe Weather: Heavy Rain and Storms (Hail, Lightning), Severe Weather: Wind and Tornado, Stream Bank Erosion, Volcano, Wildfire)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Local jurisdictional reimbursement for mitigation projects and cost recovery after a disaster is guided by Government Code Section 8685.9 (Assembly Bill (AB) 2140).

Project Description: Specifically, this section requires that each applicable jurisdiction adopt a local hazard mitigation plan (LHMP) in accordance with the federal Disaster Mitigation Act of 2000 as part of the Safety Element of its General Plan. Adoption of the LHMP into the Safety Element of the General Plan may be by reference or incorporation.

Other Alternatives: No action

Existing Planning Mechanisms through which Action will be Implemented: Safety Element of General Plan

Responsible Office/Partners: Butte County Planning Department and planning departments for each incorporated jurisdiction.

Cost Estimate: Jurisdictional board/staff time

Participating Jurisdictions: County and incorporated cities.

Benefits (avoided Losses): Incorporation of an adopted LHMP into the Safety Element of the General Plan will help jurisdictions maximize the cost recovery potential following a disaster.

Potential Funding: Local budgets

Timeline: 2019-2024

Project Priority: High

Action 2. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness

Hazards Addressed: Multi-hazard (Climate Change, Dam Failure, Drought & Water shortage, Earthquake and Liquefaction, Floods: 100/200/500 year, Floods: Localized Stormwater, Hazardous Materials

Transportation, Invasive Species: Aquatic, Invasive Species: Pests/Plants, Landslide, Mudslide, and Debris Flow, Levee Failure, Severe Weather: Extreme Heat, Severe Weather: Freeze and Winter Storm, Severe Weather: Heavy Rain and Storms (Hail, Lightning), Severe Weather: Wind and Tornado, Stream Bank Erosion, Volcano, Wildfire)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Butte County plays a key role in public outreach/education efforts to communicate the potential risk and vulnerability of their community to the effects of natural hazards. A comprehensive multi-hazard public education program will better inform the community of natural hazards of concern and actions the public can take to be better prepared for the next natural disaster event.

Project Description: A comprehensive multi-hazard outreach program will ascertain both broad and targeted educational needs throughout the community. The County will work with other agencies as appropriate to develop timely and consistent annual outreach messages in order to communicate the risk and vulnerability of natural hazards of concern to the community. This includes measures the public can take to be better prepared and to reduce the damages and other impacts from a hazard event. The public outreach effort will leverage and build upon existing mechanisms, will include elements to meet the objectives of Goal 3 of this LHMP Update, and will consider:

- Using a variety of information outlets, including websites, local radio stations, news media, schools, and local, public sponsored events;
- Creating and distributing (where applicable) brochures, leaflets, water bill inserts, websites, and public service announcements;
- Displaying public outreach information in County office buildings, libraries, and other public places and events;
- Developing public-private partnerships and incentives to support public education activities.

Other Alternatives: Continue public information activities currently in place.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Existing County outreach programs will be reviewed for effectiveness and leveraged and expanded upon to reach the broader region.

Responsible Office/Partners: Butte County, incorporated communities, and other jurisdictions

Participating Jurisdictions: County and all cities.

Priority (H, M, L): High

Cost Estimate: Annual costs to be determined, and will depend on the scope and frequency of activities and events as well as volunteer participation

Benefits (Losses Avoided): Increase residents' knowledge of potential hazards and activities required to mitigate hazards and be better prepared. Protect lives and reduce damages, relatively low cost to implement.

Potential Funding: Local budgets, grant funds

Timeline: Ongoing/Annual public awareness campaign

Action 3. Countywide Alert and Notification System

Hazards Addressed: Climate Change, Dam Failure, Drought & Water shortage, Earthquake and Liquefaction, Floods: 100/200/500 year, Floods: Localized Stormwater, Hazardous Materials Transportation, Invasive Species: Aquatic, Invasive Species: Pests/Plants, Landslide, Mudslide, and Debris Flow, Levee Failure, Severe Weather: Extreme Heat, Severe Weather: Freeze and Winter Storm, Severe Weather: Heavy Rain and Storms (Hail, Lightning), Severe Weather: Wind and Tornado, Stream Bank Erosion, Volcano, Wildfire

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: The county and cities maintain alert and notification systems to notify citizens of hazardous situations. The drawback of using an alert and warning system that is reliant on cell phones and internet technology can lead to a delay in communication or lack of communication when cell towers go down or the power is off.

Project Description: The County and Cities within Butte County would like to explore the idea of a notification system that is not reliant on cell phone technology taking into consideration the topography and demographics of Butte County. This project would consist of a county-wide assessment and implementation of the recommended solutions for alert and notification.

Other Alternatives: Ham radio, CodeRed, door to door

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office/Partners: Butte County Office of Emergency Management

Cost Estimate: \$1,000,000

Benefits (Losses Avoided): Timely alert and notifications can assist with evacuations and closures of areas. A fast-moving event, such as wildland fires requires timely notifications to provide current information and prepare citizens for evacuations. Failure to provide timely notifications to citizens can result in deaths, increased property damage and impacts to the environment.

Potential Funding: Emergency Management Performance Grant, Homeland Security Grants, and Interoperable Communications Grants.

Timeline: 2020-2025

Project Priority: High

Action 4. Mass Notification of Emergency/Evacuation Notification

Hazards Addressed: Climate Change, Dam Failure, Drought & Water shortage, Earthquake and Liquefaction, Floods: 100/200/500 year, Floods: Localized Stormwater, Hazardous Materials

Transportation, Invasive Species: Aquatic, Invasive Species: Pests/Plants, Landslide, Mudslide, and Debris Flow, Levee Failure, Severe Weather: Extreme Heat, Severe Weather: Freeze and Winter Storm, Severe Weather: Heavy Rain and Storms (Hail, Lightning), Severe Weather: Wind and Tornado, Stream Bank Erosion, Volcano, Wildfire

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Mass notification utilizing the Code RED system is dependent on telecommunication networks functioning which during the Camp Fire they failed resulting in half of the Code RED messages not being delivered.

Project Description: Adding a distinctive Hi/Lo siren to all Sheriff's patrol vehicles and educating the public of this new siren and its intended purpose. The siren will only be used to alert the public in the area of the evacuation that they need to evacuate.

Other Alternatives: Continue to use Code RED, traditional media, social media and door to door notifications.

Existing Planning Mechanism(s) through which Action Will Be Implemented: All Sheriff's patrol cars will be outfitted with the Hi/Lo siren and a public awareness outreach will be initiated to educate the public of this new siren.

Responsible Office/Partners: Butte County Sheriff's Office.

Cost Estimate: Insignificant.

Benefits (Losses Avoided): The Hi/Lo siren isn't dependent on telecommunications networks and the public will recognize it as a different siren to help them recognize there is an emergency.

Potential Funding: N/A

Timeline: 7/1/2020

Project Priority: High

Action 5. Butte County Fairground Emergency Generator(s) Installation

Hazards Addressed: Climate Change, Dam Failure, Drought & Water shortage, Earthquake and Liquefaction, Floods: 100/200/500 year, Floods: Localized Stormwater, Hazardous Materials Transportation, Invasive Species: Aquatic, Invasive Species: Pests/Plants, Landslide, Mudslide, and Debris Flow, Levee Failure, Severe Weather: Extreme Heat, Severe Weather: Freeze and Winter Storm, Severe Weather: Heavy Rain and Storms (Hail, Lightning), Severe Weather: Wind and Tornado, Stream Bank Erosion, Volcano, Wildfire

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: The Butte County Fairground (BCF) was deployed during the Camp Fire as a Red Cross Shelter and a large and small animal evacuation shelter. Approximately 750 people and 1500 animals were cared for at the facilities for 72 days. The electrical power demands exceeded the current system capacity. Portable generators were brought in to provide heat and electricity. A power grid failure during an emergency shelter operation could significantly affect the health and safety of evacuees, staff and volunteers.

Project Description: Install 2 permanent natural gas emergency generators on the BCF on two of the buildings used full-time for Red Cross evacuees, staff and volunteers. The generators would provide a secondary source of power during a power failure.

Other Alternatives: Do not install emergency generators. A power outage during an emergency shelter operation would then require CalOES to provide temporary generators that may not be available or could not be delivered due to road closures, etc. The outage could affect the operation of the emergency shelter and the health and safety of evacuees

Existing Planning Mechanism(s) through which Action will be implemented: BCF has researched the installation of emergency generator(s) and contracted for the design and cost with a local electrical engineering firm. Butte County General Services would oversee the bidding, contracting and completion of the installation contract. BCF would assist the County in this process.

Responsible Office/Partners: Butte County General Services, Butte County Fairground, Butte County Office of Emergency Management

Cost Estimate: \$190,000

Benefits (Losses Avoided): On-site permanent generators will minimize risk of a power failure during emergency shelter operation, reduce deployment set-up time, and help to ensure the health and safety of the evacuated community.

Potential Funding: HMGP, PDM, State Funding Fairs and Expositions

Timeline: Within the next 2 years

Project Priority: Medium

Action 6. Butte County Fairground Emergency Shelter Operation Plan

Hazards Addressed: Climate Change, Dam Failure, Drought & Water shortage, Earthquake and Liquefaction, Floods: 100/200/500 year, Floods: Localized Stormwater, Hazardous Materials Transportation, Invasive Species: Aquatic, Invasive Species: Pests/Plants, Landslide, Mudslide, and Debris Flow, Levee Failure, Severe Weather: Extreme Heat, Severe Weather: Freeze and Winter Storm, Severe Weather: Heavy Rain and Storms (Hail, Lightning), Severe Weather: Wind and Tornado, Stream Bank Erosion, Volcano, Wildfire

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: The Butte County Fairground (BCF) opened on November 8th, 2019, as the first emergency evacuation shelter for Camp Fire Evacuees, including 2 Red Cross Shelters, a large animal shelter (LAS), and a small livestock shelter. The shelters were in operation 72 days, serving approximately 750 people and 1500 animals. UC Davis provided 24-hour coverage treating injured animals with Fairground staff and volunteers. Based on the successful deployment of the BCF as an emergency shelter and the availability of staff and appropriate facilities for disaster services, the BCF can continue to make a critical contribution to minimizing the risk and vulnerability of the community to local disasters, while also ensuring hazard preparedness. In addition to Butte County, there are 7 counties within proximity to Butte County that could also be assisted by an evacuation shelter at the BCF in the advent of a disaster. This was a first-time deployment of the BCF as an emergency shelter and the activation was accomplished without an operation plan; an Emergency Shelter Operation Plan would reduce set-up/ deployment time, improve efficiency and coordination between organizations such as the Red Cross, Butte County, BCF and volunteer organizations, and facilitate use of shared resources.

Project Description: Develop an Emergency Shelter Operation Plan (ESOP) for Butte County Fairground that can be used in future disaster deployments to open and maintain emergency sheltering. The ESOP will be designed to address the goals and objectives of the Butte County LHMP with regard to Mitigation Actions: Emergency services. While the Plan would directly address shelter operations for Butte County Fairground, it is important to note that the Plan could also be used as a template to assist with the development of ESOP's for other rural fairgrounds throughout California.

Other Alternatives: Continue to use the BCF as an evacuation shelter in the future w/o an operational plan.

Existing Planning Mechanism(s) through which Action will be implemented: The Butte County Fairground is a participant on the Hazard Mitigation Planning Committee for the LHMP update. The BCF ESOP will address the goals and objectives of emergency services within the LHMP with regard to evacuation shelter operations. BCF will continue to work with Butte County OEM and Cal OES to develop the ESOP.

Responsible Office/Partners: Butte County Fairground, Butte County OEM, Cal OES

Cost Estimate: \$59,000

Benefits (Losses Avoided): The ESOP will be a Mitigation Action that will improve Emergency Services, protecting people and animals during and after a disaster, specifically with regard to Emergency Response Evacuation and Sheltering.

Potential Funding: HMGP, PDM, State funding through Fairs and Expositions, DFA

Timeline: Within 1 year of funding approval

Project Priority: High

Action 7. Butte County Fairground WIFI Upgrade

Hazards Addressed: Climate Change, Dam Failure, Drought & Water shortage, Earthquake and Liquefaction, Floods: 100/200/500 year, Floods: Localized Stormwater, Hazardous Materials Transportation, Invasive Species: Aquatic, Invasive Species: Pests/Plants, Landslide, Mudslide, and Debris Flow, Levee Failure, Severe Weather: Extreme Heat, Severe Weather: Freeze and Winter Storm, Severe Weather: Heavy Rain and Storms (Hail, Lightning), Severe Weather: Wind and Tornado, Stream Bank Erosion, Volcano, Wildfire

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: The Butte County Fairground (BCF) was the primary Camp Fire Evacuation Center for community residents and large and small livestock. The Fairground housed approximately 750 evacuees and 1500 animals at the height of the event; the deployment continued for 72 days. In addition, UC Davis Veterinary School, Red Cross, North Valley Animal Disaster Group, ASPCA, Humane Society, Americorp, ASPCA, BC Animal Control, 28 Security Guards, Rush employment staff, Fairground staff, and volunteers were also present on the grounds 24 hrs/day. Internet access was extremely limited or non-existent and at times affected evacuation management, security enforcement, record keeping and emergency staff coordination. Current AT&T phone lines were installed in the 50's and the wiring is damaged and is consistently inoperable. During inclement weather, the entire phone and internet system goes down (as encountered during the Camp Fire).

Project Description: The Mitigation Action proposes to install the necessary network infrastructure to provide wireless coverage throughout the Butte County Fairground (39 acres). There are 3 components to the proposed Mitigation Action: 1. WIFI through Comcast, install 600 ft of cable to the BCF. 2. Install highspeed internet and wireless throughout the BCF. 3. Install a voice-over internet compatible phone network, upgrading the current system which is failing.

Other Alternatives: Do not upgrade the WIFI, continue to operate with the current outdated system.

Existing Planning Mechanism(s) through which Action will be implemented: BCF has researched the installation and cost of the WIFI upgrade and has also completed a plan for the work. Contact has been made with Comcast to obtain a cost to bring cable to the Fairground.

Responsible Office/Partners: Butte County Fairground, Butte County General Services

Cost Estimate: \$55,000

Benefits (Losses Avoided): Provides uninterrupted, critical emergency services communications, thereby helping to safeguard and maintain critical infrastructure operations during a disaster. The Mitigation Action would also contribute to disaster preparedness for future evacuation events.

Potential Funding: PDM, State Fairs and Expositions, CDFA

Timeline: Within 1 year of funding approval

Project Priority: Medium

Action 8. *Butte County Fairground Emergency Shelter Facility*

Hazards Addressed: Climate Change, Dam Failure, Drought & Water shortage, Earthquake and Liquefaction, Floods: 100/200/500 year, Floods: Localized Stormwater, Hazardous Materials Transportation, Invasive Species: Aquatic, Invasive Species: Pests/Plants, Landslide, Mudslide, and Debris Flow, Levee Failure, Severe Weather: Extreme Heat, Severe Weather: Freeze and Winter Storm, Severe Weather: Heavy Rain and Storms (Hail, Lightning), Severe Weather: Wind and Tornado, Stream Bank Erosion, Volcano, Wildfire

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: The Butte County Fairground (BCF) was deployed during the Camp Fire Disaster as the first emergency evacuation shelter for the Red Cross and livestock evacuees. Deployment of the BCF continued for 72 days, serving approximately 750 people and 1,500 animals. This was the first disaster deployment for the BCF. The number of people and animals exceeded the capacity of available facilities on the BCF; additional housing (tents, stalls, campsites) had to be set up to accommodate evacuees. Additional buildings on the Fairground had to also be used to house Red Cross staff, volunteers, and security guards who had to be onsite 24 hrs/day. Also, injured livestock developed infections and separate quarantine facilities had to be set up. In addition, UC Davis veterinary teams were onsite 24 hrs/day caring for injured animals and treatment sites had to be developed. The Fairground buildings are dated and were never designed to house people or livestock for extended occupation, but the facilities served as a critical component of the Camp Fire evacuation. BCF is a member of the Hazard Mitigation Plan Committee for the update of the LHMP and is being designated as a stakeholder in the Plan for future disasters. The BCF can not only serve as an evacuation center for multi-hazards locally but could be deployed for disasters in nearby counties. An updated emergency facility on the BCF that was designed with dual purpose to house people or animals depending on the deployment request, would significantly improve the efficiency of the evacuation and reduce costs of setting up temporary housing.

Project Description: The Mitigation Action proposes to construct a metal building on a cement foundation that is approximately 10,000 sq. ft, 90' X 110'. The building is designed to house human or animal evacuees, medical or veterinary staff, ADA Accessible restrooms and conditioned space, depending on the deployment request from Butte County. The facility would meet building code regulations and ADA standards and would significantly reduce the cost of renting additional housing, set-up times and staff expenses.

Other Alternatives: Consider remodeling current BCF facilities to meet evacuation shelter requirements and better serve the community; this would be costly given the age of the buildings and the original intended, periodic, short term use that the facilities were designed for.

Existing Planning Mechanism(s) through which Action will be implemented: The Butte County Fairground is a participant on the Hazard Mitigation Planning Committee for the LHMP update. BCF proposes to develop an Emergency Shelter Operation Plan that will identify the use of each Fairground building in a disaster deployment: the Camp Fire deployment identified the limitations of some of the

Fairground facilities and the need for a new building better suited for evacuation services. BCF will be coordinating the planning of the facility, if funded, with Butte County General Services and OEM.

Responsible Office/Partners: Butte County Fairground, Butte County General Services and OEM

Cost Estimate: \$625,000

Benefits (Losses Avoided): The new facility would provide improved emergency evacuation services in terms of efficiency, safety, and comfort of evacuees, staff and volunteers; protecting evacuees during and after a disaster.

Potential Funding: State; Fairs and Exposition, CDFA, Local; Butte County

Timeline: Within 3 years

Project Priority: High

Action 9. Critical Facility Back Up Power

Hazards Addressed: Wind, Heat, PSPS, Wildfire, Earthquake, Flood, Landslide, Dam Failure

Goals Addressed: 1, 2, 3, 4, 5, 7, 9

Issue/Background: During storms, flooding, wind, heat and severe weather as well as during other natural hazard disaster events, power may be lost and critical infrastructure may be rendered unavailable or at minimal usage

Project Description: Back up power, including switching units, to protect critical infrastructure, traffic signals, etc.

Other Alternatives: Renting generators, moving critical operations

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office/Partners: Butte County Administration - Office of Emergency Management, Butte County Sheriff's Office, Butte County Public Works, Butte County General Services

Cost Estimate: \$1,000,000

Benefits (Losses Avoided): Life Safety, Property Protection, Natural Resource Protection, Continuity of Operations

Potential Funding: HMGP, PDM

Timeline: 2019-2025

Project Priority: Medium

Action 10. Critical Facility and Infrastructure Back Up Power and Light Towers

Hazards Addressed: Wind, Heat, PSPS

Goals Addressed: 1, 2, 3, 4, 5, 7, 9

Issue/Background: During storms, flooding, wind, heat and severe weather, power may be lost and critical infrastructure may be rendered unavailable or at minimal usage

Project Description: Portable light towers, backup power, including switching units and generators, to protect critical infrastructure, traffic signals and traffic lights, and storm drain pump stations.

Other Alternatives: Renting generators, moving critical operations

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office/Partners: Butte County Administration - Office of Emergency Management, Butte County Sheriff's Office, Butte County Public Works, Butte County General Services

Cost Estimate: \$1,000,000

Benefits (Losses Avoided): Continuity of Operations

Potential Funding: HMGP, PDM

Timeline: 2019-2025

Project Priority: Medium

Action 11. Post-Disaster Building Code Compliance

Hazards Addressed: Fire, Flood

Goals Addressed: 1, 2, 3, 4, 5, 7, 9

Issue/Background: Butte County has been prone to fires and floods over the last 50 plus years, more specifically, since 2016 there have been multiple fires and flood events that have been locally, state and/or federally declared.

Project Description: Project would support the post-disaster rebuilding effort by ensuring that sufficient expertise is available to ensure compliance with appropriate codes and standards so homes are resilient to future disasters.

Other Alternatives: None at this time

Existing Planning Mechanism(s) through which Action Will Be Implemented: None

Responsible Office/Partners: Department of Development Services

Project Priority: Medium

Cost Estimate: 1,000,000

Benefits (Losses Avoided): The benefits would be to rebuild resilient communities.

Potential Funding: HMGP, FMA, PDM

Timeline: 2019-2025

Action 12. Cohasset Road Improvements

Hazards Addressed: Fire, flooding, erosion

Goals Addressed: 1, 2, 3, 4, 5, 7, 9

Issue/Background: Butte County has been prone to fires and floods over the last 50 plus years, more specifically, since 2016 there have been multiple fires and flood events that have been locally, state and/or federally declared. Cohasset Road needs to be maintained and improved for the safe evacuation of community members and access for first responders.

Project Description: Project would upsize, add or replace damaged culverts to alleviate flash flood, snow melt and debris flow damage. Road widening and/or brush and debris clearing would provide safer ingress and egress for the community and emergency response vehicles. Guardrail upgrade to metal or steel posts. Shoulders of the roads will be widened and/or added as necessary.

Other Alternatives: None at this time

Existing Planning Mechanism(s) through which Action Will Be Implemented: None

Responsible Office/Partners: Department of Public Works

Project Priority: High

Cost Estimate: 30,000,000

Benefits (Losses Avoided): The benefits would be to reduce flash flood damage and improve evacuation routes with wider roads and fire-resistant guardrail

Potential Funding: HMGP, FMA, PDM

Timeline: 2019-2025

Action 13. Concow Culvert Upsizing, Guardrail and Road Widening

Hazards Addressed: Fire, flooding

Goals Addressed: 1, 2, 3, 4, 5, 7, 9

Issue/Background: Concow Rd. is a narrow road that provide ingress and egress to the Concow community in Butte County. Concow has experienced many devastating wildfires in the past century. Culverts couldn't handle the amount of water in the burn scar area. With the debris flow the culverts were clogged. There were many washouts along the road due to culverts that were too small for the amount of rain and debris. Currently, Concow Rd. has wooden post guardrail.

Project Description: Project would upside culverts to alleviate flash flood and debris flow damage. Road widening would provide safer ingress and egress for the community and emergency response vehicles. Guardrail upgrade to metal or steel posted so they don't burn.

Other Alternatives: None at this time

Existing Planning Mechanism(s) through which Action Will Be Implemented: None

Responsible Office/Partners: Department of Public Works

Project Priority: High

Cost Estimate: 3,000,000

Benefits (Losses Avoided): The benefits would be to reduce flash flood damage and improve evacuation routes with wider roads and fire-resistant guardrail

Potential Funding: HMGP, FMA, PDM

Timeline: 2019-2025

Action 14. Evacuation Routes

Hazards Addressed: Fire, flooding, erosion

Goals Addressed: 1, 2, 3, 4, 5, 7, 9

Issue/Background: Butte County has been prone to fires and floods over the last 50 plus years, more specifically, since 2016 there have been multiple fires and flood events that have been locally, state and/or federally declared. Evacuation routes need to be maintained and improved for the safe evacuation of community members and access for first responders. Culverts are inadequate or damaged from previous disasters and need to be upgraded or added.

Project Description: Project would upsize, add or replace damaged culverts to alleviate flash flood and debris flow damage. Road widening would provide safer ingress and egress for the community and

emergency response vehicles. Guardrail upgrade to metal or steel posts. Shoulders of the roads will be widened and/or added as necessary. Example projects include Skyway Safety Improvements, Neal Road Fire Escape and Pentz Road Improvements.

Other Alternatives: None at this time

Existing Planning Mechanism(s) through which Action Will Be Implemented: None

Responsible Office/Partners: Department of Public Works

Project Priority: High

Cost Estimate: 5,000,000

Benefits (Losses Avoided): The benefits would be to reduce flash flood damage and improve evacuation routes with wider roads and fire-resistant guardrail

Potential Funding: HMGP, FMA, PDM

Timeline: 2019-2025

Action 15. Honey Run Rd. and Centerville Rd. Culvert Upsizing and Road Widening

Hazards Addressed: Fire, flooding

Goals Addressed: 1, 2, 3, 4, 5, 7, 9

Issue/Background: Honey Run Road and Centerville Rd. are narrow winding roads that provide ingress and egress to communities in a fire prone area of Butte County. These two-lane roads run alongside Butte Creek which can flood and has caused damage to the roads.

Project Description: Project would upside culverts to alleviate flood damage. Road widening would provide safer ingress and egress for the community and emergency response vehicles.

Other Alternatives: None at this time

Existing Planning Mechanism(s) through which Action Will Be Implemented: None

Responsible Office/Partners: Department of Public Works

Cost Estimate: 6,000,000

Benefits (Losses Avoided): The benefits would be to reduce recurrence flood damage to the roadway and improve evacuation routes

Potential Funding: HMGP, FMA, PDM

Timeline: 2019-2025

Project Priority: High

Action 16. Portable Message Boards

Hazards Addressed: Fire, Flood

Goals Addressed: 1, 2, 3, 4, 5, 7, 9

Issue/Background: Butte County has been prone to fires and floods over the last 50 plus years, more specifically, since 2016 there have been multiple fires and flood events that have been locally, state and/or federally declared. These disasters have caused the evacuation of a large number of citizens having to travel on alternate routes for safety. Portable, changeable message boards can help guide citizens to safety.

Project Description: Project would purchase portable, changeable message boards and supporting equipment for multiple boards per road district.

Other Alternatives: None at this time

Existing Planning Mechanism(s) through which Action Will Be Implemented: None

Responsible Office/Partners: Department of Public Works

Project Priority: Medium

Cost Estimate: 1,000,000

Benefits (Losses Avoided): The benefits would be to help with successful evacuation of citizens.

Potential Funding: HMGP, PDM

Timeline: 2019-2025

Action 17. Multi County Traffic Plan

Hazards Addressed: Fire

Goals Addressed: 1, 2, 3, 4, 5, 7, 9

Issue/Background: During evacuations for major emergencies traffic stalls and the public cannot evacuate in a safe timely manner. This study is needed to determine how to safely evacuate the public on large scale emergencies.

Project Description: Work will include, develop a traffic model across multiple adjacent counties and determine traffic flows during major emergencies. From the model, develop a plan that identifies critical traffic flow obstructions and recommend solutions to remedy gridlock locations.

Other Alternatives: None at this time

Existing Planning Mechanism(s) through which Action Will Be Implemented: None

Responsible Office/Partners: Butte County Administration - Office of Emergency Management, Butte County Sheriff's Office, Butte County Public Works, Butte County General Services

Project Priority: Medium

Cost Estimate: \$3,750,000

Benefits (Losses Avoided): The benefits would be to support evacuation plans during an emergency.

Potential Funding: HMGP, FMA, PDM

Timeline: 2019-2025

Climate Change Actions

Action 18. Climate Change (Greenhouse Gas reduction measures and adaptation/resilience)

Hazards Addressed: Climate Change (A variety of hazards may be attributable to Climate Change including extreme heat, freeze and snow, heavy rains and storms, high winds, increase flooding, increased wildfire)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: The biggest climate change threats to the Butte County is the increase in extreme heat events as well as the increase in wildfire events. The County's roadways, infrastructure in flood zones, disadvantaged communities, agriculture sector and sensitive species habitat are among the most vulnerable to climate change impacts.

Project Description: Butte County will be updating its 2014 Climate Action Plan in 2020. The Climate Action plan proposes measures to reduce greenhouse gas emissions in public and private sectors. The County will also be updating its General Plan's Health and Safety Element to address SB 379 by incorporating goals, policies and measures that help to adapt to the effects of climate change.

Other Alternatives: None

Existing Planning Mechanism(s) through which Action will be implemented:

- Butte County Climate Action Plan update
- Health and Safety Element Update to incorporate climate adaptation policies pursuant to SB 379

Responsible Office/Partners: Butte County Department of Development Services

Project Priority: High

Cost Estimate: \$150,000.00 to \$200,000.00

Benefits (Losses Avoided): Reduction in greenhouse gasses has a cumulative effect in reducing the effects of climate change worldwide. Adaptation and resilience policies and measures will make the county and its population more prepared for the effects of climate change.

Potential Funding: SB-3 Grant, Hazard Mitigation Grant

Timeline: 2020

Drought Actions

Action 19. Drought Planning

Hazards Addressed: Drought and Water Shortage

Goals Addressed: 1, 2, 3, 4, 8, 9

Issue/Background: Drought and water shortages are threats to the population of Butte County.

Project Description: Planning for drought and water shortage

Other Alternatives: None

Existing Planning Mechanism(s) through which Action Will Be Implemented: This will create a planning mechanism

Responsible Office/Partners: Butte County Administration - Office of Emergency Management, Butte County Water and Resource Conservation

Cost Estimate: \$1,000,000

Benefits (Losses Avoided): Protection of life and property

Potential Funding: HMGP, PDM

Timeline: 2019-2025

Project Priority: Medium

Earthquake and Liquefaction Actions

Action 20. Identify Un-Reinforced Masonry Buildings in the County

Hazards Addressed: Earthquake and Liquefaction

Goals Addressed: 1, 2, 3, 4, 8, 9

Issue/Background: In Butte County there are many old buildings with no record of the construction type or building method used in construction. Damages in the 1975 Oroville earthquake were greatest in unreinforced masonry buildings.

Project Description: Inventory masonry buildings within the county to identify structures with unreinforced masonry that have the highest risk of collapse during earthquake.

Other Alternatives: None

Existing Planning Mechanism(s) through which Action will be implemented: None at this time.

Responsible Office/Partners: Office of Emergency Management / Building Official

Cost Estimate: Staff time

Benefits (Losses Avoided): Reducing the potential for loss of life and injury by reducing response time for emergency personnel by identifying the buildings with the highest risk of collapse due to earthquake.

Potential Funding: Existing budgets

Timeline: 5 years

Project Priority: Medium

Flood, Localized Flood, Levee Failure, Dam Failure, Streambank Erosion, and Heavy Rain Actions

Action 21. Nord Localized Flooding

Hazards Addressed: Localized Flooding, Flooding, Heavy Rains and Storms

Goals Addressed: 1, 2, 3, 4, 6, 7, 9

Issue/Background: During heavy rain storms the community of Nord is impacted by sheet flooding which has flooded many homes several times. More specifically, homes in the vicinity of Nord Hwy, Carmen Lane and Victor Drive have been impacted every few years. Recent flood events include 1996, 2005, 2008, 2012 and 2014. Most recent flooding occurred during two separate storms in February 2019 affecting multiple homes in the community.

Project Description: Home elevation above flood level.

Other Alternatives: No action.

Existing Planning Mechanism(s) through which Action Will Be Implemented: None identified

Responsible Office/Partners: Office of Emergency Management

Cost Estimate: \$150,000 per home

Benefits (Losses Avoided): Repetitive losses to homes in the Nord community, financial and emotional stress to affected residents.

Potential Funding: Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, Flood Mitigation Assistance Program and the Repetitive Flood Claims Program

Timeline: 2019-2024

Project Priority: High

Action 22. Water on Road Warning signs on River Road at Brick House

Hazards Addressed: Flooding, Localized Flooding, Heavy Rain and Storms

Goals Addressed: 1, 2, 3, 4, 6, 7, 9

Issue/Background: At a number of locations on River Road between Chico River Road and Ord Ferry Road the road dips at local sloughs that only have water in them during the heavy rain season.

Project Description: These dips flood during heavy rains and when down stream flows in the sloughs backup across the road. The road has gates just north of Ord Ferry Road and just south of Chico River Road to warn the traveling public that the road may be flooded. The dips are signed and the pavement

marked with red lines to a location of the highest recorded water level in the slough. The signs warn the traveling public not to proceed on the road when water is up to or above the red line. At one location just north of Ord Ferry Road commonly referred to as the Brick House there have been a number of accidents when there is sometime only one inch of water on the road. CHP has suggested that the County install more permanent signs with larger flashing beacons to warn drivers that there is water on the road.

Other Alternatives: None at this time.

Existing Planning Mechanism(s) through which Action Will Be Implemented: This project would be done through the Public Works Departments Road Maintenance Division

Responsible Office: Department of Public Works, Land Development Division

Cost Estimate: \$5,000.

Benefits (Losses Avoided): Reduce traffic accidents at this location.

Potential Funding: Local or Grant Funds.

Schedule: 2019-2025

Project Priority: Medium

Action 23. Rock Creek and Keefer Slough and Flood Control

Hazards Addressed: Flooding, Heavy Rain and Storms, Streambank Erosion, Localized Flooding, Dam Failure

Goals Addressed: 1, 2, 3, 4, 6, 7, 9

Issue/Background: Flooding and flood protection have been an issue along Rock Creek and Keefer Slough for some time.

Project Description: There have been numerous efforts to address the issue from both a flood protection and flood proofing perspectives. Now is the time to bring property owners and the community together to develop a plan to solve the problem.

Other Alternatives: None at this time.

Existing Planning Mechanism(s) through which Action Will Be Implemented: This project will also be listed on the Regional Flood Management Plan (RFMP) that is required by the Central Valley Flood Protection Plan (CVFPP). The County is active in the RFMP process for the region and will propose this project as a part of the RFMP for the region.

Responsible Office: Department of Public Works, Land Development Division

Cost Estimate: Based on previous feasibility studies the cost estimate is in the \$36 million range.

Benefits (Losses Avoided): The benefits would be to reduce recurrence period of flooding that currently exists.

Potential Funding: HMGP, FMA, PDM

Timeline: 2019-2025

Project Priority: Medium

Action 24. Palermo Drainage Study

Hazards Addressed: Localized Flooding, Flooding, Heavy Rains and Storms

Goals Addressed: 1, 2, 3, 4, 6, 7, 9

Issue/Background: Local flooding is a regular occurrence in the Community of Palermo especially in heavy rainfall events.

Project Description: The existing storm drain system in the community is a series of roadside ditches small streams and cross culverts that direct flows to the south west. This study would analyze the existing system and make recommendations on improvements to reduce the occurrence of localized flooding.

Other Alternatives: None at this time.

Existing Planning Mechanism(s) through which Action Will Be Implemented: This project will also be listed on the Regional Flood Management Plan (RFMP) that is required by the Central Valley Flood Protection Plan (CVFPP). The County is active in the RFMP process for the region and will propose this project as a part of the RFMP for the region.

Responsible Office: Department of Public Works, Land Development Division

Cost Estimate: None at this time.

Benefits (Losses Avoided): The benefits would be to reduce recurrence period of localized flooding that currently exists.

Potential Funding: HMGP, FMA, PDM

Timeline: 2019-2025

Project Priority: Medium

Action 25. Reinforce Nelson Road at its crossing of the Western Canal

Hazards Addressed: Flooding, Localized Flooding, Heavy Rain and Storms, Streambank Erosion

Goals Addressed: 1, 2, 3, 4, 6, 7, 9

Issue/Background: At the location that Nelson Road crosses the Western Canal just east of the Nelson Road/ 7 Mile Road Intersection the road is sometime closed when the operators of the Western Canal release water into Little Butte Creek for downstream customers the flows are greater than the ability of the Road culverts to handle. The flow overtops the road and washed away the gravel surface and portions of the shoulders. Public Works crews than have to close the road and then make repairs before opening it back to traffic.

Project Description: This project would either create a concrete low-water crossing to prevent future erosion or construct a larger box culvert to handle the flow of water so it does not overtop the road.

Other Alternatives: None at this time.

Existing Planning Mechanism(s) through which Action Will Be Implemented: This project would be done through the Public Works Departments Road Maintenance Division

Responsible Office: Department of Public Works, Land Development Division

Cost Estimate: \$1,000,000

Benefits (Losses Avoided): Reduce road closures at this location.

Potential Funding: Local Funds.

Timeline: 2019-2025

Project Priority: Medium

Action 26. Little Chico Creek 200- and 100-year Flood Protection Study

Hazards Addressed: Flooding, Streambank Erosion, Levee Failure, Dam Failure

Goals Addressed: 1, 2, 3, 4, 6, 7, 9

Issue/Background: Little Chico Creek has limited flood protection facilities along its length.

Project Description: This Study would determine the needed improvements to provide both, SB5 required, 200-year flood protection for the urban areas of Chico and, FEMA required, 100-year protection for the non-urban areas to the west of the Chico urban core.

Other Alternatives: None at this time.

Existing Planning Mechanism(s) through which Action Will Be Implemented: This project will be included in the Regional Flood Management Plan (RFMP) that is required by the Central Valley Flood Protection Plan (CVFPP). The County is active in the RFMP process for the region and will propose this project as a part of the RFMP for the region.

Responsible Office: Department of Public Works, Land Development Division & the Building and Development Services Department of the City of Chico

Cost Estimate: None at this time.

Benefits (Losses Avoided): Once the 200 year and 100-year flood protection are provided property owners in the area will not be required to buy Flood Insurance and there will not be the threat of flood damage to homes and businesses in the area.

Potential Funding: FMA, PDM.

Timeline: 2019-2025

Project Priority: Medium

Action 27. Lindo Chanel 200- and 100-year Flood Protection Study

Hazards Addressed: Flooding, Streambank Erosion, Heavy Rains and Storms, Levee Failure, Dam Failure

Goals Addressed: 1, 2, 3, 4, 6, 7, 9

Issue/Background: Lindo Chanel has limited flood protection facilities along its length.

Project Description: This Study would determine the needed improvements to provide both, SB5 required, 200-year flood protection for the urban areas of Chico and, FEMA required, 100-year protection for the non-urban areas to the west of the Chico urban core.

Other Alternatives: None at this time.

Existing Planning Mechanism(s) through which Action Will Be Implemented: This project will be included in the Regional Flood Management Plan (RFMP) that is required by the Central Valley Flood Protection Plan (CVFPP). The County is active in the RFMP process for the region and will propose this project as a part of the RFMP for the region.

Responsible Office: Department of Public Works, Land Development Division & the Building and Development Services Department of the City of Chico

Cost Estimate: \$1,000,000

Benefits (Losses Avoided): Once the 200-year and 100-year flood protection is provided property owners in the area will not be required to buy Flood Insurance and there will not be the threat of flood damage to homes and businesses in the area.

Potential Funding: FMA, PDM

Timeline: 2019-2025.

Project Priority: Medium

Action 28. Feather River West Levee Improvement Project

Hazards Addressed: Flooding, Levee Failure, Streambank Erosion, Heavy Rains and Storms

Goals Addressed: 1, 2, 3, 4, 6, 7, 9

Issue/Background: The levees along the west bank of the Feather River do not provide 100-year flood protection because they suffer from potential under seepage and through-seepage.

Project Description: The Sutter Butte Flood Control Agency is planning a project to improve these levees from Thermalito Afterbay, in Butte County, to the Sutter Bypass in Sutter County.

Other Alternatives: None.

Existing Planning Mechanism(s) through which Action Will Be Implemented: SBFCA is currently in the design, environmental clearance and permitting phase of improving the Feather River west bank levees. Property owners in the Agencies boundaries approved the formation of an Assessment District to provide local funding for the project with the remainder of funding coming from the State and Federal governments.

Responsible Office: Sutter Butte Flood Control Agency

Cost Estimate: \$312 million,

Benefits (Losses Avoided): The planned improvements will provide 200-year level of flood protection for the southern portion of Butte County that are currently either in a FEMA 100-year flood zone A or in the shaded X zone both of which were imposed by FEMA in 2011. This will allow these designations to be removed or modified thus eliminating or reducing flood insurance costs for property owners in the area.

Potential Funding: Current funding is 77% state and 23% local.

Schedule: Phase I will begin in 2013. Phase II will begin in 2014. Project completion for both phases is 2016

Project Priority: High

Action 29. Butte Creek Levees Certified to FEMA 100 Year Flood Protection Levels

Hazards Addressed: Flooding, Levee Failure, Streambank Erosion, Heavy Rains and Storms

Goals Addressed: 1, 2, 3, 4, 6, 7, 9

Issue/Background: The Butte Creek levees that protect the communities of South Chico, Durham and Nelson were declared by FEMA to not provide 100-year protection under their guidelines. It is believed that the only criteria that the levees do not meet in FEMA's guidelines are for freeboard.

Project Description: This project would prepare the necessary documentation to certify the levees and identify any needed construction to achieve that certification.

Other Alternatives: None at this time.

Existing Planning Mechanism(s) through which Action Will Be Implemented: This project will be included in the Regional Flood Management Plan (RFMP) that is required by the Central Valley Flood Protection Plan (CVFPP). The County is active in the RFMP process for the region and will propose this project as a part of the RFMP for the region.

Responsible Office: Department of Public Works, Land Development Division

Cost Estimate: \$1,000,000.

Benefits (Losses Avoided): Once the levees for this stream are certified to meet the FEMA requirements for the 100 year flood event the property owners in the area will be removed from the FEMA 100 year flood zones in the area and their flood insurance rates will go down or in some cases may be eliminated.

Potential Funding: HMGP, FMA, PDM

Timeline: 2019-2025.

Project Priority: Medium

Action 30. 3B's Overflow Structure Construction

Hazards Addressed: Flooding, Streambank Erosion, Dam Failure

Goals Addressed: 1, 2, 3, 4, 6, 7, 9

Issue/Background: The 3B's Overflow Structure is one of three overflow structures along the Sacramento River that allow flows from the Sacramento River to enter the Butte Basin Overflow Area. The 3B's Structure was originally constructed about 1964 as an earthen structure. Since then high-water events on the Sacramento River have degraded the structure to the point that now even low-water events will spill into the Butte Basin causing problems for property owners getting access to their fields and orchards.

Project Description: The proposed project would reconstruct the 3B's structure to its design elevation and harden it to prevent future degradation.

Other Alternatives: None at this time.

Existing Planning Mechanism(s) through which Action Will Be Implemented: This project will be included in the Regional Flood Management Plan (RFMP) that is required by the Central Valley Flood Protection Plan (CVFPP). The County is active in the RFMP process for the region and will propose this project as a part of the RFMP for the region.

Responsible Office: Department of Public Works, Land Development Division

Cost Estimate: \$1,000,000

Benefits (Losses Avoided): Once these improvements are made nuisance flooding in the Butte Basin will be eliminated allowing property owners to access their fields and orchards earlier in normal years.

Potential Funding: HMGP, FMA, PDM

Timeline: None at this time.

Project Priority: Medium

Action 31. Big Chico Creek 100- and 200-year Flood Protection Study

Hazards Addressed: Flooding, Streambank Erosion, Levee Failure, Heavy Rains and Storms

Goals Addressed: 1, 2, 3, 4, 6, 7, 9

Issue/Background: Big Chico Creek has limited flood protection facilities along its length.

Project Description: This Study would determine the needed improvements to provide both, SB5 required, 200-year flood protection for the urban areas of Chico and, FEMA required, 100-year protection for the non-urban areas to the west of the Chico urban core.

Other Alternatives: None at this time.

Existing Planning Mechanism(s) through which Action Will Be Implemented: This project will be included in the Regional Flood Management Plan (RFMP) that is required by the Central Valley Flood Protection Plan (CVFPP). The County is active in the RFMP process for the region and will propose this project as a part of the RFMP for the region.

Responsible Office: Department of Public Works, Land Development Division & the Building and Development Services Department of the City of Chico

Cost Estimate: \$1,000,000.

Benefits (Losses Avoided): Once the 200 year and 100-year flood protection are provided property owners in the area will not be required to buy Flood Insurance and there will not be the threat of flood damage to homes and businesses in the area.

Potential Funding: HMGP, FMA, PDM

Timeline: 2019-2025

Project Priority: Medium

Action 32. Keefer Slough to Mud Creek Flood Mitigation

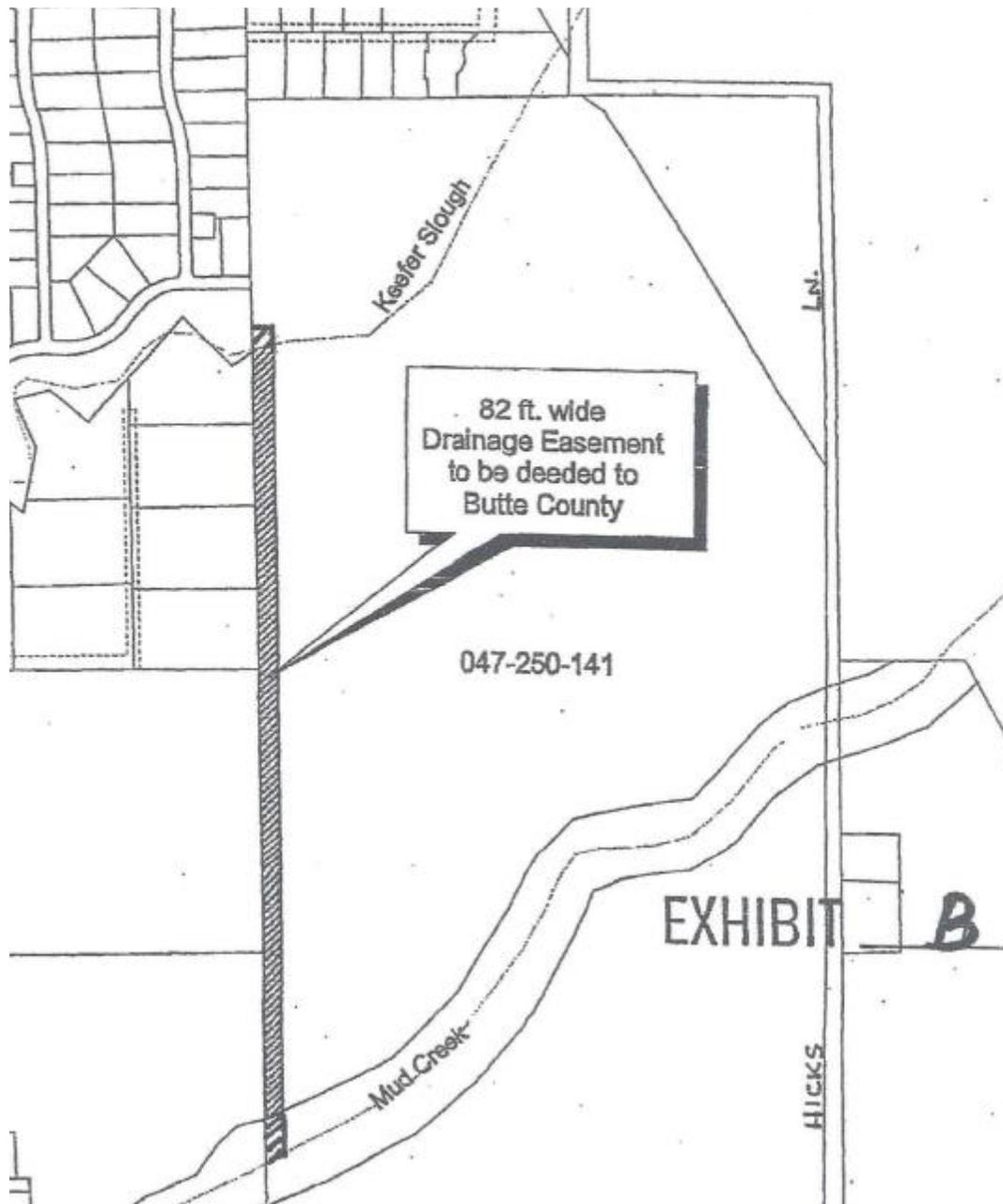
Hazards Addressed: Flooding, Streambank Erosion, Heavy Rains and Storms

Goals Addressed: 1, 2, 3, 4, 6, 7, 9

Issue/Background: Sierra Moon Subdivision is in efforts to continue to build homes and pump water into Keefer Slough and shed water on properties along Keefer Slough. The county of Butte has an Easement Grant Deed for the Sierra Moon Subdivision that is not being utilized. Currently this easement went from 82ft to 35ft. During 2019 Storm, flooding occurred throughout the areas on Keefer Slough and the surrounding residents near this easement. Roads were shut down, water was in resident homes, damages throughout Keefer Slough channel, orchards and ground damage was occurring from this flooding event.

Project Description: Building a 1 mile long and 35-foot-wide ditch from Keefer Slough to Mud Creek. Butte County holds this a 35-foot easement from Keefer Slough to Mud Creek just west of the Sierra Moon Sub-Division. During peak flows, water can be diverted down this ditch to Mud Creek and not down Keefer Slough where flooding is known to occur and cause tremendous amount of damages.

Figure 5-1 Drainage Exhibit for Stevens Development Agreement



Other Alternatives: Do not utilize this easement and expect flooding to continue to occur.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Working with Butte County to get a CSA-87 Extra Territorial Service Agreement signed. Once this agreement is in place then continue efforts will be put forth to work with DWR who is in control of Mud Creek to discuss the plans on building this ditch. Then discussions with Schuster Homes will be made. Then grant funding for this project will be sought after.

Responsible Office: Rock Creek Reclamation District, Landowners, County of Butte, Sierra Moon Sub-Division Developer (Schuster Homes), Department of Water Resources (DWR)

Cost Estimate: \$500,000.

Benefits (Losses Avoided): Benefits include:

- Prevents destruction of lives, homes, structural buildings and orchards.
- Other physical benefits include prevention of State HWY 99 from being flooded and closed. Prevent loss of life, loss of property, loss of income. Another physical benefit is reducing soil erosion.
- Non-physical benefits include safety, increased value of land and property, reduction in high flood insurance costs and a sense of security.

Potential Funding: HMGP, FMA, PDM

Timeline: 2020-2025

Project Priority: High

Action 33. Rock and Sand Creek Flood Mitigation

Hazards Addressed: Flooding, Streambank Erosion, Heavy Rains and Storms

Goals Addressed: 1, 2, 3, 4, 6, 7, 9

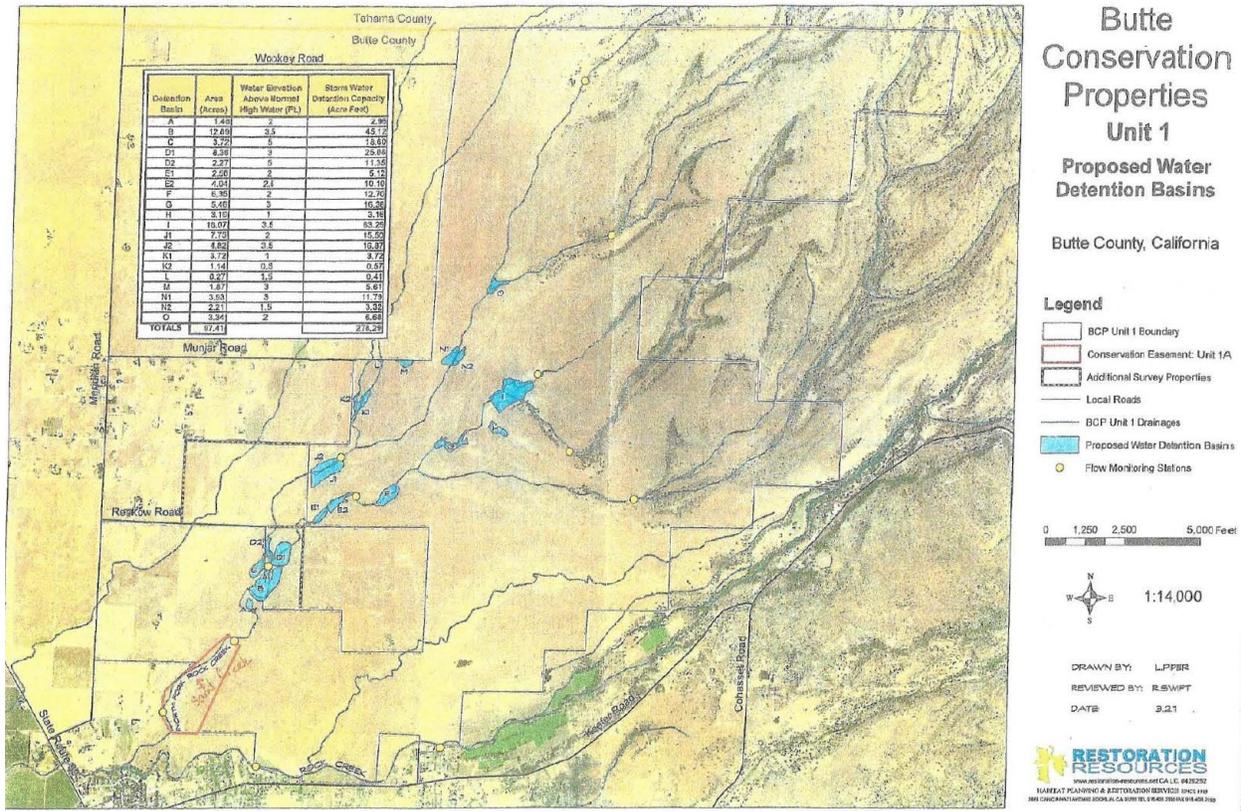
Issue/Background: 2019 Late February flooding event caused over \$1 Million in damages to Rock Creek Reclamation District levee system, orchards, ground and property. According to a 1999 USACE report, Rock Creek frequently floods farmlands within the Rock Creek Reclamation District, impacting 4,700 acres of farmland in total and affects the town of Nord (DAC). The extent of this flooding is now limited by overflow from the Keefer Slough distributary upstream of Hwy 99, but if this overflow is controlled in the future frequency and intensity of flooding within the Reclamation District will increase. Sand Creek (or the North Fork of Rock Creek) is a major tributary, joining Rock Creek from the north just east of Hwy 99. There is a potential to detain storm runoff within the Sand Creek system, which could significantly reduce the peak discharge in Rock Creek downstream. The 1999 USACE report also indicated that the lower reaches of Rock Creek periodically inundate the agricultural areas and leave the Town of Nord vulnerable to flooding. Thus, there is strong local support for measures to reduce flooding and establish viable recharge areas. It is understood that mitigation for flood hazards in this specific area should be part of the overall mitigation of the system.

Also, we have been extracting far more water from underground aquifers than is being replenished. By 2022 our sub-basin needs to come up with a groundwater sustainability plan (GSP) to address sustaining our water for the future or the State Water Resource Board will intervene and control our local water supply.

Migrating bird population in California has been dropping drastically due to the decline in natural habitat of food source. In a 2018 study, nearly 40% of the bird population has declined.

Project Description: A series of habitat detention/ retention water basins along Sand Creek (or the North Fork of Rock Creek). A total of 20 different size water detention basin along the fork and 12 flow monitoring stations. Flood flows can be diverted into these water retention basins to hold back the high flows from entering Rock Creek watershed just east of HWY99. These wetlands will be a source to control the water during peak flows, control the habitat and recharge the underground. A map of the project area can be seen below.

Figure 5-2 Proposed Water Detention Basins



Other Alternatives: Storm water can be diverted into fallow fields, row crops, orchards and vineyards.

Existing Planning Mechanism(s) through which Action Will Be Implemented: A feasibility study being performed within the next year through DWR Grant funding. This planning will determine exact acre feet capacity of water basins and which areas percolate the best and the best suitable habitat restoration areas for migratory birds.

Responsible Office: Rock Creek Reclamation District, Landowners, County of Butte, Sierra Moon Sub-Division Developer (Schuster Homes), Department of Water Resources (DWR)

Cost Estimate: \$10,000,000.

Benefits (Losses Avoided): Benefits include:

- Prevents destruction of lives, homes, structural buildings and orchards. Recharge of the underground aquifer. Controlled habitat that would provide food source for migratory birds.
- Other physical benefits include prevention of State HWY 99 from being flooded and closed. Prevent loss of life, loss of property, loss of income. Another physical benefit is reducing soil erosion. Groundwater recharge physical benefits will provide adequate water supply for productions of farmland and domestic consumption. Provides better habitat for the environment.
- Non-physical benefits include safety, increased value of land and property, reduction in high flood insurance costs, sense of security and restoring our environment for the future.

Potential Funding: HMGP, FMA, PDM

Timeline: 2020-2025

Project Priority: High

Action 34. Rock Creek and Keefer Slough Flood Mitigation

Hazards Addressed: Flooding, Streambank Erosion, Heavy Rains and Storms

Goals Addressed: 1, 2, 3, 4, 7, 9

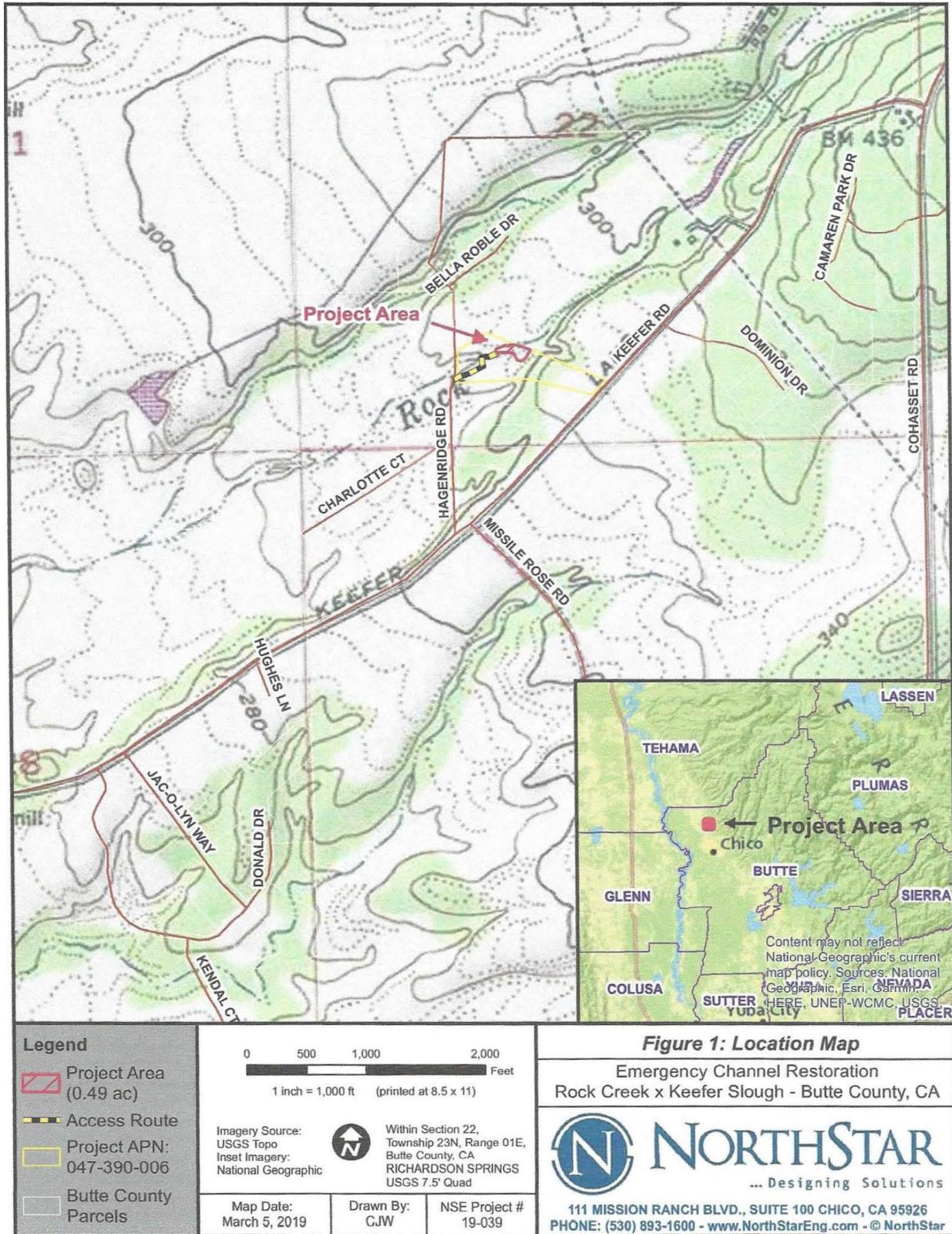
Issue/Background: In February 2019 Flood Emergency work was performed by Butte County Public Works where Rock Creek and Keefer Slough meet east of HWY 99. Alluvial deposition at the mouth of Rock Creek needed to be removed to restore the flow down Rock Creek's side of the bifurcation in order to return the proper balance of flows between these two channels. The more dominate channel footprint is the Rock Creek branch. The combination of cobblestone rocks and vegetation growth facilitated a depositional setting that aggraded the bar both at the upstream low-water channel as well as the downstream larger channel.

The bifurcation of Keefer Slough at Rock Creek has not been maintained in over 30 years. Cobblestone rocks, sediment and vegetation has built up over the years and have caused the main channel to go down Keefer Slough and not Rock Creek. Tremendous damaged was caused downstream on property from Keefer Slough. Estimated property damage in 2019 known was over \$200K.

The flows from Rock Creek and Keefer Slough vary drastically during flooding events. Therefore, homes, roads, highways, property, buildings, ground, farmland, orchards are all being damaged. Lives are being threatened from the high flows from both Rock Creek and Keefer Slough during high flooding events. More water is going down the overflow (Keefer Slough) and less down the main channel (Rock Creek).

Project Description: Creating a flood mitigation environmental project that will allow the flows to be managed for both Rock Creek and Keefer Slough. The work would be to put in large boulders (unmovable) along Keefer Slough to block the majority of the water from going down Keefer Slough. It would also be to secure the banks and surrounding areas with natural habitat that won't cause blockage. It would entail shifting the channel down to Rock Creek instead of down the overflow of Keefer Slough. Desired outcome would be to restore Rock Creek and Keefer Slough. A map of the location is shown below.

Figure 5-3 Project Location



Other Alternatives: No action and flooding continues to occur.

Existing Planning Mechanism(s) through which Action Will Be Implemented: In the process of working with River Partners and Flow West Engineering to put together the flow capacity for each channel and the exact design.

Responsible Office: Landowners, Rock Creek Reclamation District, River Partners, Flow West and Butte County Public Works

Cost Estimate: \$500,000.

Benefits (Losses Avoided): Benefits include:

- Prevents destruction of lives, homes, structural buildings and orchards.
- Other physical benefits include prevention of State HWY 99 from being flooded and closed. Prevent loss of life, loss of property, loss of income. Another physical benefit is reducing soil erosion. Groundwater recharge physical benefits will provide adequate water supply for productions of farmland and domestic consumption. Provides better habitat for the environment.
- Non-physical benefits include safety, increased value of land and property, reduction in high flood insurance costs, sense of security and restoring our environment for the future.

Potential Funding: HMGP, FMA, PDM

Timeline: 2020-2025

Project Priority: High

Action 35. Flood Control at Cherokee Canal

Hazards Addressed: Flood

Goals Addressed: 1, 2, 3, 4, 6, 7, 9

Issue/Background: Cherokee Canal poses a flood threat to the Richvale area of Butte County.

Project Description: Raising the bridges and overcrossings at Afton Road, Nelson Shipee Road and Richvale Highway would provide more capacity for water flow through Cherokee Canal. Other flood control projects could include debris removal and vegetation control. Structural improvements to increase the hydraulic capacity.

Other Alternatives: None at this time

Existing Planning Mechanism(s) through which Action Will Be Implemented: None

Responsible Office/Partners: Department of Public Works

Cost Estimate: 3,000,000

Benefits (Losses Avoided): The benefits would be to help with flood control and the protection of people and property.

Potential Funding: HMGP, PDM

Timeline: 2019-2025

Project Priority: Medium

Action 36. Community Rating System

Hazards Addressed: Flood

Goals Addressed: 1, 2, 3, 4, 6, 7, 9

Issue/Background: Flood Insurance costs are going up. The National Flood Insurance Program's (NFIP) Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages floodplain management activities that exceed the minimum NFIP requirements.

Project Description: Hiring a consultant to prepare and submit documentation to verify efforts to achieve enough points in the CRS to reduce flood insurance premiums for community property owners.

Other Alternatives: None at this time

Existing Planning Mechanism(s) through which Action Will Be Implemented: None

Responsible Office/Partners: Department of Public Works, Flood Plain Management, Office of Emergency Management

Project Priority: Medium

Cost Estimate: 200,000

Benefits (Losses Avoided): The benefits would be to help community members get reduced flood insurance rates.

Potential Funding: HMGP, PDM

Timeline: 2019-2025

Action 37. Palermo Drainage Study

Hazards Addressed: Flooding

Goals Addressed: 1, 2, 3, 4, 6, 7, 9

Issue/Background: Local flooding is a regular occurrence in the Community of Palermo especially in heavy rainfall events.

Project Description: The existing storm drain system in the community is a series of roadside ditches, small streams and cross culverts that direct flows to the southwest. This study would analyze the existing system and make recommendations on improvements to reduce the occurrence of localized flooding.

Other Alternatives: None at this time

Existing Planning Mechanism(s) through which Action Will Be Implemented: This project will also be listed on the Regional Flood Management Plan (RFMP) that is required by the Central Valley Flood Protection Plan (CVFPP). The County is active in the RFMP process for the region.

Responsible Office/Partners: Department of Public Works, Land Development Division

Project Priority: Medium

Cost Estimate: \$4,500,000

Benefits (Losses Avoided): The benefits would be to reduce recurrence period of localized flooding that currently exists

Potential Funding: HMGP, FMA, PDM

Timeline: 2019-2025

Action 38. Rock Creek and Keefer Slough Flood Control

Hazards Addressed: Flooding, Erosion

Goals Addressed: 1, 2, 3, 4, 6, 7, 9

Issue/Background: Flooding and flood protection have been an issue along Rock Creek and Keefer Slough for some time. There have been numerous efforts to address the issue from both a flood protection and flood proofing perspectives.

Project Description: Project would offer flood protection for the communities by replacement of existing culverts and addition of new drainage facilities to reduce localized frequent flooding. The project may include a preliminary engineering/ alternative analysis, refined design and implementation/construction, and/or other means of flood protection and control.

Other Alternatives: None at this time

Existing Planning Mechanism(s) through which Action Will Be Implemented: None

Responsible Office/Partners: Department of Public Works

Project Priority: High

Cost Estimate: 2,000,000

Benefits (Losses Avoided): The benefits would be to reduce reoccurrence of flooding that currently exists.

Potential Funding: HMGP, FMA, PDM

Timeline: 2019-2025

Action 39. Streamflow Gage

Hazards Addressed: Flooding

Goals Addressed: 1, 2, 3, 4, 6, 7, 9

Issue/Background: Local flooding is a regular occurrence in Butte County especially in heavy rainfall events and around the burn scare area. In some areas of Butte County, during storms the only gage is downstream of potential critical levee locations. Post fire watershed conditions pose a heightened risk to ungagged waterways.

Project Description: Implementation of stream flow gages in creeks downstream of burn areas to better inform emergency management and planning.

Other Alternatives: None at this time

Existing Planning Mechanism(s) through which Action Will Be Implemented: None

Responsible Office/Partners: Department of Public Works

Project Priority: Medium

Cost Estimate: \$200,000,000

Benefits (Losses Avoided): The benefits would be to reduce recurrence flooding that currently exists

Potential Funding: HMGP, FMA, PDM

Timeline: 2019-2025

Hazardous Materials Actions

Action 40. Hazardous Materials Transportation Mitigation

Hazards Addressed: Hazardous Materials Transportation

Goals Addressed: 1, 2, 3, 4, 7, 9

Issue/Background: Butte County is a transportation corridor for trucks and trains that may carry hazardous materials.

Project Description: Training, staffing, equipment and MOUs for response to hazardous material spills

Other Alternatives: none

Existing Planning Mechanism(s) through which Action will be implemented:

Responsible Office/Partners: Butte County Administration - Office of Emergency Management, Butte County Public Works, Butte County Fire

Cost Estimate: \$1,000,000

Benefits (Losses Avoided): Protection of life, property and the environment

Potential Funding: HMGP, PDM

Timeline: 2019-2025

Project Priority: High

Action 41. Butte County Drainage and Culvert Improvements

Hazards Addressed: Flooding, Erosion

Goals Addressed: 1, 2, 3, 4, 7, 9

Issue/Background: Butte County has been prone to fires and floods over the last 50 plus years, more specifically, since 2016 there have been multiple fires and flood events that have been locally, state and/or federally declared. Drainage systems and culverts need to be improved for the long-term protection of property and the environment.

Project Description: Project would upsize, add or replace damaged or undersized/inadequate culverts to alleviate flash flood, snow melt and debris flow damage throughout Butte County. These improvements are needed county wide. Perform master drainage studies to better inform infrastructure sizing.

Other Alternatives: None at this time

Existing Planning Mechanism(s) through which Action Will Be Implemented: None

Responsible Office/Partners: Department of Public Works

Project Priority: High

Cost Estimate: 10,000,000

Benefits (Losses Avoided): The benefits would be to reduce flood damage and protect public and private property and the environment.

Potential Funding: HMGP, FMA, PDM

Timeline: 2019-2025

Invasive Species Actions

Action 42. Marine/Aquatic Invasive Species Survey/ Surveillance Project

Hazards Addressed: Invasive Species

Goals Addressed: 1, 2, 3, 4, 7, 8, 9

Issue/Background: Water and the natural and manmade conveyances' and infrastructure are among Butte County's most important natural and industrial resources. The County's water systems are the critical component for many of the environmental and agricultural cycles both terrestrial and aquatic.

Project Description: Marine/ Aquatic invasive species can jeopardize and damage any part of the entire system ranging from human economy dependent infrastructure to natural aquatic, riparian and wetland habitat. Entire water sheds can be affected when an aggressive invasive species infests the rivers, shorelines, tributaries, drainage, irrigation and domestic delivery systems. An aggressive survey project will identify incipient, undocumented infestations for eradication by the Agricultural Dept. and Dept. of Boating and Waterways.

Other Alternatives: Rely on the present incidental discovery scenario

Existing Planning Mechanism(s) through which Action will be implemented: The County Agricultural Department is the lead member in the Butte County Weed Management Area (BCWMA), a collective of resource, regulatory agencies and private associations cooperating under an MOU. The Management Group plans and coordinates eradication activities on invasive noxious weeds in Butte County. California Department of Boating and Waterways is designated as the lead state agency to cooperate with other state, local and federal agencies in controlling Marine/Aquatic Invasive weeds.

Responsible Office/Partners: Butte County Agricultural Department

Cost Estimate: \$8,000.00 per annual survey

Benefits (Losses Avoided): Prevent damage to, or failure of, the drainage irrigation and domestic water delivery systems and infrastructure. Mitigate severe impact to natural aquatic, riparian and wetland habitat.

Potential Funding: Competitive grants

Timeline: To be determined based on the availability of funding

Project Priority: Medium

Action 43. Foreign Animal Disease Rapid Response Quarantine Program

Hazards Addressed: Section 4.2.14, Foreign Animal Disease (FAD) Outbreak

Goals Addressed: 1, 2, 3, 4, 7, 8, 9

Issue/Background: The introduction of a FAD in California poultry, livestock or wildlife presents substantial risks to animals, human health and the agricultural economy. Rapid response and quarantine are fundamental to preventing region-wide outbreak.

Project Description: Biologist from the County Agricultural Department are the most likely to encounter a FAD event. A response plan exists but department support resources to carry out rapid response, quarantine and decontamination are not in place. The Department needs to acquire specific response and decontamination equipment and training.

Other Alternatives: Rely on other county organizations to provide or share required equipment and resources. There is no alternative for proper FAD response training.

Existing Planning Mechanism(s) through which Action Will Be Implemented: CDFA, Animal Health Branch, Emergency Disease Programs has developed and provided a FAD outbreak response strategy and plan to be administered locally by the County Agricultural Department.

Responsible Office: Butte County Agricultural Department, 316 Nelson Ave. Oroville CA, 95965

Cost Estimate: \$15,000.00

Benefits (Losses Avoided): Protection of a \$30 million county poultry, dairy and livestock industry/economy. Protect the \$36 billion state poultry, dairy and livestock industry/ economy. Prevent disease contagion, outbreak and human FAD exposure.

Potential Funding: Competitive grants. Response training can be provided by CDFA, Animal Health Branch.

Timeline: To be determined based on the availability of funding

Project Priority: High

Action 44. Fire Break Maintenance / Broom Eradication Project

Hazards Addressed: Invasive Species Control

Goals Addressed: 1, 2, 3, 4, 7, 8, 9

Issue/Background: Broom species (*Genista monspessulana*, *Cytisus striatus*, *Cytisus scoparius*) are invasive weeds that have filled in fire breaks and have significantly added to the fuel load creating fire prone habitat adjacent roads in the county forested areas. Eradicating them reduces fire danger.

Project Description: At present, along the foothill roads, the Broom infestations occur at easily accessible locations for truck mounted spray equipment and are in controllable quantities; however, the infestations are increasing and spreading. An aggressive control project will prevent forest fires, severely retard the spread of this invasive pest and likely achieve eradication in most locations.

Other Alternatives: Presently, there are no feasible alternatives to fuel reduction or invasive species eradication that will mitigate the fire destruction of forest, public and private property and loss of life.

Existing Planning Mechanism(s) through which Action Will Be Implemented: The County Agricultural Department is the lead member in the Butte County Weed Management Area (BCWMA), a collective of resource, regulatory agencies and private associations cooperating under an MOU. The Management Group plans and coordinates eradication activities on invasive noxious weeds in Butte County.

Responsible Office: Butte County Agricultural Department: 316 Nelson Ave. Oroville CA, 95965

Cost Estimate: \$65,000.00 for a five-year program.

Benefits (Losses Avoided): Maintaining the integrity of the fire breaks and prevention of wildfires, preservation of the forest resources and air quality, protection of foothill/mountain communities, mitigate loss of life, public and private property, resources. Stop the spread of invasive species.

Potential Funding: Competitive grants

Timeline: To be determined based on the availability of funding

Project Priority: High

Action 45. California DWR Red Sesbania (Sesbania punicea) Removal and Flood Mitigation Project

Hazards Addressed: Invasive Species

Goals Addressed: 1, 2, 3, 4, 7, 8, 9

Issue/Background: Aggressive noxious weeds crowd out native vegetation and alter the natural environment and habitat for wildlife species, as well as impacting agricultural water-use efficiency and recreational land values. Red sesbania forms solid stands along riverbanks, displacing native vegetation and wildlife habitat. Each plant produces numerous seeds, which in turn can potentially travel great distances by water. All parts of the plant, particularly the seeds, are poisonous to mammals, birds, and reptiles. The species has been recognized as a species that is rapidly invading riparian vegetation in the Sacramento/San Joaquin River Delta and along rivers leading into the Delta. In Butte County, it is known to occur in both the Oroville Wildlife Area (OWA) and along the Feather River near Oroville, CA. The Thermalito Power Canal, Thermalito Forebay, and Diversion Pool are the upstream extent of the red sesbania population on the Feather River.

Project Description: In 2008 the California Department of Water Resources (DWR) Oroville Field Division began removal of red sesbania along the Thermalito Power Canal, Thermalito Forebay, and Thermalito Diversion Pool. Mechanical removal measures include pulling plants by hand or with a weed wrench. When mature trees with seed pods are encountered, the pods are removed by hand, bagged, and removed from the site. Larger trees may be cut and stump sprayed with herbicide.

Other Alternatives: Herbicide treatments.

Existing Planning Mechanism(s) through which Action Will Be Implemented: CA DWR Invasive Plant Management Program.

Responsible Office: Butte County Agricultural Department and CA DWR

Cost Estimate: 2 Environmental Scientists @ \$125/hr. x 2 days/yr. = \$4,000 annually

Benefits (Losses Avoided): Control of noxious weed species would enhance native vegetation and its associated wildlife. Eradication and/or control of these species will help to reduce the number of seeds and/or plant parts that can invade other sensitive resources and habitats, especially riparian habitats downstream.

Potential Funding: Internally funded under CA DWR Invasive Plant Management Program

Timeline: Ongoing

Project Priority: High

Landslide and Debris Flow Actions

Action 46. Slope Stabilization, Erosion Protection and Control

Hazards Addressed: Landslide and Debris Flow, Flooding, Heavy Rain and Storms, Winter Storms

Goals Addressed: 1, 2, 3, 4, 7, 9

Issue/Background: During storms, flooding, wind and severe weather, erosion protection is needed to prevent or lessen the impacts of landslides, mud slides, slope failure and debris flows, especially in burn scar areas

Project Description: Best Management Practices (BMPs) enlisted to mitigate the impacts of landslides, mud slides, slope failure and debris flows, especially in burn scar areas

Other Alternatives: None

Existing Planning Mechanism(s) through which Action will be implemented: Erosion ordinance

Responsible Office/Partners: Butte County Administration - Office of Emergency Management, Butte County Public Works

Cost Estimate: \$1,000,000

Benefits (Losses Avoided): Loss of property, watershed protection, protection of the environment

Potential Funding: HMGP, PDM

Timeline: 2019-2025

Project Priority: High

Severe Weather Actions

Action 47. Tree Mitigation

Hazards Addressed: Severe Weather: Winds, Heavy Rains and Storms, Drought

Goals Addressed: 1, 2, 3, 4, 7, 9

Issue/Background: High winds and severe storms may cause power outages and damage to property from falling trees and blowing debris

Project Description: Tree mitigation, PSPS planning

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action will be implemented: None

Responsible Office/Partners: Butte County Administration - Office of Emergency Management, Butte County Public Works

Cost Estimate: \$1,000,000

Benefits (Losses Avoided): Protection of life, property, and critical facilities and infrastructure

Potential Funding: HMGP, PDM

Timeline: 2019-2025

Project Priority: High

Action 48. Extreme Heat Planning

Hazards Addressed: Extreme Heat

Goals Addressed: 1, 2, 3, 4, 7, 9

Issue/Background: Extreme heat is becoming more prevalent and increasing risk to people and property

Project Description: Heat Contingency Planning, PSPS planning

Other Alternatives: none

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office/Partners: Butte County Administration - Office of Emergency Management, Butte County Public Health

Cost Estimate: \$1,000,000

Benefits (Losses Avoided): Protection of life and property

Potential Funding: HMGP, PDM

Timeline: 2019-2025

Project Priority: Medium

Wildfire Actions

Action 49. Upper Ridge Fuels Reduction Project

Hazards Addressed: Wildfire (and Extreme Heat, Drought and Water Shortage, Invasive Species, High Winds)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Butte County has experienced many damaging wildland fires during the past century. Dense vegetative fuel loading provides the potential for future catastrophic wildland fires and damage to communities and assets at risk.

Project Description: Conduct fuels reduction on multiple ownerships in the Upper Ridge; Paradise Irrigation District, Paradise Pines Property Owners Association, US Forest Service, BLM, Sierra Pacific Industries, Paradise Park and Recreation District and Paradise Unified School District.

Other Alternatives:

- Increased number of initial attack resources
- Public education to reduce ignitions
- Nothing

Existing Planning Mechanism(s) through which Action Will Be Implemented: Butte Unit Fire Plan/Community Wildfire Protection Plan

Responsible Office/Partners: CAL FIRE/Butte County Fire Department in cooperation with the Butte County Fire Safe Council

Cost Estimate: \$1800 - \$2800 per acre treated. Approximately 300 acres: \$600,000

Benefits (Losses Avoided):

- Reduced fire intensity within the fuel reduction zone.
- Increased probability of containing a fire within the fuel reduction zone.
- Reduced risk to public safety, property, environment and other assets at risk.

Potential Funding: Grant funding, US FS and BLM project work

Timeline: 2019 and ongoing

Project Priority: High

Action 50. Upper Ridge Fuels Reduction Maintenance Project

Hazards Addressed: Wildfire (and Extreme Heat, Drought and Water Shortage, Invasive Species, High Winds)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Butte County has experienced many damaging wildland fires during the past century. Dense vegetative fuel loading provides the potential for future catastrophic wildland fires and damage to communities and assets at risk.

Project Description: Conduct fuels reduction maintenance on multiple ownerships in the Upper Ridge; Paradise Irrigation District, Paradise Pines Property Owners Association, US Forest Service, BLM, Sierra Pacific Industries, Paradise Park and Recreation District and Paradise Unified School District. Additionally, support private landowners with maintenance outreach education and the chipper program.

Other Alternatives:

- Increased number of initial attack resources
- Public education to reduce ignitions
- Nothing

Existing Planning Mechanism(s) through which Action Will Be Implemented: Butte Unit Fire Plan/Community Wildfire Protection Plan

Responsible Office/Partners: CAL FIRE/Butte County Fire Department in cooperation with the Butte County Fire Safe Council

Cost Estimate: \$1800 - \$2800 per acre treated. Approximately 150 acres: \$300,000

Benefits (Losses Avoided):

- Reduced fire intensity within the fuel reduction zone.
- Increased probability of containing a fire within the fuel reduction zone.
- Reduced risk to public safety, property, environment and other assets at risk.

Potential Funding: Grant funding, US FS and BLM project work

Timeline: 2019 and ongoing

Project Priority: High

Action 51. Concow/Yankee Hill Fuels Reduction Project

Hazards Addressed: Wildfire (and Extreme Heat, Drought and Water Shortage, Invasive Species, High Winds)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Butte County has experienced many damaging wildland fires during the past century. Dense vegetative fuel loading provides the potential for future catastrophic wildland fires and damage to communities and assets at risk.

Project Description: Conduct fuels reduction on multiple ownerships with grants funding provided by CAL FIRE to the Yankee Hill Fire Safe Council.

Other Alternatives:

- Increased number of initial attack resources
- Public education to reduce ignitions
- Nothing

Existing Planning Mechanism(s) through which Action Will Be Implemented: Butte Unit Fire Plan/Community Wildfire Protection Plan

Responsible Office/Partners: CAL FIRE/Butte County Fire Department in cooperation with the Butte County Fire Safe Council

Cost Estimate: \$1800 - \$2800 per acre treated. Approximately 100 acres: \$200,000

Benefits (Losses Avoided):

- Reduced fire intensity within the fuel reduction zone.
- Increased probability of containing a fire within the fuel reduction zone.
- Reduced risk to public safety, property, environment and other assets at risk.

Potential Funding: Grant funding

Timeline: 2019 and ongoing

Project Priority: High

Action 52. Concow/Yankee Hill Fuels Reduction Maintenance Project

Hazards Addressed: Wildfire (and Extreme Heat, Drought and Water Shortage, Invasive Species, High Winds)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Butte County has experienced many damaging wildland fires during the past century. Dense vegetative fuel loading provides the potential for future catastrophic wildland fires and damage to communities and assets at risk.

Project Description: Maintain fuels reduction on multiple ownerships with grants funding and partner support on USFS lands, Sierra Pacific Industries and private landowners. Leverage CAL FIRE prescribed fire resources to maintain brush regrowth from the CAMP Fire of November 8, 2018. Additionally, support private landowners with maintenance outreach education and the chipper program.

Other Alternatives:

- Increased number of initial attack resources

- Public education to reduce ignitions
- Nothing

Existing Planning Mechanism(s) through which Action Will Be Implemented: Butte Unit Fire Plan/Community Wildfire Protection Plan

Responsible Office/Partners: CAL FIRE/Butte County Fire Department in cooperation with the Butte County Fire Safe Council

Cost Estimate: \$1800 - \$2800 per acre treated. Approximately 150 acres: \$300,000

Benefits (Losses Avoided):

- Reduced fire intensity within the fuel reduction zone.
- Increased probability of containing a fire within the fuel reduction zone.
- Reduced risk to public safety, property, environment and other assets at risk.

Potential Funding: Grant funding

Timeline: 2019 and ongoing

Project Priority: High

Action 53. Berry Creek Fuels Reduction Project

Hazards Addressed: Wildfire (and Extreme Heat, Drought and Water Shortage, Invasive Species, High Winds)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Butte County has experienced many damaging wildland fires during the past century. Dense vegetative fuel loading provides the potential for future catastrophic wildland fires and damage to communities and assets at risk.

Project Description: Construct fuels reduction on multiple ownerships with grant funding and partner support on US FS lands and private landowners. Work focusing along Bald Rock and Rockefeller Roads.

Other Alternatives:

- Increased number of initial attack resources
- Public education to reduce ignitions
- Nothing

Existing Planning Mechanism(s) through which Action Will Be Implemented: Butte Unit Fire Plan/Community Wildfire Protection Plan

Responsible Office/Partners: CAL FIRE/Butte County Fire Department in cooperation with the Butte County Fire Safe Council

Cost Estimate: \$1800 - \$2800 per acre treated. Approximately 400 acres: \$800,000

Benefits (Losses Avoided): Reduced fire intensity within the fuel reduction zone; increased probability of containing a fire within the fuel reduction zone; reduced risk to public safety, property, environment and other assets at risk.

Potential Funding: Grant funding and US FS project work

Timeline: 2019 and ongoing

Project Priority: High

Action 54. Berry Creek Fuels Reduction Maintenance Project

Hazards Addressed: Wildfire (and Extreme Heat, Drought and Water Shortage, Invasive Species, High Winds)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Butte County has experienced many damaging wildland fires during the past century. Dense vegetative fuel loading provides the potential for future catastrophic wildland fires and damage to communities and assets at risk.

Project Description: Maintain fuels reduction on multiple ownerships with grant funding and partner support on US FS lands and private landowners. Additionally, support private landowners with maintenance outreach education and the chipper program.

Other Alternatives:

- Increased number of initial attack resources
- Public education to reduce ignitions
- Nothing

Existing Planning Mechanism(s) through which Action Will Be Implemented: Butte Unit Fire Plan/Community Wildfire Protection Plan

Responsible Office/Partners: CAL FIRE/Butte County Fire Department in cooperation with the Butte County Fire Safe Council

Cost Estimate: \$1800 - \$2800 per acre treated. Approximately 50 acres: \$100,000

Benefits (Losses Avoided):

- Reduced fire intensity within the fuel reduction zone.
- Increased probability of containing a fire within the fuel reduction zone.
- Reduced risk to public safety, property, environment and other assets at risk.

Potential Funding: Grant funding and US FS project work

Timeline: 2019 and ongoing

Project Priority: High

Action 55. Butte Meadows Fuels Reduction Project

Hazards Addressed: Wildfire (and Extreme Heat, Drought and Water Shortage, Invasive Species, High Winds)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Butte County has experienced many damaging wildland fires during the past century. Dense vegetative fuel loading provides the potential for future catastrophic wildland fires and damage to communities and assets at risk.

Project Description: Construct a shaded fuel break along Humboldt Road from Hwy 32 to the community of Jonesville as grant funds allow.

Other Alternatives:

- Increased number of initial attack resources
- Public education to reduce ignitions
- Nothing

Existing Planning Mechanism(s) through which Action Will Be Implemented: Butte Unit Fire Plan/Community Wildfire Protection Plan

Responsible Office/Partners: CAL FIRE/Butte County Fire Department in cooperation with the Butte County Fire Safe Council

Cost Estimate: \$1,800 - \$2,800 per acre treated. Approximately 100 acres: \$200,000

Benefits (Losses Avoided):

- Reduced fire intensity within the fuel reduction zone.
- Increased probability of containing a fire within the fuel reduction zone.
- Reduced risk to public safety, property, environment and other assets at risk.

Potential Funding: Grant funding

Timeline: 2019 and ongoing

Project Priority: Medium

Action 56. Cohasset Fuels Reduction Project

Hazards Addressed: Wildfire (and Extreme Heat, Drought and Water Shortage, Invasive Species, High Winds)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Butte County has experienced many damaging wildland fires during the past century. Dense vegetative fuel loading provides the potential for future catastrophic wildland fires and damage to communities and assets at risk.

Project Description: Construct a shaded fuel break along Vilas Rd, Mann and Nolita Ridge Rd, and Mud Creek Rd in the community of Cohasset as grant funds allow.

Other Alternatives:

- Increased number of initial attack resources
- Public education to reduce ignitions
- Nothing

Existing Planning Mechanism(s) through which Action Will Be Implemented: Butte Unit Fire Plan/Community Wildfire Protection Plan

Responsible Office/Partners: CAL FIRE/Butte County Fire Department in cooperation with the Butte County Fire Safe Council

Cost Estimate: \$1800 - \$2800 per acre treated. Approximately 182 acres: \$364,000

Benefits (Losses Avoided):

- Reduced fire intensity within the fuel reduction zone.
- Increased probability of containing a fire within the fuel reduction zone.
- Reduced risk to public safety, property, environment and other assets at risk.

Potential Funding: Grant funding

Timeline: 2019 and ongoing

Project Priority: High

Action 57. Cohasset Fuels Reduction Maintenance Project

Hazards Addressed: Wildfire (and Extreme Heat, Drought and Water Shortage, Invasive Species, High Winds)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Butte County has experienced many damaging wildland fires during the past century. Dense vegetative fuel loading provides the potential for future catastrophic wildland fires and damage to communities and assets at risk.

Project Description: Maintain a shaded fuel break along Vilas Rd, Mann and Nolta Ridge Rd, and Mud Creek Rd in the community of Cohasset as grant funds allow. Additionally, support private landowners with maintenance outreach education and the chipper program.

Other Alternatives:

- Increased number of initial attack resources
- Public education to reduce ignitions
- Nothing

Existing Planning Mechanism(s) through which Action Will Be Implemented: Butte Unit Fire Plan/Community Wildfire Protection Plan

Responsible Office/Partners: CAL FIRE/Butte County Fire Department in cooperation with the Butte County Fire Safe Council

Cost Estimate: \$1800 - \$2800 per acre treated. Approximately 97 acres: \$195,000

Benefits (Losses Avoided):

- Reduced fire intensity within the fuel reduction zone.
- Increased probability of containing a fire within the fuel reduction zone.
- Reduced risk to public safety, property, environment and other assets at risk.

Potential Funding: Grant funding

Timeline: 2019 and ongoing

Project Priority: High

Action 58. *Forest Ranch Fuels Reduction Project*

Hazards Addressed: Wildfire (and Extreme Heat, Drought and Water Shortage, Invasive Species, High Winds)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Butte County has experienced many damaging wildland fires during the past century. Dense vegetative fuel loading provides the potential for future catastrophic wildland fires and damage to communities and assets at risk.

Project Description: Construct shaded fuel breaks along roadways including Doe Mill Road, Headwaters Road, and Schott Road in the community of Forest Ranch as grant funds allow.

Other Alternatives:

- Increased number of initial attack resources
- Public education to reduce ignitions

- Nothing

Existing Planning Mechanism(s) through which Action Will Be Implemented: Butte Unit Fire Plan/Community Wildfire Protection Plan

Responsible Office/Partners: CAL FIRE/Butte County Fire Department in cooperation with the Butte County Fire Safe Council

Cost Estimate: \$1800 - \$2800 per acre treated. Approximately 227 acres: \$454,000

Benefits (Losses Avoided):

- Reduced fire intensity within the fuel reduction zone.
- Increased probability of containing a fire within the fuel reduction zone.
- Reduced risk to public safety, property, environment and other assets at risk.

Potential Funding: Grant funding

Timeline: 2019 and ongoing

Project Priority: Medium

Action 59. Forest Ranch Fuels Reduction Maintenance Project

Hazards Addressed: Wildfire (and Extreme Heat, Drought and Water Shortage, Invasive Species, High Winds)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Butte County has experienced many damaging wildland fires during the past century. Dense vegetative fuel loading provides the potential for future catastrophic wildland fires and damage to communities and assets at risk.

Project Description: Construct shaded fuel breaks along roadways including Doe Mill Road, Headwaters Road, and Schott Road in the community of Forest Ranch as grant funds allow.

Other Alternatives:

- Increased number of initial attack resources
- Public education to reduce ignitions
- Nothing

Existing Planning Mechanism(s) through which Action Will Be Implemented: Butte Unit Fire Plan/Community Wildfire Protection Plan

Responsible Office/Partners: CAL FIRE/Butte County Fire Department in cooperation with the Butte County Fire Safe Council

Cost Estimate: \$1800 - \$2800 per acre treated. Approximately 227 acres: \$454,000

Benefits (Losses Avoided):

- Reduced fire intensity within the fuel reduction zone.
- Increased probability of containing a fire within the fuel reduction zone.
- Reduced risk to public safety, property, environment and other assets at risk.

Potential Funding: Grant funding

Timeline: 2019 and ongoing

Project Priority: Medium

Action 60. Feather Falls Fuels Reduction Project

Hazards Addressed: Wildfire (and Extreme Heat, Drought and Water Shortage, Invasive Species, High Winds)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Butte County has experienced many damaging wildland fires during the past century. Dense vegetative fuel loading provides the potential for future catastrophic wildland fires and damage to communities and assets at risk.

Project Description: Construct shaded fuel breaks along roadways including Lumpkin Road, Craig Access Road and side roads feeding into Lumpkin Road.

Other Alternatives:

- Increased number of initial attack resources
- Public education to reduce ignitions
- Nothing

Existing Planning Mechanism(s) through which Action Will Be Implemented: Butte Unit Fire Plan/Community Wildfire Protection Plan

Responsible Office/Partners: CAL FIRE/Butte County Fire Department in cooperation with the Butte County Fire Safe Council

Cost Estimate: \$1800 - \$2800 per acre treated. Approximately 40 acres: \$80,000

Benefits (Losses Avoided):

- Reduced fire intensity within the fuel reduction zone.
- Increased probability of containing a fire within the fuel reduction zone.
- Reduced risk to public safety, property, environment and other assets at risk.

Potential Funding: Grant funding

Timeline: 2019 and ongoing

Project Priority: High

Action 61. Feather Falls Fuels Reduction Maintenance Project

Hazards Addressed: Wildfire (and Extreme Heat, Drought and Water Shortage, Invasive Species, High Winds)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Butte County has experienced many damaging wildland fires during the past century. Dense vegetative fuel loading provides the potential for future catastrophic wildland fires and damage to communities and assets at risk.

Project Description: Maintain shaded fuel breaks along roadways including Lumpkin Road, Craig Access Road and side roads feeding into Lumpkin Road. Additionally, support private landowners with maintenance outreach education and the chipper program.

Other Alternatives:

- Increased number of initial attack resources
- Public education to reduce ignitions
- Nothing

Existing Planning Mechanism(s) through which Action Will Be Implemented: Butte Unit Fire Plan/Community Wildfire Protection Plan

Responsible Office/Partners: CAL FIRE/Butte County Fire Department in cooperation with the Butte County Fire Safe Council

Cost Estimate: \$1800 - \$2800 per acre treated. Approximately 40 acres: \$80,000

Benefits (Losses Avoided):

- Reduced fire intensity within the fuel reduction zone.
- Increased probability of containing a fire within the fuel reduction zone.
- Reduced risk to public safety, property, environment and other assets at risk.

Potential Funding: Grant funding

Timeline: 2019 and ongoing

Project Priority: High

Action 62. Forbestown Fuels Reduction Maintenance Project

Hazards Addressed: Wildfire (and Extreme Heat, Drought and Water Shortage, Invasive Species, High Winds)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Butte County has experienced many damaging wildland fires during the past century. Dense vegetative fuel loading provides the potential for future catastrophic wildland fires and damage to communities and assets at risk.

Project Description: Maintain shaded fuel breaks along roadways including Lumpkin Road, Craig Access Road and side roads feeding into Lumpkin Road. Additionally, support private landowners with maintenance outreach education and the chipper program.

Other Alternatives:

- Increased number of initial attack resources
- Public education to reduce ignitions
- Nothing

Existing Planning Mechanism(s) through which Action Will Be Implemented: Butte Unit Fire Plan/Community Wildfire Protection Plan

Responsible Office/Partners: CAL FIRE/Butte County Fire Department in cooperation with the Butte County Fire Safe Council

Cost Estimate: \$1800 - \$2800 per acre treated. Approximately 40 acres: \$80,000

Benefits (Losses Avoided):

- Reduced fire intensity within the fuel reduction zone.
- Increased probability of containing a fire within the fuel reduction zone.
- Reduced risk to public safety, property, environment and other assets at risk.

Potential Funding: Grant funding

Timeline: 2019 and ongoing

Project Priority: High

Action 63. Forbestown Fuels Reduction Maintenance Project

Hazards Addressed: Wildfire (and Extreme Heat, Drought and Water Shortage, Invasive Species, High Winds)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Butte County has experienced many damaging wildland fires during the past century. Dense vegetative fuel loading provides the potential for future catastrophic wildland fires and damage to communities and assets at risk.

Project Description: Create shaded fuel breaks along roadways including Forbestown, Black Bart, Sweeds Flat and side roads feeding into main roads. Work with CAL FIRE on their community fuels reduction project funded by the State. Additionally, support private landowners with maintenance outreach education and the chipper program.

Other Alternatives:

- Increased number of initial attack resources
- Public education to reduce ignitions
- Nothing

Existing Planning Mechanism(s) through which Action Will Be Implemented: Butte Unit Fire Plan/Community Wildfire Protection Plan

Responsible Office/Partners: CAL FIRE/Butte County Fire Department in cooperation with the Butte County Fire Safe Council

Cost Estimate: \$1800 - \$2800 per acre treated. Approximately 50 acres: \$100,000

Benefits (Losses Avoided):

- Reduced fire intensity within the fuel reduction zone.
- Increased probability of containing a fire within the fuel reduction zone.
- Reduced risk to public safety, property, environment and other assets at risk.

Potential Funding: Grant funding

Timeline: 2019 and ongoing

Project Priority: Medium

Action 64. Eave Vent Replacement/Education Project

Hazards Addressed: Wildfire (and Extreme Heat, Drought and Water Shortage, Invasive Species, High Winds)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Embers from a fire can travel for miles, landing in vegetation and blowing through roof vents causing homes and other buildings to catch fire.

Project Description: Educate the public and contractors on the importance of replacing existing eave vents with newer, fire resistant vents to help save homes. Phase II of the project would be identifying an area in need and having vents installed.

Other Alternatives:

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office/Partners: Butte County OEM/ Town of Paradise / Local Fire Safe Councils

Cost Estimate: 200,000.00

Benefits (Losses Avoided): Hardening homes from fire damage or destruction

Potential Funding: Hazard Mitigation or other grants as they become available

Timeline: 3-5 years

Project Priority: medium

Action 65. Firewise Communities and Education Program

Hazards Addressed: Wildfire (and Extreme Heat, Drought and Water Shortage, Invasive Species, High Winds)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Butte County has experienced many damaging wildland fires during the past century. Dense vegetative fuel loading provides the potential for future catastrophic wildland fires and damage to communities and assets at risk.

Project Description: Provide multiple forms of community outreach to youth, families and wildland urban interface residents about defensible space, evacuation preparedness, home hardening, ember storms, forest health, Firewise USA program and fire safe council programs.

Other Alternatives:

- Increased number of initial attack resources
- Public education to reduce ignitions
- Nothing

Existing Planning Mechanism(s) through which Action Will Be Implemented: Butte Unit Fire Plan/Community Wildfire Protection Plan

Responsible Office/Partners: CAL FIRE/Butte County Fire Department in cooperation with the Butte County Fire Safe Council

Cost Estimate: \$80,000 for prevention staffing

Benefits (Losses Avoided):

- Reduced fire intensity within the fuel reduction zone.

- Increased probability of containing a fire within the fuel reduction zone.
- Reduced risk to public safety, property, environment and other assets at risk.

Potential Funding: Grant funding

Timeline: 2019 and ongoing

Project Priority: High

Action 66. Fuels Reduction Chipper Program

Hazards Addressed: Wildfire (and Extreme Heat, Drought and Water Shortage, Invasive Species, High Winds)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Butte County has experienced many damaging wildland fires during the past century. Dense vegetative fuel loading provides the potential for future catastrophic wildland fires and damage to communities and assets at risk.

Project Description: Provide no cost or low cost service for chipping fire hazardous vegetation throughout the Wildland Urban Interface to improve defensible space and ingress/egress.

Other Alternatives:

- Increased number of initial attack resources
- Public education to reduce ignitions
- Nothing

Existing Planning Mechanism(s) through which Action Will Be Implemented: Butte Unit Fire Plan/Community Wildfire Protection Plan

Responsible Office/Partners: CAL FIRE/Butte County Fire Department in cooperation with the Butte County Fire Safe Council

Cost Estimate: 500 acres at total of \$500,000

Benefits (Losses Avoided):

- Reduced fire intensity within the fuel reduction zone.
- Increased probability of containing a fire within the fuel reduction zone.
- Reduced risk to public safety, property, environment and other assets at risk.

Potential Funding: Grant funding

Timeline: 2019 and ongoing

Project Priority: High

Action 67. Residents Assistance Program - Fuels Reduction and Defensible Space

Hazards Addressed: Wildfire (and Extreme Heat, Drought and Water Shortage, Invasive Species, High Winds)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Butte County has experienced many damaging wildland fires during the past century. Dense vegetative fuel loading provides the potential for future catastrophic wildland fires and damage to communities and assets at risk.

Project Description: Provide no cost or low cost service for creating and improving defensible space and ingress/egress for elderly, low income and disabled residents in the Wildland Urban Interface.

Other Alternatives:

- Increased number of initial attack resources
- Public education to reduce ignitions
- Nothing

Existing Planning Mechanism(s) through which Action Will Be Implemented: Butte Unit Fire Plan/Community Wildfire Protection Plan

Responsible Office/Partners: CAL FIRE/Butte County Fire Department in cooperation with the Butte County Fire Safe Council

Cost Estimate: 150 acres at total of \$300,000

Benefits (Losses Avoided):

- Reduced fire intensity within the fuel reduction zone.
- Increased probability of containing a fire within the fuel reduction zone.
- Reduced risk to public safety, property, environment and other assets at risk.

Potential Funding: Grant funding

Timeline: 2019 and ongoing

Project Priority: High

Action 68. Camp Fire Hazard Tree Removal - Fuels Reduction

Hazards Addressed: Wildfire (and Extreme Heat, Drought and Water Shortage, Invasive Species, High Winds)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Butte County has experienced many damaging wildland fires during the past century. Dense vegetative fuel loading provides the potential for future catastrophic wildland fires and damage to communities and assets at risk.

Project Description: Assist in efforts to improve community safety from hazard trees caused by the November 8, 2018 Camp Fire by cutting small and large diameter dead and dying trees near homes, roadways and community locations. As well as removal of brush and stump regrowth from trees killed or removed.

Other Alternatives:

- Increased number of initial attack resources
- Public education to reduce ignitions
- Nothing

Existing Planning Mechanism(s) through which Action Will Be Implemented: Butte Unit Fire Plan/Community Wildfire Protection Plan

Responsible Office/Partners: CAL FIRE/Butte County Fire Department in cooperation with the Butte County Fire Safe Council

Cost Estimate: 200,000 trees estimated at 60 million dollars in removal and processing

Benefits (Losses Avoided):

- Reduced fire intensity within the fuel reduction zone.
- Increased probability of containing a fire within the fuel reduction zone.
- Reduced risk to public safety, property, environment and other assets at risk.

Potential Funding: FEMA, Local, State and Private Grant funding

Timeline: 2019 and ongoing

Project Priority: High

Action 69. California DWR Fuel Load Management Plan

Hazards Addressed: Wildfire (and Extreme Heat, Drought and Water Shortage, Invasive Species, High Winds)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Fire affects most of the population within the region surrounding the CA Department of Water Resources (DWR) Oroville Facilities, as evidenced by an ever-increasing occurrence of fire and the significant effects of the severe 2008 and 2018 fire seasons. Vegetation within and surrounding the facilities has lacked management for over 50+ years. Areas have extreme fuel loading with ladder fuels and overgrowth being two main concerns. There is dead and dying vegetation throughout, areas are overstocked

with trees and brush, and the vegetation is encroaching on critical infrastructure, public buildings, drainages, and residential structures.

Relicensing stakeholders have expressed concern that historic land management and fire prevention activities within the DWR Project Boundary and surrounding areas have resulted in increased fuel load, which has led to an increased risk of wildfires. The vegetation found within these areas is predominantly chaparral and mixed oak woodland. The area includes a sizable percentage of urban/residential lot areas east of the City of Oroville and south of the City of Paradise.

There are two types of wildland urban interface (WUI) environments found within this area, true urban interface where development abruptly meets wildland and wildland urban intermix in which low density communities and homes intermix with wildland area. In addition to homes and structures, many other assets are at risk in the WUI. These include but are not limited to public infrastructure, hydroelectric power facilities, historic buildings, and State recreational areas. Areas of concern have extreme levels of fuel loading and are located on slopes where winds are unpredictable.

The plan helps to remove ladder fuels and dead and dying vegetation, thin unhealthy overstocked trees and overgrown vegetation, and create defensible space around structures. In turn, this will help lessen the intensity of a wildfire, help prevent fire from crowning into the trees, and protect surrounding critical infrastructure and residential communities.

Project Description: DWR Oroville Field Division has developed a Fuel Load Management Plan (Plan) for lands within the Oroville Facilities Federal Energy Regulatory Commission (FERC) Project Boundary, as called for by the Settlement Agreement for Licensing of the Oroville Facilities. This Plan was developed in coordination with federal, state, and local fire management and land and resource management agencies including the U.S. Forest Service (USFS), U.S. Bureau of Land Management (BLM), California Department of Forestry and Fire Protection Butte Unit (CAL FIRE), California Department of Parks and Recreation (DPR), California Department of Fish and Wildlife (DFW), Paradise Fire Department, Butte County Fire Safe Council (BCFSC), Butte County Resource Conservation District, State Water Contractors, and Native American Tribes.

DWR and participating agencies understood the need to implement this program to protect public and natural resources from wildfire so it became an Appendix B article (Section B102) which could be initiated outside of the FERC license (i.e. prior to license issuance). The plan was drafted in September 2012 and implementation started immediately. DWR has continued to implement fuel reduction projects throughout the area and has partnered with many of the agencies noted in the Plan. Additional activity is planned for the coming years as this program continues to increase in scope.

The primary goals and objectives of the Plan are as follows: decrease the risk of damage or loss of life and protect critical infrastructure and surrounding communities from a catastrophic wildfire; identifying, prioritizing, and protecting the wide range of assets found throughout our FERC project boundary and surrounding lands; improve defensible space around infrastructure; increase public safety; decrease fire intensity and rate of spread; minimize the potential for fire ignitions on State lands and help prevent fire from escaping and running upslope to residential communities; reduce the potential for fire along the main

roads and to improve ingress for firefighters and egress for the public; maintain water quality; improve fish and wildlife habitat; and improve forest health.

The Plan identifies fuel load reduction treatments to provide land and resource managers with a strategic approach to minimize the potential for wildfire within the FERC Project Boundary. Fuel load reduction treatment types discussed within the Plan include prescribed and pile burning, mastication, thinning, chipping, multicutting, disking, mowing, grazing, and herbicide application. Several fuel load management strategies are also discussed, including zone strategies, risk/hazard strategies, and fuel break strategies.

The Plan identifies ten treatment zones within the project boundary to prioritize for treatment, which encompass a total of approximately 2,925 acres. A majority of the acreage (1,261 acres, or 43 percent) are ranked as a high priority in five zones. Medium priority areas total 1,578 acres, or 54 percent, found in four zones. Only one zone was ranked as a low priority and totaled 86 acres, or 3 percent. High priority areas will likely be addressed first, followed by medium priority zones, and then the low priority zone.

Within the ten treatment zones, priority levels for treatment (high, medium, and low) were determined by assessing various factors, including historical fire ignition data, adjacent residential development density, roadway access, fuel loading and landscape factors, and occurrence of recent and/or current fuel treatment projects in the vicinity surrounding the Lake Oroville area. High priority zones have the combined highest census tract population densities, highest ranked assets at risk, greatest amount of fuel load, and the steepest slopes. Zones with many but not all the features noted above received a medium priority ranking. The area that received a low priority ranking has one or more of the following conditions: relatively low fuel loads, relatively low slopes, and/or relatively low census tract human population density.

Implementation of fuel treatment projects involve defining and scoping site-specific projects, defining and securing permits and approvals, securing funding, contracting for the work, and then treatment implementation. Recommended treatment metrics and target levels are given for each treatment zone, but may be revised upon further site inspections/evaluations. Appropriate permits will be sought from the necessary agencies and will be obtained at the time work is accomplished. Because there are multiple treatment zones within any given priority level, zones will likely be grouped and implemented in phases as appropriate. The goal is to implement all fuel treatments within a given priority level before moving on to the next priority level. However, periodic reviews may result in alternative implementation priorities to address changing conditions and/or partnering with others to implement joint projects, as appropriate.

Fuel load reduction treatments will be implemented in the Plan Area over a 10- to 15-year period. Monitoring of treatments are tracked using ArcGIS computer software and a record is kept of ongoing treatments completed within the Plan Area. Monitoring data is compared against performance criteria and used in the adaptive management of the treatment zones. Treatments for each site may be adjusted over time as needed. The Plan will be reviewed and updated at least once every 10 years. From 2012-2019, with support from CAL FIRE, BCFSC, DPR, CA Conservation Corps. (CCC), Mooretown Rancheria, Butte County Fire Department, and the Butte County Sheriff Department, DWR has treated and/or retreated approximately 450 acres.

Treatment areas include:

- Bidwell Canyon State Recreation Area
- Saddle Dam State Recreation Area
- Loafer Creek State Recreation Area
- Lime Saddle Campground and Marina areas
- Hyatt Power Plant area
- Oroville Dam Bouvard East corridor
- Canyon Drive corridor
- Other smaller areas mixed throughout

All areas have been treated using one or more of the following methods: hand thinning, prescribed burning, pile burning, chipping, and lop and scatter.

Other Alternatives:

- Public education
- Increased number in initial attack resources

Existing Planning Mechanism(s) through which Action Will Be Implemented: DWR Fuel Load Management Plan, CAL FIRE Vegetation Management Program (VMP), CEQA, CAL FIRE Butte Unit Fire Plan, Community Wildfire Protection Plan, and best management practices.

Responsible Office/Partners: California DWR Oroville Field Division

Cost Estimate: \$200,000 - \$300,000+ annually

Benefits (Losses Avoided):

- Lessen fire intensity
- Help prevent fire from crowning
- Protect critical infrastructure, residential structures, and public property
- Improve egress and ingress
- Increase public safety

Potential Funding: DWR, CAL FIRE VMP, grant funding

Timeline: 2012 – Ongoing

Project Priority: High

Action 70. Refuge Areas

Hazards Addressed: Fire

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Shelter in place refuge areas for citizens during an emergency event.

Project Description: Multipurpose open space areas with low fuels where many people would be safe during a fire or other emergency. Space could be used as a staging area, command post, helicopter landing area, or used for other emergency needs.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: CWPP

Responsible Office/Partners: Butte County Administration - Office of Emergency Management, Butte County Sheriff's Office, Butte County Public Works, Butte County General Services

Project Priority: Medium

Cost Estimate: \$5,000,000

Benefits (Losses Avoided): Continuity of Operations

Potential Funding: HMGP, PDM

Timeline: 2019-2025