Tehama East and Tehama West

Community Wildfire Protection Plan Update

2017

Report to the Tehama County Board of Supervisors and CalFire Tehama-Glenn Unit

Prepared by

Resource Conservation District of Tehama County

2 Sutter Street, Suite D

Red Bluff, California 96080

April 2017

Through funding provided by the Tehama County Board of Supervisors

and the Resource Conservation District of Tehama County

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ACRONYMS

Acronym	Definition
BLM	Bureau of Land Management
CDC	California Department of Corrections
CDF	California Department of Forestry and Fire Protection
CNDDB	California Natural Diversity Data Base
CRMP	Coordinated Resource Management Planning Group
dbh	Diameter at Breast Height (4.5 feet above ground level)
DFG	California Department of Fish & Game
DFPZ	Defensible Fuel Profile Zone
FMP	Fire Management Plan (Federal)
FRAP	Forest & Rangeland Resources Assessment Program (CalFire)
FSC	Fire Safe Council
LCPOA	Lake California Property Owners Association
LNF	Lassen National Forest
LNFFMP	Lassen National Forest Fire Management Plan
LNFRMP	Lassen National Forest Resource Management Plan
MNF	Mendocino National Forest
MNFFMP	Mendocino National Forest Fire Management Plan
MNFRMP	Mendocino National Forest Resource Management Plan
NRCS	Natural Resources Conservation Service
RCD	Resource Conservation District
RCDTC	RCDTC
TCWAR	Thomes Creek Watershed Analysis Report
SCRMP	Sunflower Coordinated Resource Management Plan
STNF	Shasta Trinity National Forest
STNFFMP	Shasta-Trinity National Forest Fire Management Plan
STNFRMP	Shasta Trinity National Forest Resource Management Plan
UC	University of California
USDA	United States Department of Agriculture
VMP	VMP Vegetation Management Program (CalFire)
WSRCD	Western Shasta Resource Conservation District

EXECUTIVE SUMMARY

In September 2005, the Resource Conservation District of Tehama County (RCDTC) completed preparation of the Tehama West Fire Plan. In October 2008, the RCDTC completed the Tehama East Community Fire Plan. These planning processes and related planning documents were funded by the United States Forest Service through the financial contributions of the Tehama County Resource Advisory Committee and the California Fire Safe Council. The RCDTC contributed labor hours as well. The ultimate goal of these efforts was to improve fire and fuels management within Tehama County's westside and eastside wildland interface areas in order to better protect County residents and the natural resources of these areas. To accomplish this goal, the RCDTC developed a collaboration of public and private sector stakeholders who assisted in identifying the County's significant community and natural resources in need of protection from wildfire and the in-place infrastructure developed to protect these assets and who assisted in making recommendations for additions or changes to this infrastructure to improve current fire and fuels management conditions.

The original fire plans were used as a guide by area stakeholders, especially the RCDTC, in developing protection strategies and specific projects to implement these efforts. Since their development, an array of project work described in the two fire plans have been completed by numerous entities such as the RCDTC, CalFire, the United States Forest Service, Bureau of Land Management, Crane Mills, Sierra Pacific Industries, and Collins Pine Company, among others. These projects were completed individually or through cooperation between stakeholders. An example of such cooperation in the implementation of fire and fuels management efforts over the past several years includes federal dollars being provided to the RCDTC to complete fuel treatments on private lands adjacent to National Forests in order to better protect communities as well as public and private timber lands and other watershed resources. Another example of project work being completed through the coordination of funding sources, regulatory authority, and labor were State Conservancy dollars being used to complete necessary California Environmental Policy Act analysis for project work with the US Forest Service providing specialist labor to complete required federal environmental analysis. Such efforts of individual entities have resulted in many additional miles of fuel breaks and acres of other vegetation treatments developed within Tehama County's chaparral, oak woodlands, and forest stands along with capital improvements to fire management infrastructure.

Much work has been completed. Approximately 80% of the projects developed in the original Tehama East CWPP and roughly 40% of those described in the Tehama West Fire Plan have been implemented since the two plans were approved by the Tehama County Board of Supervisors, CalFire, and the RCDTC's Board of Directors. Much remains to be done, however, as Wildland Urban Interface areas continue to increase in population, vegetation within fuel breaks and other vegetation treatments continue to grow, and additional important natural resources are identified, making the update of these fire planning documents so important. Through this updating process, the RCDTC has made necessary modifications to the Tehama West Fire Plan that result in that document being formally recognized as a Community Wildfire Protection Plan by signing entities. With this designation, it is anticipated that obtaining public and private funding for the fire and fuels management projects described therein will be made easier and more efficient.

The project work and other efforts described in this combined planning document have been prioritized based upon input provided by members of the Tehama-Glenn Fire Safe Council and other reviewers from

the Tehama County community. The results of this process can be found on the prioritization spreadsheet which is attached to the planning document. It is an integral component to this project's deliverable package, which includes the planning document and County Base Map. Importantly, the prioritization process represents the opinions and agenda of public and private stakeholders in Tehama County. However, the agenda of potential funders and availability of project dollars will ultimately determine which projects are completed first. It is the goal of the RCD of Tehama County to seek funding and implement projects according to the priorities established by local review entities without missing opportunities to complete projects that are of lower priority.

Finally, the revised Tehama East and Tehama West Community Wildfire Protection Plans should be considered a work in progress as it is anticipated that additional project work or other fire and fuels management related efforts will be identified in the years to come. In order for these future efforts to be considered a part of the Community Wildfire Protection Plan process, they will need to be formally incorporated into the appropriate plan by reference and approved by both the Tehama County Board of Supervisors as well as CalFire's Tehama-Glenn Unit Chief.

The RCDTC coordinates efforts of the Tehama-Glenn Fire Safe Council and would like to thank its members and other planning process participants for their contribution of data, input, and suggestions used in the development of both the original Tehama West Fire Plan and Tehama East Community Wildfire Protection Plan and in the update of these planning documents. Council members include staff from the U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, CalFire, The Nature Conservancy, Sierra Pacific Industries, Crane Mills, Collins Pine Company, the Tehama County Public Works Department, and the Resource Conservation District of Tehama County. In addition, individuals and representatives from landowner groups provided a great deal of assistance in developing the revised CWPP documents. These include Bill Burrows/Burrows Ranch, Dick O'Sullivan/Turner Ranch, Vicky and Frank Dawley/Big Bluff Ranch, the Manton Fire Safe Council, Shasta County Fire Safe Council, Battle Creek Watershed Conservancy, Western Shasta Resource Conservation District, Glenn County Resource Conservation District, Mill Creek Conservancy, Deer Creek Conservancy, Lake California Property Owners Association, and the Mill Creek Homeowners Association. Special thanks is extended to Tehama County Board of Supervisors member Dennis Garton for his support of the Tehama-Glenn Fire Safe Council, Manton Fire Safe Council, and the fire and fuels management efforts of the RCDTC.

PROJECT BACKGROUND

PLANNING PROCESS OVERVIEW

As was the case during development of the Tehama West Fire Plan (now formally recognized as the Tehama West Community Wildfire Protection Plan) and the Tehama East Community Wildfire Protection Plan, the updating process was designed to allow the incorporation of significant professional and community input into the development of these documents. To accomplish this, members of the Tehama-Glenn Fire Safe Council were canvassed in order to obtain information on work they reported in the two original planning documents. At the present time, Council activities are coordinated by a designated staff member of the RCDTC. Council members include staff from the Unites States Forest Service (Lassen, Mendocino and Shasta-Trinity National Forests), Bureau of Land Management, U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, CalFire, The Nature Conservancy, Sierra Pacific Industries, Crane Mills, Collins Pine, Tehama County Public Works Department and Planning Departments. Membership also consists of individual landowners and landowner organizations. These include Bill Burrows/Burrows Ranch, Dick O'Sullivan/Turner Ranch, Vicky and Frank Dawley Big Bluff Ranch, Manton Fire Safe Council, the Battel Creek Watershed Conservancy, Mill Creek Conservancy, Deer Creek Conservancy, The Nature Conservancy, Lake California Property Owners Association. The Tehama County Board of Supervisors is also represented in Council proceedings through the participation of Supervisor Dennis Garton. Plan outreach and input efforts were also focused on specific landowners who expressed interest in the planning project and who were forthcoming with questions, comments, and concerns. In order to maximize input from area stakeholders, an announcement was made in area newspapers regarding the completion of the draft plan revisions which were uploaded onto the RCDTC's website. Once comments were received from TGFSC members and other stakeholders, they were reviewed, considered and incorporated into the revised plan's final draft that was then updated, clarified, and expanded. The final draft planning documents were submitted to CalFire and the Tehama County Board of Supervisors for approval and certification as formal Community Wildfire Protection Plans. The two planning documents were then submitted to the RCDTC Board of Directors for their approval. Through this approval process, the original Tehama West Fire Plan became a formally recognized Community Wildfire Protection Plan and renamed as such. In order to assure wide distribution of the information contained in the plan, copies were distributed to public agencies, the academic community, public libraries, and the general public. The final document was also permanently posted to the RCDTC website for community reference and downloading.

PLANNING METHODOLOGY

The methodology used in developing this update to the Tehama West Fire Plan and the Tehama East Community Wildfire Protection Plan was similar to that used in the development of the original version of these fire plans and consisted of the following steps:

- RCDTC project personnel collected current information pertaining to previously unidentified natural and developed resources currently impacted by wildfire, fire hazards, wildland fuels, assets at risk, and currently in-place fire protection features and infrastructure located throughout Tehama County, in written, digital, and GIS formats. Included among this information were planning area demographics, ecological communities, topography, hydrology, fuel types, community

infrastructure, and fire history. The threat of wildland fire throughout the County attributable to increasing volumes of wildland fuels as well as urban development were also considered.

- Working with public and private stakeholders, RCDTC staff identified existing fuel reduction projects within the County's westside and eastside areas, including those that were in place at the time the Tehama West Fire Plan and Tehama East CWPP were prepared. Additions or improvements to this infrastructure that had been completed since publication of the original fire plan documents were identified and incorporated into the revised plan text and a Countywide Fire Plan Base Map.

- RCDTC project staff then obtained input from area landowners, land managers, and other stakeholders regarding undocumented assets at risk and fire protection infrastructure.

- The RCDTC's GIS analyst developed a new set of planning unit maps that were based upon the watersheds of the eastside and westside major tributaries to the Sacramento River. This required the development of new maps for the westside area and an expansion of eastside planning unit areas to include the entirety of these watersheds located in Tehama County. The expansion of watershed units allowed the analysis of those fire management projects that have been planned, are in progress, or have been completed by National Forest personnel and private forest land managers.

- With stakeholder input, RCDTC staff assessed information pertaining to at-risk assets and fire protection infrastructure in order to develop projects and strategies to improve the protective capabilities within Tehama County's eastside and westside areas. This information was incorporated into a Countywide Fire Plan Base Map (described below) which represents the compilation of the planning area maps mentioned above. Stakeholder input was also utilized in the development of a list that described and located recommendations for fuel reduction and fire safety projects. These listed projects were then incorporated onto the project's base map.

- The Tehama West Fire Plan and Tehama East Community Wildfire Protection Plan along with the current update documents were developed using current fire management data obtained from CalFire and its Fire and Resource Assessment Program, the U.S. Forest Service, and other public and private organizations.

In order to reduce the cost of planning and executing fire hazard reduction projects, an overarching county-wide fire planning/risk assessment framework and planning process was developed which incorporates the array of fire and fuels management plans, policies, and projects being developed or currently established by public and private stakeholders located throughout Tehama County. Utilizing the collaboration and cooperation required in order to develop a landscape scale planning and assessment document, it was felt that cost savings could be achieved by identifying common fire and fuels management problems on a landscape scale basis, developing mitigation measures to solve these problems, and implementing mitigation projects.

COUNTYWIDE FIRE PLAN BASE MAP

Another means of achieving improved project effectiveness and cost efficiency developed through the current fire planning process was the development of a Countywide Fire Plan Base Map which is a compilation of the planning area maps described above. Onto this countywide map are displayed all fire related projects described in the revised Tehama West and Tehama East Community Wildfire Protection Plans along with the resources these efforts are intended to protect. The map allows public and private land managers, community groups, and government agencies to visually demonstrate the relationship between their proposed, in progress, and completed projects and the fire and fuels management efforts being conducted by other entities. This information is expected to help those conducting fuels reduction work to better demonstrate the value of their projects in relation to other fuels reduction efforts in the creation of landscape scale protection against catastrophic wildfire. Through this explanation and demonstration of the interconnectedness between individual projects, applications for permits or funding have a much greater chance of receiving approval. To accomplish this intention, the Countywide Fire Plan Base Map is considered to be a key component and outcome of this updating process.

ENVIRONMENTAL REVIEW

Refer to the 2008 Tehama East Community Wildfire Protection plan for information pertaining to environmental review and requirements for fire and fuels management projects and efforts to streamline these processes.

CATEGORIES USED TO RANK RECOMMENDED PROJECTS

Community (areas valued by community members): High value examples are a community, a housing development or a grouping of several residences, a telecommunications translator, a community water supply, or key travel corridors. Low value examples are areas containing no residences or infrastructure issues.

Fuel Hazard (areas with high fuel loading and/or flammable vegetation): High hazard equates to dense, flammable vegetation (e.g., thickets of second growth, untreated plantations, or brush fields). Low hazard equates to open sites, areas previously thinned, and those containing no ladder fuels.

Fire Risk (areas with a high likelihood of fire starting): High risk equates to areas with high slope position and southwest aspect, with a past history of lightning strikes, or with high concentrations of human activity (e.g., hunting camps). Low risk equates to areas with low slope position, with little human activity, or with little past history of lightning strikes or fires.

Ecological Value (a measure of known ecological concerns in the landscape): High value is assigned for known habitat of threatened or endangered species or species for which USFS survey and management protocols apply (e.g., notable stands of old growth vegetation or known nesting habitats of rare species. Low value does not indicate lack of ecological value but rather no outstanding concerns for the particular area in question.

Economic Value (a measure of known economic value of area resources): High value is assigned for areas with private property values or with power lines and/or plantations or other investments/resources at risk. Low Value is assigned for areas containing no particular infrastructure or resource value.

Readiness (ability of landowners and managers to respond quickly): High value is assigned where the ability exists for both private landowners and the USFS to act immediately with community support on public or private land. Low value is assigned where significant administrative work would be needed (e.g., NEPA compliance) before activities could take place.

Cost of Project (referring to overall economic cost of doing the work): High cost examples include inaccessible or steep terrain, or a large scale project. Low cost examples include clearing defensible space around a residence, or some types of controlled burns.

Recreation Value/Viewshed: High value would be a scenic highway designation or high recreational use area. Low value would indicate that no particular value was noted.

PRIORITY PROJECTS SUMMARY

Based upon the objectives of this fire planning process as well as input from local area stakeholders, the top priority of project work is the protection of residents and firefighters as well as public and private property, including ranchlands and timberlands. To address these priorities, project work was ranked in significance as follows:

- Projects that provide immediate and direct impact on the threat and intensity of wildfires such as fuel breaks and fuel reduction projects;

- Projects that result in improvements to firefighting and fire protection infrastructure, including access for firefighting forces, egress of residents, water storage, and water delivery system upgrades;

- Projects that entail planning endeavors such as the development of a coordination plan for maintenance and vegetation management projects along Ponderosa Way and development of long term funding sources; and

- Projects that involve regulatory matters such as changes in laws, ordinances, and codes that relate to fire safety and fire management.

FIRE PLAN AREA AND PLANNING UNIT DESCRIPTIONS

LOCATION, GEOGRAPHIC AND ENVIRONMENTAL CONDITIONS

Since the RCDTC's preparation of the original Tehama West Fire Plan and Tehama East Community Wildfire Protection Plan, District staff have had continuous discussions with Tehama-Glenn Fire Safe Council members along with other eastside and westside watershed stakeholders relating to updating the projects described in those planning documents. Input was also sought with regard to the value of the planning process used by the RCDTC. These discussions indicated that through various changes to fire plan areas, greater coordination could be achieved between public and private fire management initiatives. It was felt that this improved coordination would result in the increased effectiveness and cost efficiency of newly developed, improved, and maintained fire management infrastructure. Changes to the original Tehama West Fire Plan area took the form of creating new planning units that are now based upon entire major watersheds rather than CalFire battalions. In addition, that portion of the Cottonwood Creek watershed (largely the South Fork) and Beegum Creek's South and Middle Fork watersheds located in Tehama County were included in the 2016 amendment to the Tehama West Fire Plan that resulted in the document becoming a formally recognized Community Wildfire Protection Plan and being renamed as the Tehama West Community Wildfire Protection Plan.

In order to expand the area of analysis, all planning units in both fire plans now include all portions of watersheds located within Tehama County. This required an expansion of the three upland planning units found in the original Tehama East CWPP document, including the Battle Creek-Manton, newly renamed Paynes-Antelope-Hwy 36E Corridor, and the Central-Cohasset Planning Units. The use of watershed boundaries as the primary delineator of planning units was based upon the behavior of wildfire in relation to topography and vegetation as well as the impact that large, intense wildfires can have on watershed health, watershed functioning, water quality, and the resulting safety and wellbeing of communities. As a result, adequate fire protection and prevention measures have been developed based upon a landscape perspective as well as the organizational interrelationships between fire and land management entities.

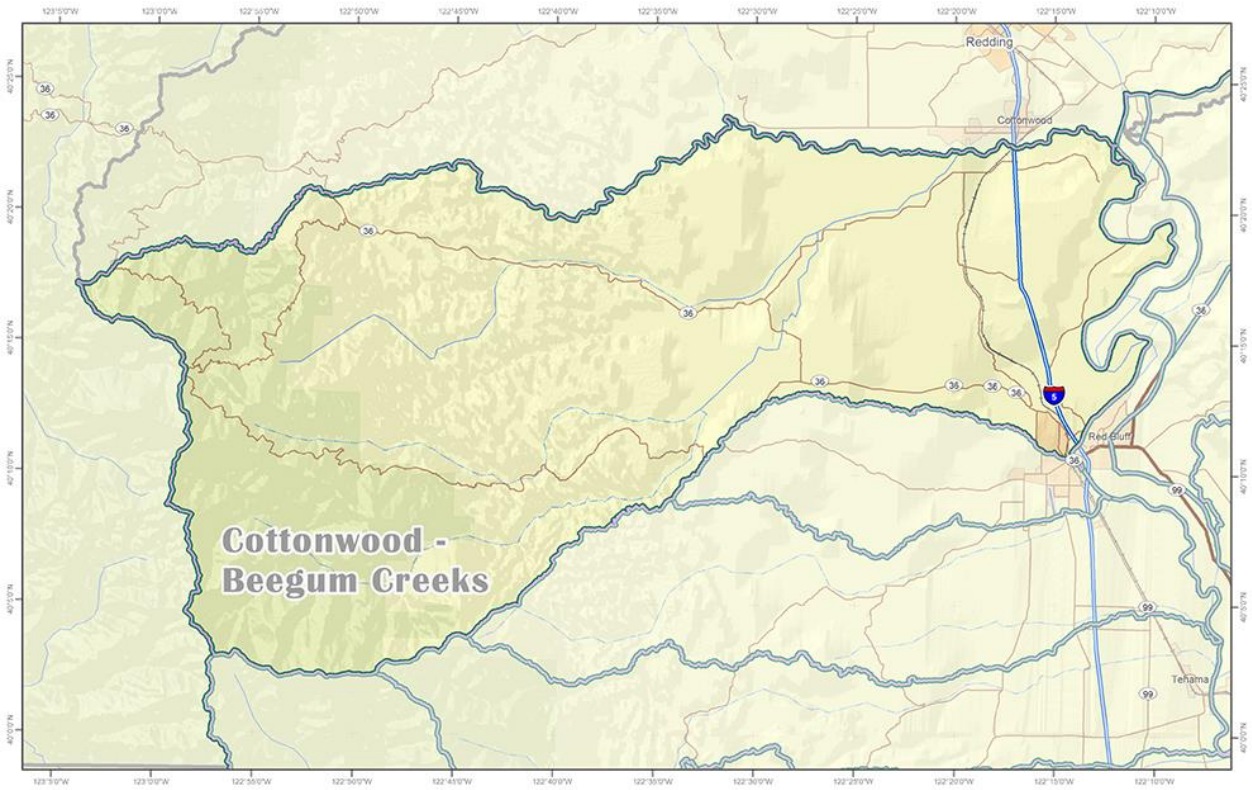
UPDATED PLANNING UNIT DESCRIPTIONS

A detailed description of the original Tehama West Fire Plan area (now formally referred to as the Tehama West Community Wildlife Protection Plan) can be found in the initial version of the planning document developed in 2005. A detailed description of the original Tehama East Community Wildfire Protection Plan area can be found in the initial version of that planning document developed in 2008.

Updated Tehama West Planning Unit Descriptions

(A detailed description of the original Tehama West Fire Plan area
can be found in the 2005 Tehama West Fire Plan document.)

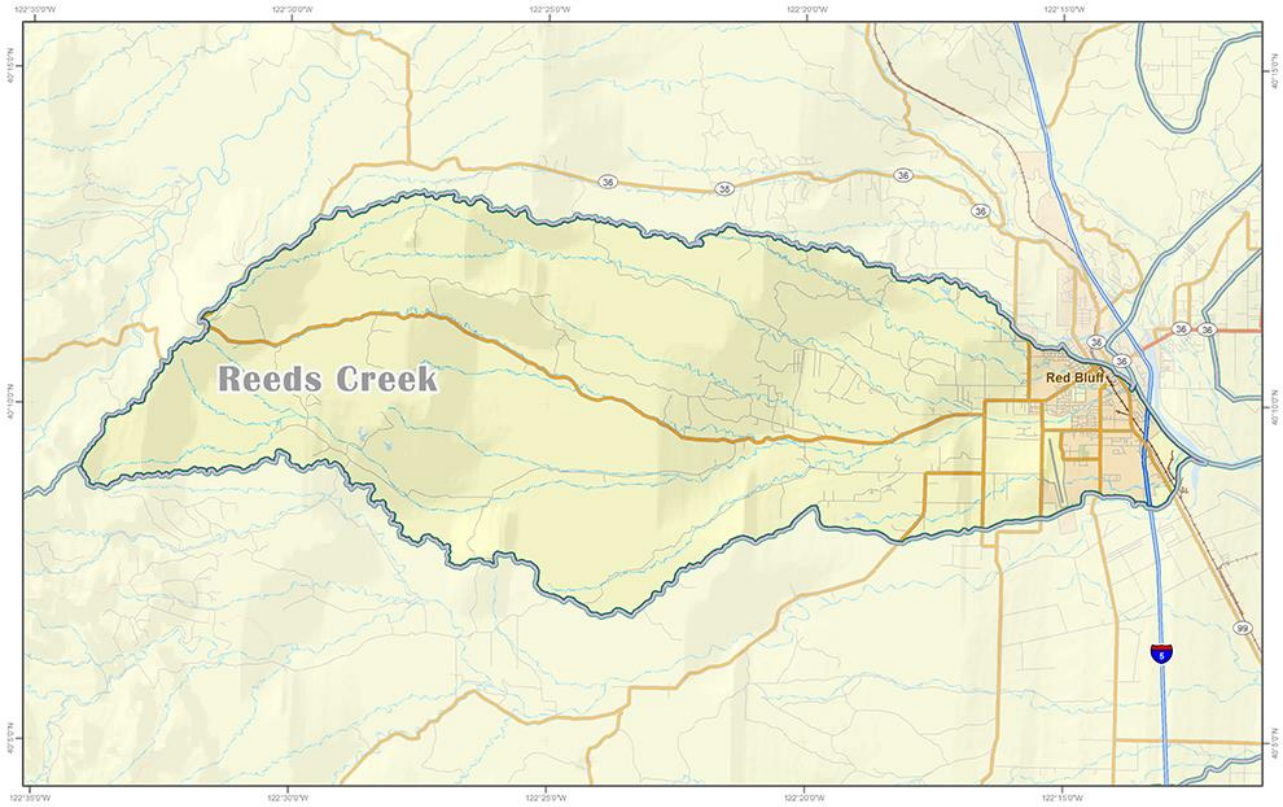
COTTONWOOD-BEEGUM CREEKS PLANNING UNIT (652 SQUARE MILES)



This newly developed planning unit includes the portions of the South Fork Cottonwood Creek and the Middle and South Forks Beegum Creek watersheds lying within Tehama County. Major tributaries to South Fork Cottonwood Creek include Cold Fork, Buck Creek, Slides Creek, and Hensley Creek. Smaller watersheds included near the Sacramento River are Frazier, Spring, Blue Tent, Dibble, and Brewery Creeks. This planning unit is generally very remote, having only two population centers: the community of Platina in Shasta County and the R Wild Horse Ranch, a recreational development in Tehama County. Significant resources found within this planning unit are the U.S. Forest Service Yolla Bolly-Middle Eel Wilderness and lands managed by the Shasta-Trinity National Forest, Mendocino National Forest, and the Bureau of Land Management. Privately managed timberlands are found within this planning unit as well. Elevations within the Cottonwood-Beegum Creeks Planning Unit range from 350 feet to 7,000 feet.

North: Tehama County border
East: Sacramento River
South: Southern boundaries of Cottonwood, Dibble, and Brewery Creeks
West: Tehama County border

REEDS CREEK PLANNING UNIT (80 SQUARE MILES)



Reeds Creek flows 22 linear miles from an elevation of 1,100 feet to the Sacramento River at the 253-foot elevation level. Principle tributaries to this significant westside stream are Brickyard, Pine, Liza, and Live Oak Creeks. The watershed of Grasshopper Creek near the Sacramento River is also included. Blue oak woodlands, grasslands, live oak/riparian woodlands, and cultivated lands occupy most of the planning unit. The Red Bluff urban area occupies about 4% of the total watershed area.

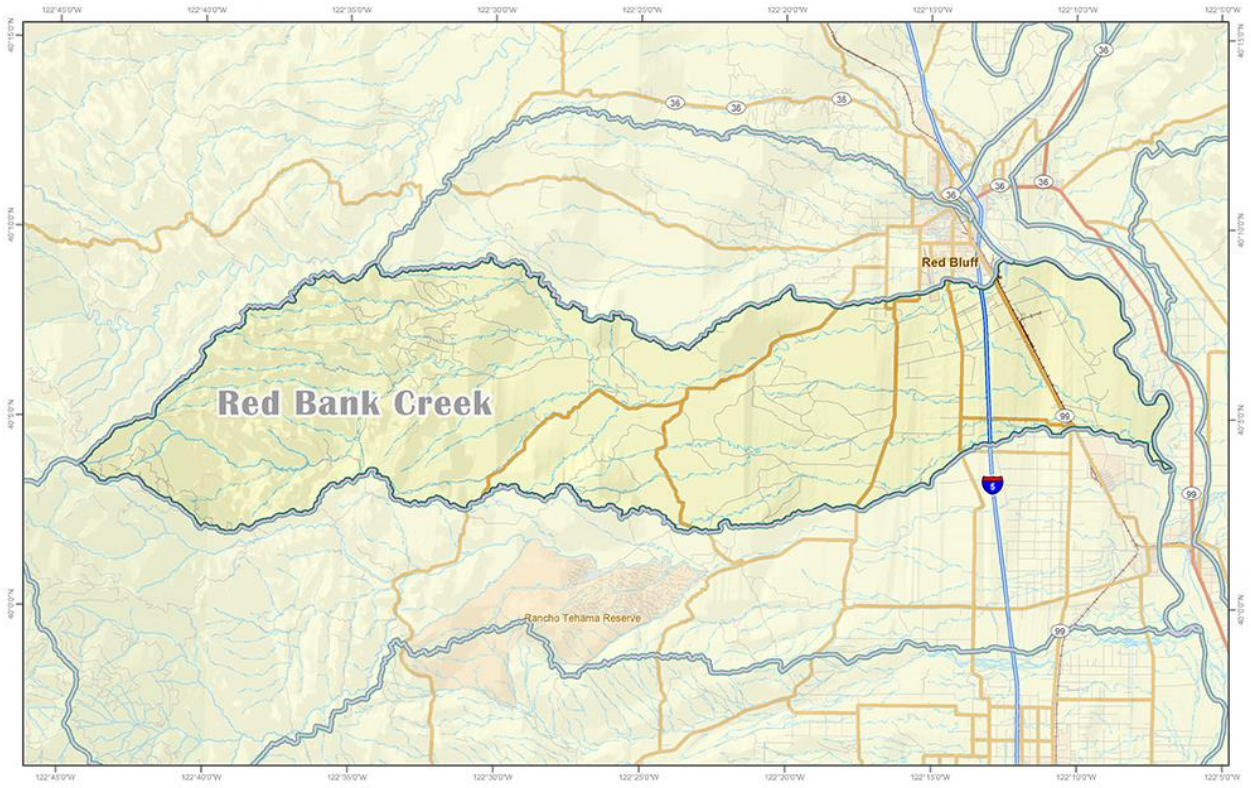
North: Watershed boundary of Reeds Creek

East: Sacramento River

South: Watershed boundaries of Reeds Creek and Grasshopper Creeks

West: Watershed boundary of Reeds Creek

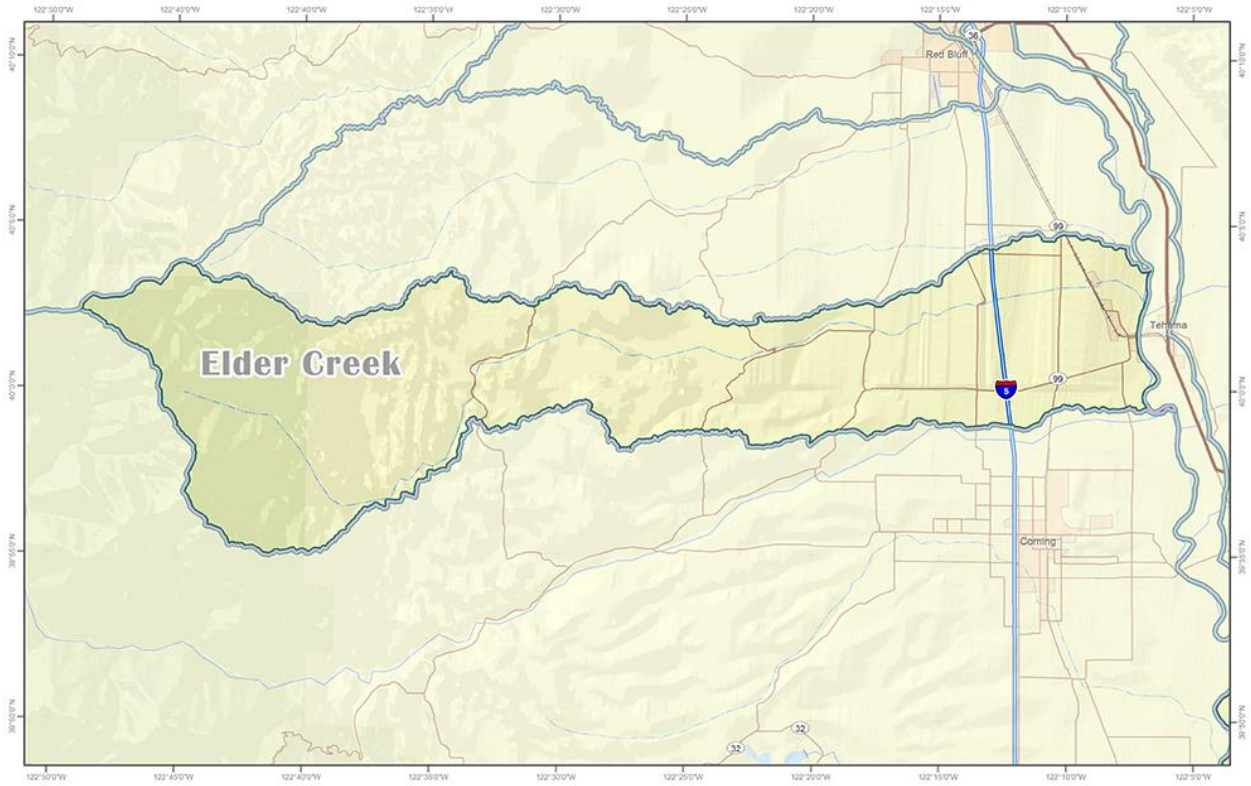
RED BANK CREEK PLANNING UNIT (181 SQUARE MILES)



Red Bank Creek originates in the interior coast range at an elevation of 5,600 feet and flows 26 miles in an easterly direction to the Sacramento River near Red Bluff. Once the stream course of the North and South Forks of Red Bank Creek leave steep timbered slopes, they combine into a main stem within chaparral covered slopes of the coast range. The main stem of Red Bank Creek then passes through oak and grass covered foothills with steep to rolling topography. Principle tributaries of Red Bank Creek include Last Chance, Pigpen, Dry, and Clover Creeks. The planning unit also includes the smaller watershed of Oat Creek near the Sacramento River, together with Butler Slough. Ten percent of the land within the Red Bank Creek watershed is federally owned (USFS and BLM) with the remaining 90% in private ownership.

North: Watershed boundary of Red Bank Creek
East: Sacramento River
South: Southern boundaries of Red Bank and Oat Creeks
West: Watershed boundary of Red Bank Creek

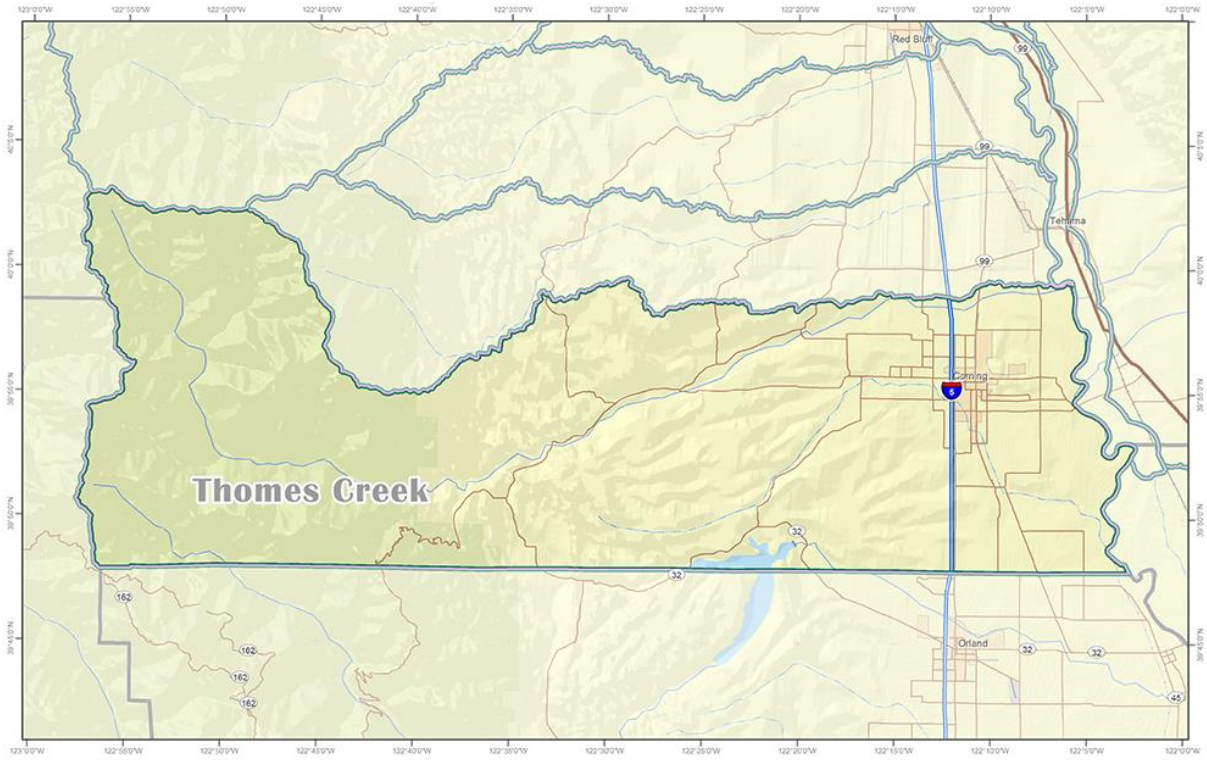
ELDER CREEK PLANNING UNIT (200 SQUARE MILES)



The Elder Creek system consists of a North, Middle, and South Fork and is an intermittent tributary of the Sacramento River, entering 12 miles south of Red Bluff. The stream's watershed originates at an elevation of 5,900 feet on the North Fork. The upstream reach (approximately 20 miles from the valley floor) rapidly increases in elevation within a rugged canyon area that supports resident fish. Major tributaries to this significant westside watershed include Basin, Alder, and South Fork Elder Creeks. Elder Creek flows past the community of Rancho Tehama, which has a population of just over 3,000 residents; as a result, water quality, flooding, and erosion are significant issues to area stakeholders. The planning unit also includes the smaller watersheds of McClure Creek and Rodeo Creek near the Sacramento River confluence.

North: Watershed boundaries of Elder and Rodeo Creeks
East: Sacramento River
South: Watershed boundaries of Elder Creek, McClure Creek, and Rodeo Creek
West: Watershed boundary of Elder Creek

THOMES CREEK PLANNING UNIT (588 SQUARE MILES)



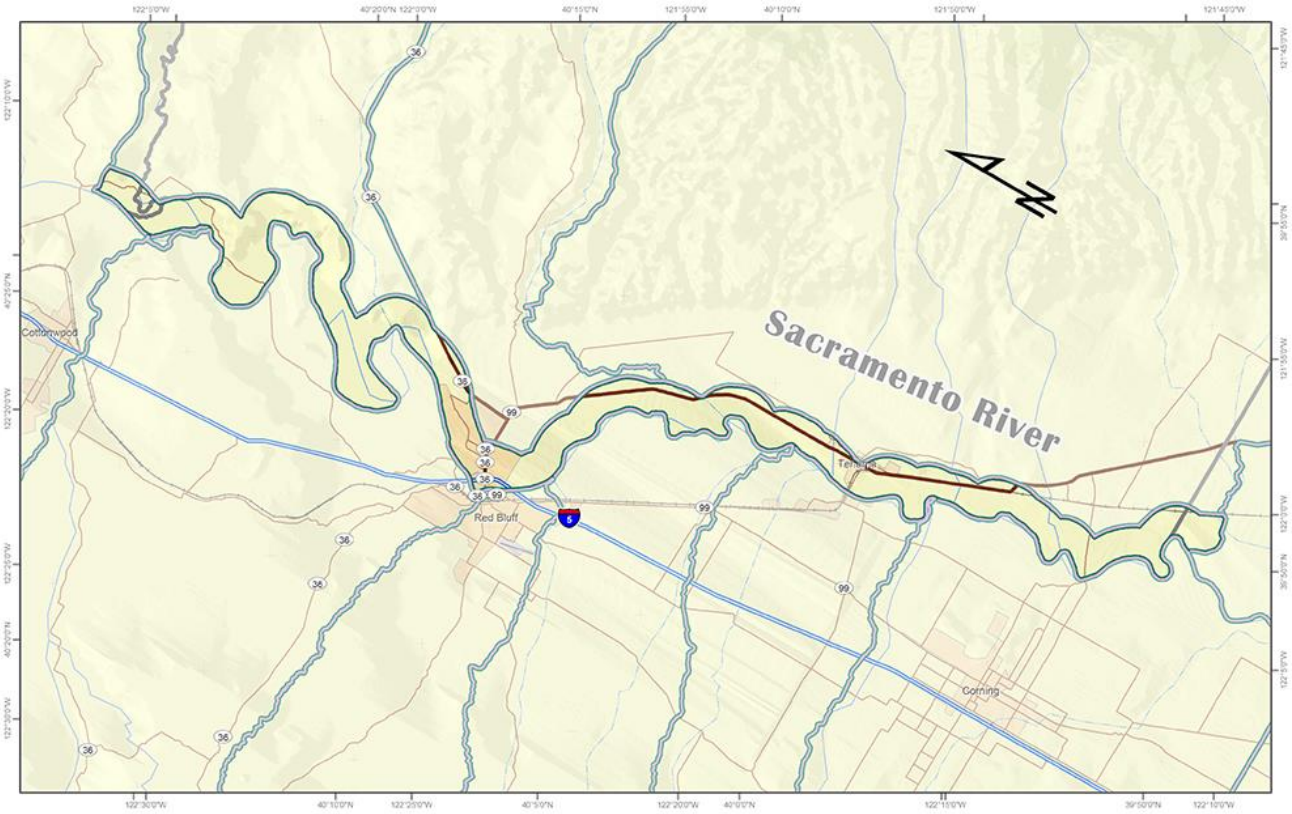
The headwaters of Thomes Creek begin on the east side of the Coast Range crest and flow for 70 miles along Tehama County's western and southern boundary. The stream channel ranges in elevation from 750 to 6,300 feet above sea level and joins the Sacramento River near the town of Tehama. From the confluence with the Sacramento River to approximately seven miles upstream, the aquatic habitat is suitable for juvenile Chinook salmon rearing during December to March. The stream's upper watershed is in relatively good condition, having a well-developed riparian forest. The slopes throughout much of the watershed are very steep, and soils are subject to high rates of erosion and creep. This combination of slopes and soils, as well as the array of resource and water quality values generated by Thomes Creek, make it imperative that riparian and upland vegetation remain intact and protected from high intensity wildfire. The planning unit also includes the watersheds of Jewett Creek and Burch Creek, as well as Kopta and Hogue Sloughs near the Sacramento River, together with portions of several upper watersheds near the Tehama County southern border.

North: Watershed boundary of Thomes Creek and the Tehama/Trinity County Line
East: Sacramento River
South: Tehama County/Glenn County border
West: Watershed boundaries of Thomes Creek, Willow Creek, and Upper Grindstone Creek (i.e., Tehama County/Mendocino County border)

Updated Tehama East Planning Area Descriptions

(A detailed description of the original Tehama East Community Wildfire Protection Plan area can be found in the 2008 planning document.)

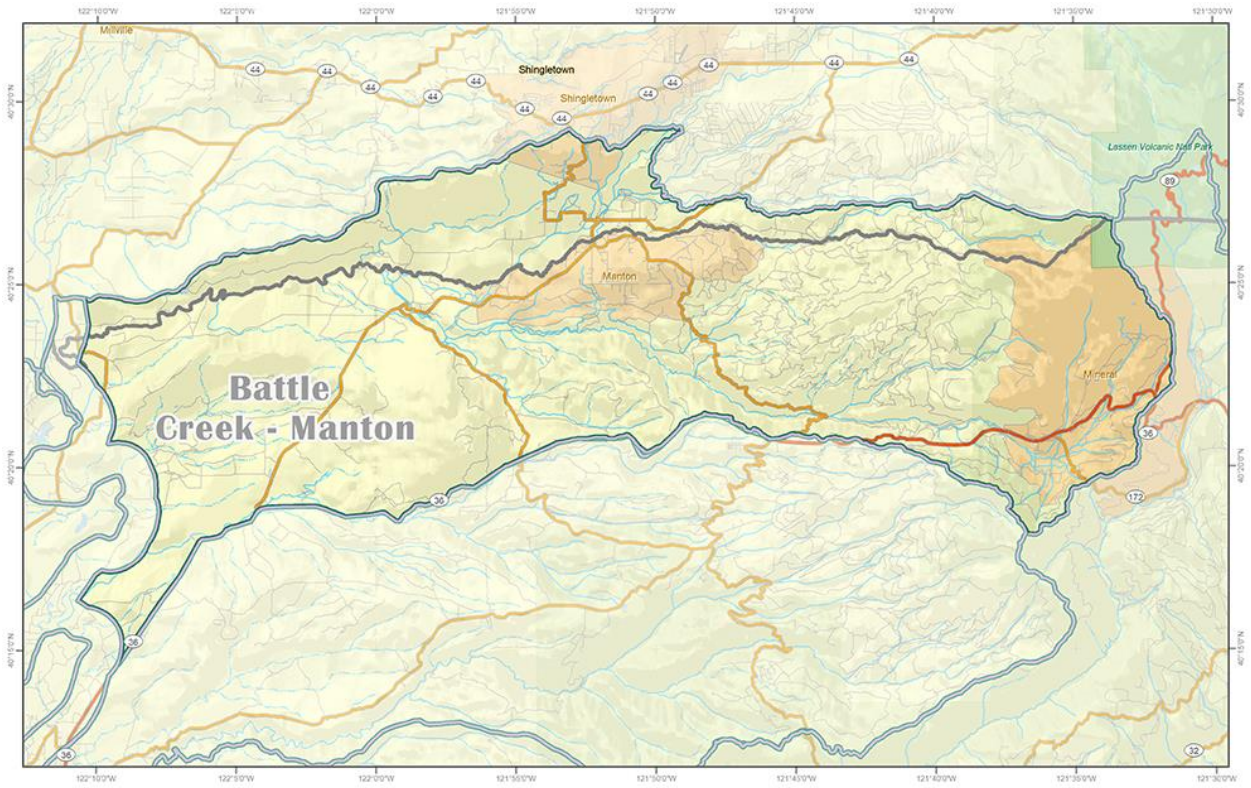
SACRAMENTO RIVER CORRIDOR PLANNING UNIT (61 SQUARE MILES)



The Sacramento River Corridor Planning Unit encompasses lands near the eastern banks of the Sacramento River and includes Woodson Bridge, Los Molinos, Dairyville, Bend, and portions of Red Bluff. The western boundary of this planning unit follows the Sacramento River, and the eastern boundary generally follows a line one mile east of the river. The northern boundary of the Battle Creek watershed and the Tehama/Shasta County line form the northern boundary of this planning unit. The southern boundary is formed by the southern edge of the Deer Creek watershed.

North: Battle Creek watershed northern boundary and Tehama County/Shasta County Line
East: One mile east from the Sacramento River stream course
South: Deer Creek watershed southern boundary
West: Sacramento River West Bank

BATTLE CREEK–MANTON PLANNING UNIT (284 SQUARE MILES)



The Battle Creek-Manton Planning Unit includes portions of the Battle Creek watershed that lie within or adjacent to the Tehama County line, the Inks Creek watershed in its entirety, and those portions of the Paynes Creek watershed that lie to the north of Highway 36E. Highway 36E forms the southwestern boundary of the planning unit, as this road feature generally follows the dividing line between the Battle Creek and Paynes Creek watersheds. The planning unit includes the entire subwatersheds of South Fork Battle Creek, Panther Creek, and Digger Creek. The planning area shares its western edge with the Sacramento River Corridor planning unit. Developed areas within the Battle Creek-Manton Planning Unit include the communities of Manton and Mineral along with their surrounding Wildland Urban Interface areas. The developed sites referred to as the Battle Creek Rod and Gun Club, Battle Creek Estates, and Canyon View Loop are also located within this planning unit.

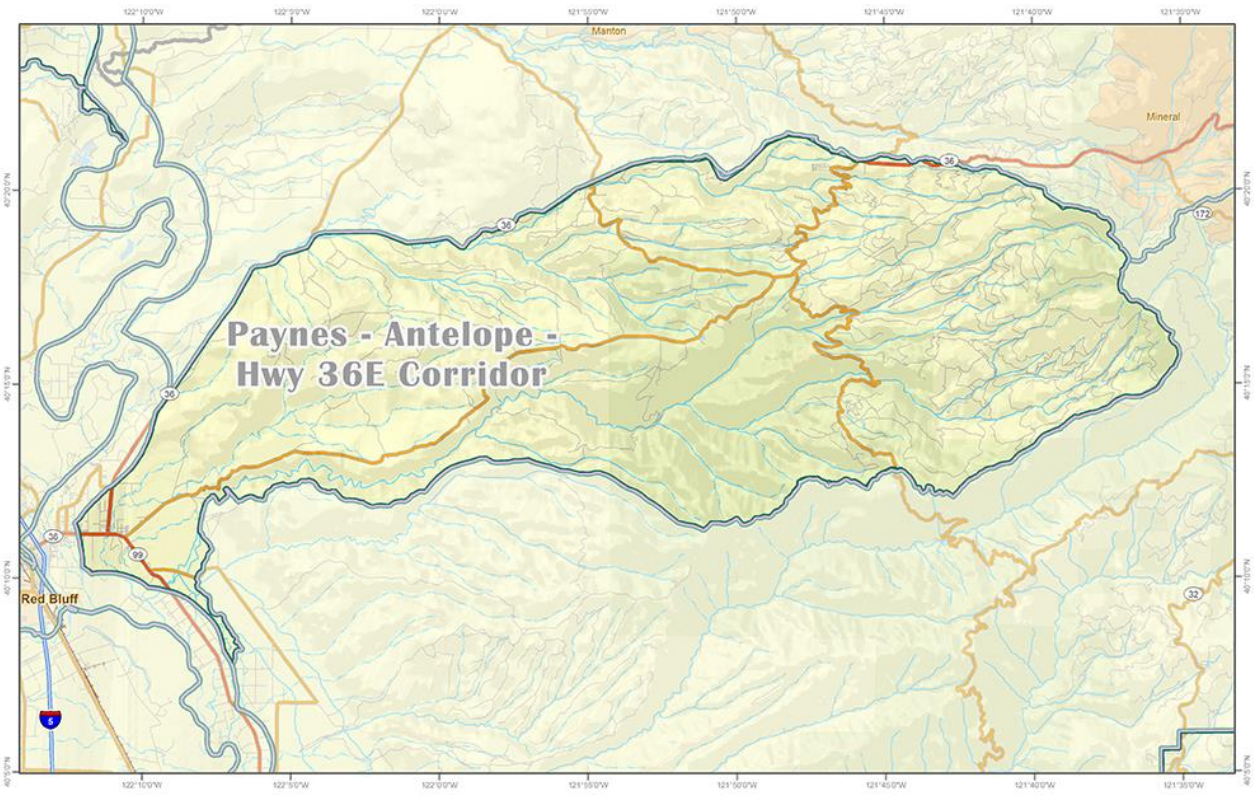
North: That portion of the Battle Creek watershed within or adjacent to the Tehama County boundary

East: Eastern boundary of South Fork Battle Creek watershed

South: Highway 36 and upper watershed boundary of South Fork Battle Creek

West: One mile from Sacramento River

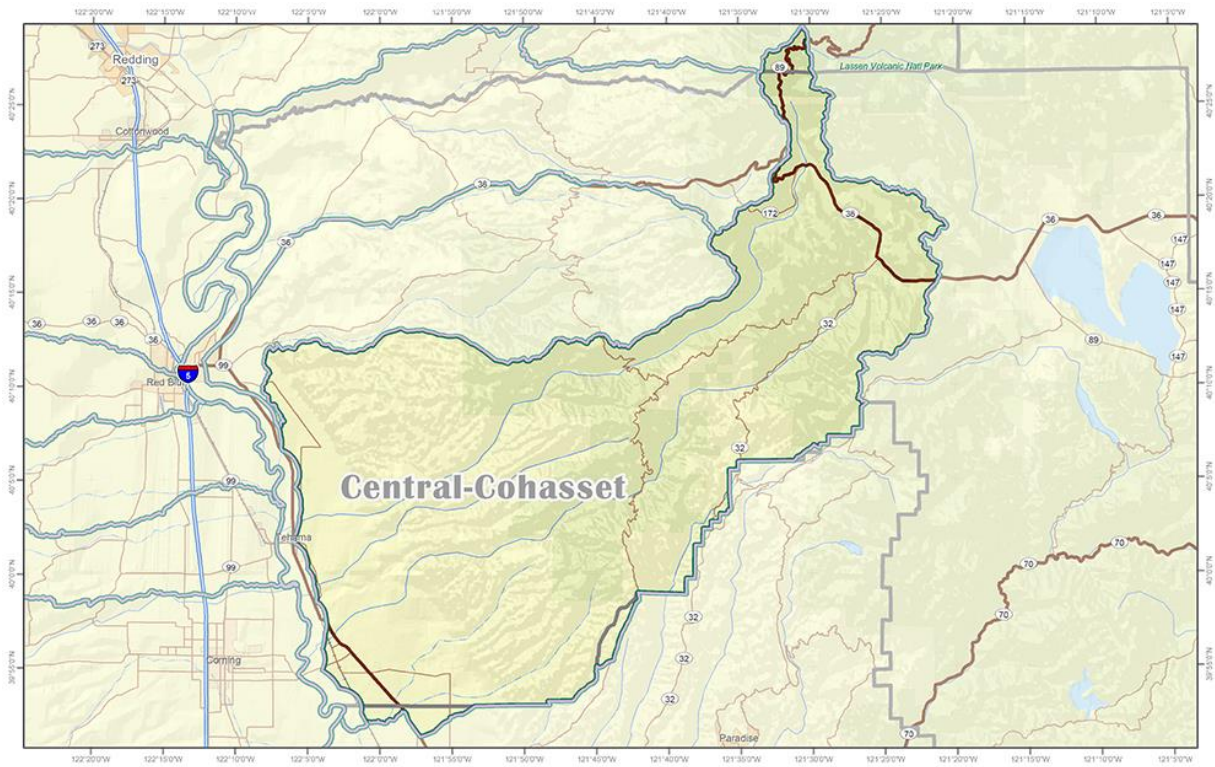
PAYNES-ANTELOPE–HWY 36E CORRIDOR PLANNING UNIT (250 SQUARE MILES)



This planning unit was renamed (formally referred to as the Paynes Creek-Highway 36 Corridor Planning Unit) to emphasize the significance of the Antelope Creek watershed relating to the size and natural resource characteristics of this planning unit area. This unit contains a number of wildland/urban interface areas including the communities of Dales, Paynes Creek, Ponderosa Sky Ranch, and Lyonsville. Other developed sites include the Boondocks community and the Paynes Creek Sportsman Club. Also contained within the planning unit are the entire watersheds of Paynes Creek and Antelope Creek along with portions of the Salt Creek and Seven Mile Creek watersheds. The northern edge of the unit follows Highway 36, which divides the Battle Creek and Paynes Creek watersheds, and the watershed boundaries of Plum Creek and North Fork Antelope Creek. The upper watershed of Antelope Creek where it meets the upper Mill Creek watershed forms the easternmost boundary of the planning unit. The southern edge of the planning unit generally follows the watercourse of lower Antelope Creek but encompasses the entire watershed of South Fork Antelope Creek. The planning unit shares its western edge with the Sacramento River Corridor planning unit.

North: Highway 36 and watershed boundaries of Plum Creek and North Fork Antelope Creek
East: Upper watershed boundaries of North and South Forks Antelope Creek
South: Lower Antelope Creek watercourse including the watershed of South Fork Antelope Creek
West: One mile from Sacramento River

CENTRAL–COHASSET PLANNING UNIT (736 SQUARE MILES)



The town of Vina and the wildland/urban interface areas of Cohasset, Campbellville, Mill Creek, Summit Springs Homesites, and Childs Meadows are included in this planning unit. Much of the area is unpopulated, very remote, and managed largely for grazing, timber and wildlife production, rare plant and animal species, and watershed health and productivity. Portions of the Antelope Creek watershed south of its watercourse are included. The entire Mill Creek watershed located within Tehama County is included within the planning unit, as are those portions of the Deer Creek watershed inside the boundary of Tehama County. The majority of the Pine, Dye, and Toomes Creek watersheds are included in the planning unit, together with smaller portions of the Rock, Big Chico, and Butte Creek upper watersheds that lie within Tehama County. The northern edge of the planning unit runs generally along the watercourse of Antelope Creek and then along the northern boundary of the Mill Creek watershed inside Tehama County. The County's eastern border and the upper Mill and Deer Creek watershed boundaries form the planning unit's eastern edge. The southern boundary of the unit follows the Tehama County border, incorporating the urban influence area of Cohasset and portions of the upper watersheds of additional creeks. As a result, a small portion of the fire plan project area lies within northern Butte County. This planning unit shares its western edge with the Sacramento River Corridor planning unit.

North: Antelope Creek watercourse and northern boundary of Mill Creek watershed/Tehama County boundary

East: Eastern boundary of Tehama County, including the upper watersheds of Mill and Deer Creeks

South: Cohasset urban influence area, portions of upper watersheds of additional creeks

West: One mile from Sacramento River

COUNTYWIDE COMPLETED, IN PROGRESS, AND PLANNED/PROPOSED FIRE AND FUELS MANAGEMENT PROJECTS

In the process of developing the original Tehama West Fire Plan and the Tehama East Community Wildfire Protection Plan, a number of initiatives were identified or developed that were expected to positively impact fire safety, fire management, and wildfire and fire ecology conditions throughout Tehama County or within more than one planning unit. These recommended actions generally entail large scale efforts conducted by federal, state, and local governments.

Countywide Completed Efforts

CalFire Tehama-Glenn Unit Strategic Fire Plan

The CalFire Tehama-Glenn Unit Strategic Fire Plan is a cooperative effort between State and local stakeholders focused on fire and fuels management within Tehama and Glenn Counties. The CalFire Tehama-Glenn Unit's Pre-Fire Engineer is responsible for updating the multi-county plan through the incorporation of current fire policies at the State level and identification of new and in-progress project work which will impact fire hazards within the planning area and will advance the fire and fuels management agenda of the Tehama-Glenn Unit.

CalFire Wildland Fire Pre-Plan

In 2016, CalFire Tehama-Glenn Unit personnel completed preparation of Wildland Fire Pre-Plans for State Responsibility Area lands within Tehama County. These planning documents take the form of maps that display those features and fire/fuels management infrastructure that can affect the control and management of a wildfire event. Information contained on these maps includes water sources, equipment staging areas, heli-base sites, improvements related to fire control infrastructure, communications and other facilities, road and highway infrastructure, power lines, pipelines and other linear features, and fuel treatments that have been completed.

RCDTC Tehama West Fire Plan and Tehama East Community Wildfire Protection Plan

In 2005, the RCDTC was awarded funding through the National Fire Plan Economic Action Program to prepare the Tehama West Fire Plan. In 2008 funding was received by the RCDTC through the Bureau of Land Management and the Tehama County Resource Advisory Committee to prepare the Tehama East Community Wildfire Protection Plan. Members of the Tehama-Glenn Fire Safe Council along with other watershed stakeholders participated in these efforts through their input regarding local resources in need of protection from wildfire, in-place infrastructure that protects these resources, and additional infrastructure needed in order to better protect eastside communities and watershed resources. In addition to the RCDTC, project collaborators included the Tehama County RAC, Lassen National Forest, Mendocino National Forest, Shasta-Trinity National Forest, Bureau of Land Management, CalFire, Battle Creek Watershed Conservancy, Mill Creek Conservancy, Deer Creek Watershed Conservancy, the Sunflower CRMP, and area ranchers. Other organizations providing significant input and assistance in the execution of these planning processes and preparation of the resulting planning documents included The Nature Conservancy, Crane Mills, Sierra Pacific Industries, Collins Pine Company, Pacific Gas and Electric, California

Department of Fish and Wildfire, U.S. Fish and Wildlife Service, Natural Resource Conservation Service, Tehama County Public Works Department, and Tehama County Planning Department,

The ultimate goal of both fire plans was to prepare documents that would aid in the development and coordination of fire and fuels management projects among an array or public/private stakeholders within the State Responsibility and Federal Responsibility Areas of Tehama County. These documents also became the RCDTC's 10-year work plan for fire and fuels management projects. Having completed a large number of the projects described in the both plans during this period of time, the RCDTC found it necessary to develop updates to these documents in order to identify new resources in need of protection, new fire and fuels management needs within Tehama County, and newly developed infrastructure to improve current conditions. In addition, through the current fire planning process, the Tehama West Fire Plan was converted into a formally recognized County Wildfire Protection plan.

Fire Hazard Reduction Coordination with Tehama County Public Works and Cal Trans

Public road and highway agencies are responsible for maintaining the vegetation within road rights-of-way under their jurisdiction in a safe condition. This responsibility includes fuel reduction along roads in areas with increased wildfire risk. Properly maintained roads can act as effective and cost efficient fuel breaks over large areas. The 2008 Tehama East CWPP recommended that the road maintenance unit of the Tehama County Public Works Department as well as local Caltrans Region 2 managers be advised whenever fire hazard reduction projects are conducted within the vicinity of County maintained roads and State highway infrastructure. Such notification has become a practice of the RCDTC's Vegetation Management Program when completing fuel treatments. Through collaboration with responsible agencies, the positive impact of fire and fuels management project work can spread over much larger distances by connecting these efforts with ongoing roadside vegetation treatments and as a result can increase fire protection benefits to area stakeholders.

Livestock Production/Vegetation Management Demonstration Project

Between 2005 and 2009, the Burrows Ranch located within the Sunflower CRMP area 25 miles west of Red Bluff conducted a pilot project that attempted to demonstrate how the production of livestock (hair sheep and meat goats) could be conducted in a manner that would both provide forage for livestock and maintain chaparral vegetation within a range of stand densities and seral stages. The ultimate goal of this unique project was to impact untreated and previously mechanically treated chaparral lands while at the same time providing an economic return to the landowner. Project funds provided by the United States Forest Service were used to purchase 1,000 head of meat goats and hair sheep that were pushed and tended by a full-time herder. As originally proposed, the offspring from grazing adults would be sold to meat producers to generate income for the Burrows Ranch. Although the pilot project was not completely successful in developing this effort into a self-sustaining ranch operation, it did provide data on unforeseen costs. The project also highlighted issues that would need to be addressed in order to achieve long term profitability for such an operation.

Countywide In Progress Efforts

RCDTC Chipper Program

In order to expedite completion of the project work developed in the Tehama East and Tehama West Community Wildfire Protection Plans, the RCDTC developed funding through the California Fire Safe Council for the purchase of a 116-horsepower chipper that would be suitable for processing vegetation up to 12 inches in diameter. These dollars were also used to fund the development of procedures and recordkeeping of the District's Vegetation Management Program through which the chipper, an operator/field technician, and related services are provided. In 2014, the RCDTC received funding from the McConnell Foundation of Redding to purchase a second chipper unit to expand the operation and provide backup equipment in order to assure project sponsors and landowners that project work can be completed in a timely, cost efficient manner according to originally proposed schedules. In addition to outside sources of funding, the RCDTC used internally developed dollars to purchase several heavy-duty pickups to pull the chipper units. Non-grant sources of funding have also been used to purchase an array of herbicide application and all-wheel drive transportation equipment through the use of overhead dollars along with those provided in connection with fee-for-service vegetation treatment projects.

CalFire Vegetation Management Program and Related Vegetation Treatment Projects

The CalFire Vegetation Management Program (VMP) is an ongoing cost-sharing initiative between private landowners and CalFire, which takes the role of project administrator. The program focuses on the use of prescribed burns along with manual and mechanical fuels reduction in order to reduce the presence of fire-prone vegetation on State Responsibility Area (SRA) lands. Throughout the Tehama–Glenn Unit area project work completed under this program has traditionally taken the form of prescribed burns for gross wildland fuels reduction. The VMP allows private landowners to enter into a contract with CalFire to use prescribed fire and other means to accomplish a combination of fire protection and resource management goals. Implementation of VMP projects is by local CalFire units who develop project related environmental impact assessment documents and who provide fire control equipment and ignition/containment crews along with a burn boss to oversee ignition control and mop up operations. Importantly, the VMP program provides indemnification to landowners in the event of fire escape. The fuels reduction projects that are completed first are those that are identified through the CalFire fire planning process and subsequently developed and prioritized in individual Community Wildfire Protection Plans. A list of completed, in progress, and planned VMP projects within the Tehama West Community Wildfire Protection Plan and Tehama East Community Wildfire Protection Plan area are shown in Table I below.

Table I. Vegetation Management Program
Proposed, Completed and Planned Fuels Projects

Project Number/Cal Mapper Number	Project Name	Status	Estimated Comple-tion Year	Project Type	Net Acres
RX-North-073-TGU	Gallatin VMP – Burress Unit	C	2011	Burn	520
RX-North-073-TGU	Gallatin VMP – Barker Unit	C	2012	Burn	870
Cal Mapper # 2500-2011-VMP-001	Eastside TNC 2011 – Big Pool Unit	C	2011	Burn	523
Cal Mapper # 2500-2011-VMP-001	Eastside TNC 2011 – Parker Unit	C	2011	Burn	361
Cal Mapper # 2500-2011-VMP-001	Eastside TNC 2011 – Safe Unit	C	2012	Burn	357
Cal Mapper # 2500-2011-VMP-001	Eastside TNC 2011 – Heifer Unit	C	2012	Burn	262
Cal Mapper # 2500-2011-VMP-001	Eastside TNC 2011 – Barn Unit	C	2013	Burn	410
Cal Mapper # 2500-2011-VMP-001	Eastside TNC 2011 – TNC Pasture Unit	C	2013	Burn	301
Cal Mapper # 2500-2014-VMP-001	PCSC- Ishi Camp VMP	P	2016	Burn	
Cal Mapper # 2500-2014-VMP-002	PCSC VMP	P	2016	Burn	
RX-North -078-TGU	TNC VMP 2015-18 Browns Unit	P	2017	Burn	715
RX-North-078-TGU	TNC VMP 2015-18 Breaks Unit	P	2017	Burn	891
RX-North-078-TGU	TNC VMP 2015-18 Wurlitzer Unit	C	2016	Burn	287
RX-North-078-TGU	TNC VMP 2015-18 Pond Unit	C	2016	Burn	697
RX-North-078-TGU	TNC VMP 2015-18 Berleman Unit	C	2015	Burn	626
RX-North-078-TGU	TNC VMP 2015-18 Andrini Unit	C	2015	Burn	464
PCSC VMP 2015-18 Unit #4	RX-North-079-TGU	P	2018	Burn	2016
PCSC VMP 2015-18 Unit #3	RX-North-079-TGU	P	2017	Burn	369
PCSC VMP 2015-18 Unit #2	RX-North-079-TGU	C	2016	Burn	40

PCSC VMP 2015-18 Unit #1	RX-North-079-TGU	C	2016	Burn	40
Sunflower VMP 2017-2020 Burrows and Joachim	RX-North-80-TGU	P	2017	Burn	1138
Sunflower VMP 2017-2020 Burrows	RX-North-80-TGU	P	2018	Burn	39 (Spring)
Sunflower VMP 2017-2020 Dawley	RX-North-80-TGU	P	2018	Burn	751
Sunflower VMP 2017-2020 Sale	RX-North-80-TGU	P	2019	Burn	336

Status Guide: A = Active, P = Planning, C = Completed, O = Ongoing, M = Maintenance

CalFire Cal Mapper Program

Since 2009 CalFire Units have developed and compiled Geographic Information System (GIS) data on various fire and fuels management projects that have been completed or currently conducted within unit areas which allows CalFire to prepare maps of projects throughout large geographical areas. This GIS data allows CalFire and other users to understand the spatial relationships between fuel treatment areas in order to better utilize previously developed project work as a means to increase the effectiveness and impact of newly developed fuel treatment and fire management projects. CalFire Cal Mapper data was used by the RCDTC in the development of its Countywide Fire Plan Base Map which shows community and wildland resources in need of protection along with the completed, in progress, and planned vegetation treatments developed to protect those resources. This ongoing initiative addresses the need for landscape scale mapping of fuels projects and other vegetation treatments identified under the recommendation entitled *Mapping of Harvest and Thinning Projects on Public and Private Timber Lands* described in the 2008 Tehama East Community Wildfire Protection Plan.

Ponderosa Way Fuels Reduction Plan/Strategy and Coordination of Ponderosa Way Road Maintenance and Vegetation Management Projects

During development of the 2008 Tehama East Community Wildfire Protection Plan document, Ponderosa Way was recognized as a significant component to the fire management infrastructure found within eastern Tehama County. Not only do portions of the road provide significant access to firefighters during wildfire events, they can also be used as an escape route by local residents. The road can also be used as a fuel break for backfiring operations and other suppression tactics. Recognition of the road's significance resulted in the recommendation for a "*Ponderosa Way Fuels Reduction Plan/Strategy and Coordination of Ponderosa Way Road Maintenance and Vegetation Management Project"* along with the "*Grading and Maintenance of Ponderosa Way."* The goal of these proposed efforts is to better coordinate maintenance of roadside vegetation and road conditions between landowners and other entities having responsibly for the upkeep of Ponderosa Way. The road surface and roadside vegetation of Ponderosa Way are maintained by various public and private entities that include the Tehama County Road Department, Lassen National Forest, Bureau of Land Management, Sierra Pacific Industries, and Collins Pine Company, among others. Many useful road maintenance projects have been developed along Ponderosa Way. An assessment of the road's overall condition and the development of specific needed road repair and vegetation management

efforts would allow the RCDTC or those entities involved with road and vegetation maintenance to apply for funding in order to complete project work. Through an organized maintenance program and completion of needed road and right-of-way maintenance, Ponderosa Way could be improved as an ingress and egress route during wildfires and other emergencies as well as fire management infrastructure. Such organized efforts would also reduce the occurrence of roadside ignitions and road related sediments impacting water quality and other watershed resources found within the eastside area.

To that end, in 2010, the RCDTC completed preparation of the *WUI and Watershed Protection/Emergency Access Assessment (Coleman Fish Hatchery Road and Ponderosa Way)*. This initial survey of road and roadside vegetation conditions along Ponderosa Way resulted in the development of numerous recommendations for improvements. The assessment document was distributed widely to Federal, State and local agencies having jurisdiction over various road segments, including the California Department of Fish and Wildlife (CDFW) and State Water Resources Control Board (SWRCB). In early 2016, the RCDTC was awarded $864,000 from the CDFW and SWRCB to complete the *Ponderosa Way Road Assessment and Sediment Reduction Plan Project*. This planning and implementation effort entails the assessment of large sediment plumes that developed across Ponderosa Way within the canyon of South Fork Battle Creek after the large 2012 Manton Fire, during a severe storm event in 2013-2014. These plumes have now crossed Ponderosa Way's road prism, preventing travel between Manton Road and Highway 36E. An assessment of road conditions will also be completed along that portion of Ponderosa Way between Highway 36E and Highway 32E to address needed maintenance issues and chronic sources of road related sediments that impact water quality within the Paynes, Antelope, Mill, and Deer Creek watershed systems. Once assessment and design work has been completed, several implementation projects will be completed within both segments of the roadway based upon available funding and the priority established by area stakeholders for road improvement projects. It is anticipated that this planning process will increase the pace with which improvements to this important eastside road can be completed, thus assuring its continued use as both an access road and fuel break within the chaparral and low elevation conifer forests of eastern Tehama County.

Roadside Fuel Treatments on County Roads in Western Tehama County's State Responsibility Area

During the summer of 2016, RCDTC Vegetation Management Program personnel made a survey of County maintained roads within western Tehama County's Local Responsibility Area and State Responsibility Area in order to identify those road segments that are in need of vegetation treatment in order to reduce ignition and fire spread risk. The following table provides a list of roads segments in need of treatment. The number of miles in need of treatment and notes related to their location are provided as well. As proposed, this work would be completed by the Tehama County Road Department.

Table II County Roads Proposed for Roadside Fuel Treatments

Road Name	Miles	Location Notes
Ridge Road	3.4 miles	Both sides of road
Cascade View Lane		Entire road
Alta Vista Lane		
Alta Vista Court		
Angele Court		

Live Oak Road	1 mile	1 mile from the end of pavement as well as along the unpaved segment of the road to a gate.
Willard Road		.2 miles
Moon Shadow Ranch Road		Entire Road
Ashland Ave	.6 miles	
Newman Drive	9 miles	Both sides or Road
Johnson Road	.5 miles	From Reeds Creek School, west both sides of the road
Pine Creek Road	.3 miles north side of road .2 miles south side of road	
Stroing Ave	.2 miles	Both sides of the road
Coyote Lane	.3 miles	Both sides of the road
Quercus Lobata	1 mile	Both sides of the road
Roglynn Road	1 mile	Both sides of the road
Matlock Loop	1.2 miles	
Oakcrest Road	2.2 miles	Both sides of the road

I-5 Fuel Break

This ongoing fuel treatment project is located within the CalTrans right-of-way along both sides of Interstate 5 between Red Bluff and Cottonwood. Annually, an 11 mile long, 6-8 foot wide handline is cut into roadside grass and other vegetation by CalFire/CDC Conservation Camp crews in order to prevent roadside ignitions within the right-of-way from spreading onto adjacent grasslands and oak woodlands, threatening homes and ranchlands near the freeway. Funding for current efforts is provided through CalFire's State Responsibility Area Fire Prevention Fund. At the present time, CalFire's Tehama-Glenn Unit is in the process of extending project work south of Red Bluff. This addition to current I-5 Fuel Break project work is scheduled to begin in the spring of 2017 with work completed by June 2017. The goal of this additional effort is to reduce hazardous fuel profiles within the wildland and Wildland Urban Interface areas in the State Responsibility Areas south of Red Bluff. Project work will reduce the risk of a damaging fire to approximately 160 residences and several hundred acres of valuable rangeland. This project will be accomplished using CalFire augmentation crews and inmate fire crews, who will use hand tools and chainsaws to develop, maintain, and further develop defensible fuel profiles within the expanded project area which is located south of the of Red Bluff in the CalTrans right-of-way along the west side of Interstate 5 from Montgomery Road to Flores Road. The project area is rated as having a Moderate Severity Zone, which identifies the area as having the potential risk for damaging fires.

Project work will entail cutting brush, thinning, and removing live trees (10" DBH. and under) and downed trees, decreasing unnatural levels of ladder fuels. Preference for trees to be left within the project area will be oak and pine trees that will have their branches pruned up to 8 feet above ground level, resulting in a minimum live crown cover of 50% in densely canopied areas. The fuels treatment area will be completely within the CalTrans right-of-way with a 4-foot scrape to bare mineral soil along the right-of-way fence line or best possible location within the easement to provide maximum fire protection. The cut vegetation will be piled and burned within the project area, and the scraped materials will be cast on the leeward side of the scrape to minimize soil disruption. The total area where fuel treatments will be completed is 10 acres, and the total length of the scrape is 5 miles. Once established, the project will require annual maintenance of the scrape.

Annual Maintenance/Improvement of Pellows Road

Prior to each year's fire season, CalFire Tehama-Glenn Unit heavy equipment operators conduct refresher trainings on dozer and grader operation by completing road maintenance along 21 miles of Pellows Road. As a result, the road surface is maintained in an improved condition, which greatly increases access by firefighting forces when conducting offensive and defensive wildfire tactics and strategies. This work is normally completed in May or June.

Fuel Treatments Permit Coordination Program

At the present time, the RCDTC is developing the *Fire Training Area and Fuel Treatments Permit Coordination Program* and preparing a Programmatic CEQA environmental analysis document related to the fire and fuels management activities that will be approved under this permitting program. This RCDTC permitting effort is being developed in cooperation with CalFire's North Region Headquarters personnel and staff from CalFire's Tehama-Glenn Unit. The goal of the permitting program is to analyze the impact of an array of fuels management treatment techniques that are often employed by private landowners within an 80,000-acre assessment area located in western Tehama County between the Elder Creek watershed and Highway 36W. The overall goal of this coordinated permitting program is to make the execution of training exercises, development of fire management infrastructure, and implementation of fuel management and watershed management projects more cost effective.

Various commonly executed wildland fire control operations, trainings, and fuel management techniques are being analyzed as to their impact on the resources found within this permitting program's assessment area and documented in a CEQA Programmatic Initial Study/Mitigated Negative Declaration document. In order to reduce the impact of these activities to a less than significant level, an array of Mitigation Measures and Best Management Practices (BMPs) are being developed and approved by regulatory entities that issue permits required in order to execute the activities approved under this permitting program. Through the development and negotiation of programmatic permits and CEQA environmental analysis with agencies having oversight, the RCDTC will become a one stop source of permits and environmental analysis that are required to implement the activities approved under this permitting program occurring within the program's assessment area. The approval and certification of the environmental analysis conducted to assess the impact of the program and the implementation of approved practices will result in the Programmatic CEQA document serving as a functional equivalent to the incremental environmental analysis and permits that would be required of participants if they completed fuel treatments individually outside of this permitting program's regulatory processes.

CalFire/Tehama County Fire Defensible Space Inspections

Changes to Public Resources Code (PRC) 4291 expand the defensible space clearance requirement maintained around buildings and structures to a distance from 30 feet to 100 feet. CalFire personnel conduct random fire inspections on residences in the Tehama County area in order to determine whether defensible space has been established around structures in accordance with these regulations.

Countywide Planned/Proposed Efforts

Fire Hazard Reduction Coordination with PG&E

PG&E is required by law to maintain vegetation clearances along rights-of-way for its primary and secondary power transmission lines. It is recommended that future fire hazard reduction projects proposed for implementation near powerlines or other power transmission rights-of-way be coordinated with PG&E as a means to leverage already occurring power infrastructure related fuel treatments, thus enhancing the effectiveness of new fuel treatments.

Fuel Hazard Reduction Coordination with AT&T

Within the Battle Creek–Manton, Paynes-Antelope-Hwy 36E Corridor, and Central-Cohasset planning units, AT&T maintains an underground telephone cable. During installation of the line, vegetation was removed, and portions of the utility company right-of-way remain clear of vegetation and wildland fuels. The cable runs from the northeast and trends to the southwest. In addition, a considerable portion of cable line is located on flat to moderate slopes. If vegetation was managed along the entire length of the cable right- of-way, this linear feature could provide access for firefighters and their equipment and would provide the basis for a more extensive fuel break within a significant portion of the three planning units. Consequently, a recommendation was developed for the collaborative development of a fuel break between AT&T, the Tehama-Glenn Fire Safe Council, RCDTC, United States Forest Service, and local landowners.

Development of Sufficient Water Storage, Handling, and Delivery Systems throughout Western and Eastern Tehama County

Portions of eastern Tehama County contain rural communities that lack water storage, handling, and delivery capacity sufficient to fight wildfires. As a result, rural homes can be put at risk if wildfire disrupts electrical service and if water cannot be generated on site. Several communities in Tehama County's Wildland Urban Interface area currently have either no water capacity or insufficient capacity for their population and consequently must depend on either tanker supplied water or water drafted from surface sources during wildfire events. Ten thousand gallon tanks are recommended in communities that have a single urban core where most homes and other structures are located. Five thousand gallon tanks are recommended in dispersed communities covering large areas.

Collaborative efforts between the Tehama-Glenn Fire Safe Council, CalFire, RCDTC, Tehama County Planning Department, local citizens, and community groups should be encouraged in order to identify additional needs for water storage capacity and to explore options available to increase water storage capacity and delivery systems. This group of stakeholders should also pursue grant funding to finance such improvements to Tehama County's wildland fire water storage infrastructure. The Wildland Fire Pre-Plan maps described above under "Completed Countywide Efforts" advance this effort in that among various fire management infrastructure shown on the Pre-Plan Map are water sources available to firefighters during wildfire events.

TEHAMA WEST COMMUNITY WILDFIRE PROTECTION PLAN COMPLETED, IN PROGRESS, AND PLANNED FIRE AND FUELS MANAGEMENT PROJECTS

(Project numbers refer to the Countywide Fire Plan Base Map)

COTTONWOOD-BEEGUM CREEKS PLANNING UNIT

Completed Projects in Cottonwood-Beegum Creeks Planning Unit

Project CO-1 Sunflower Coordinated Resource Management Plan Fuels Projects

Over the past 15 years, the Sunflower Coordinated Resource Management Plan (Sunflower CRMP) has been an active participant in managing wildland fuels within the chaparral and low elevation conifer forests of western Tehama County, particularly within the watersheds of Elder Creek, Red Bank Creek, and South Fork Cottonwood Creek. The Sunflower CRMP project area encompasses approximately 72,000 acres of which roughly 57,600 acres are privately held. The primary goals of the Sunflower CRMP are to:

- Reduce fuel loads and fire hazards.
- Develop and improve water sources to be used for fire control, wildlife, and livestock.
- Extend the base flow of perennial streams within the CRMP boundary.
- Create and improve wildlife habitat through "low serial stage" ecosystems that have significant biodiversity.
- Establish and maintain fire trails and fuel breaks.
- Develop habitat for threatened and endangered species under the protection of Safe Harbor agreements with the USFWS.
- Develop a program of environmental monitoring in order to evaluate and quantify the success of environmental projects.
- Provide educational opportunities and a demonstration area for members of the public who want to be good stewards of the land.

In order to accomplish the organization's goals relating to fire and fuels management, the original Tehama West Fire Plan proposed that Sunflower CRMP members and other westside County stakeholders complete twenty-two miles of inter-connected fuel breaks (800 acres) through a combination of ball and chaining treatments, hand cutting and chipping, and the use of mastication equipment to reduce fuel loads and to improve plant health and growing conditions. In addition, a goal was established to complete broadcast burns on 2,000 acres within the Sunflower CRMP boundary. In 2005 one Sunflower CRMP member purchased 1,000 head of meat goats and hair sheep to be tended by full time herders. The goal of

this unique project was to demonstrate the potential to impact fuel loading in the County's westside chaparral lands while at the same time providing an economic return to landowners. As of 2016, more than 40 miles (1,454 acres) of mechanically completed linear fuel breaks had been completed within the Sunflower CRMP boundaries along with more than 3,600 acres of CalFire Vegetation Management Program related burns. These treatments include those completed individually by Sunflower CRMP members and other area landowners as well as the RCDTC, CalFire, the Mendocino National Forest, and the Bureau of Land Management. Most of this work was completed from Eagle Peak in the south to Highway 36E at the north end of the Sunflower CRMP area and includes the projects described below.

Project CO-2 Elkhorn Ridge Fuel Break

This project entailed the completion of maintenance treatments along the 2.6-mile Elkhorn Ridge Fuel Break located on the south side of South Fork Cottonwood Creek watershed. Vegetation treatments were completed to a width of 200 feet resulting in 63 acres of fuel break infrastructure. These treatments helped to improve the fire protection capabilities of the fuel break infrastructure developed by members of the Sunflower CRMP described above. Project work was completed by members of the Sunflower CRMP.

Project CO-3a Hammer Loop Fuel Break – Phase I

Project work included 423 acres of ball and chain treatments and 50 acres of straight-blade brush removal and crushing using a bulldozer. Straight-blade bulldozer areas were developed primarily along significant ridge tops with the blade height averaging 4-6 inches above ground level in order to scrape off brush. Generally, two passes of the blade were made in opposite directions resulting in a significant reduction of live vegetation by the dozer blade and tracks. A portion of scraped brush on ridgetops was piled and burned. Brush in other areas of the fuel break was crushed and left on site for decomposition and future burning once significant regrown of chaparral vegetation had occurred within the crushed material. Burning dead and desiccated chaparral brush will not only reduce the volume of this material but the regrowth of live vegetation will also be removed, thus extending the life of these fuel treatments. Project work was completed by the RCDTC. Future maintenance broadcast burning within the Hammer Loop Fuel Break Project area is encouraged through the development of CalFire VMP-sponsored projects by participating landowners.

Project CO-3b Hammer Loop Fuel Break Follow Up - Phase II

Follow up maintenance work in connection with the Hammer Loop Fuel Break included seeding of treated ridge tops with approved species of grass to permanently convert a portion of the site from chaparral to grassland. The grass species selected were a combination of native and improved non-native varieties approved by the Tehama County Agriculture Department.

Project CO-4 Raney Peak South and Tedoc Mountain-Raney Peak Fuel Break

These separately funded fuels projects were completed using ball and chain techniques and when combined resulted in 35 miles of chaparral vegetation treatments between the North Fork Elder Creek watershed and Highway 36W. Chaparral vegetation was crushed and piled for burning to a width of roughly 300 feet depending upon slope and non-target vegetation, resulting in 1,272 treated acres. Crushed brush within a significant portion of the two project areas was left on site to desiccate and decompose or was used as dry fuel to burn resprouting chaparral vegetation 3 to 5 years after project completion. Project work was completed by the RCDTC.

Project CO-5 Pattymocus Fuel Break

The Pattymocus Fuel Break Project entailed the development of a 2.3-mile, 300-foot wide (84 acres in total) fuel break across private lands utilizing a ball and chain apparatus and a dozer to mechanically clear and crush chaparral brush along a system of prominent ridgelines as part of a larger fuel break system being developed by the RCDTC and the Sunflower CRMP. It is anticipated that crushed and cleared brush will be burned in approximately 3 to 5 years. As a consequence of this burning, not only will crushed and cleared brush be removed, but resprouting vegetation will be burned as well, thus extending the useful life of project work and reducing the frequency of required retreatments. This proposed project represents the final link in efforts to connect the fuel break system developed within the Sunflower CRMP area to the south with Highway 36 to the north. Project work was completed by CalFire.

Project CO-6 R Wild Horse Ranch Tank Installation

Project work entailed the installation of two 5000-gallon water tanks within the R-Wild Horse Ranch development. Funding was provided by the Cottonwood Creek Watershed Group with labor provided by R Wild Horse Ranch members.

Project CO-7 Cottonwood Creek Non-Native Plant Removal and Native Vegetation Improvements Project

The Cottonwood Creek Non-Native Plant Removal and Improvements project was developed by the Cottonwood Creek Watershed Group and implemented by the RCDTC utilizing funds provided by the US Fish and Wildlife Service. The goal of this effort was to reduce the presence of invasive species along 30 miles of Cottonwood Creek's South and Middle Forks along with the South Fork's tributary, Dry Creek. Target species included giant reed (*Arundo donax*), saltcedar (*Tamarix chinensis*), tree-of-heaven (*Ailanthus altissima*), black locust (*Robinia pseudoacacia*), scotchbroom (*Cytisus scoparius*) and pampus grass (*Cortaderia selloana*). These plants have the potential to ignite quickly and rapidly developed into a fastmoving wildfire. Professionally-accepted and agency-approved foliar herbicide spray methods and materials were used in treating invasive plants in order to effectively prevent future reinfestations of noxious plants within the project area. These treatments consisted of a foliar spray application of non-selective herbicide (Aqua Master ™). Eradication work began in the uppermost reaches of the three target creeks where vegetation mapping had already been completed. During the process of eradication, newly found small infestations of invasive plants were mapped and treated. Excess vegetation was cut and removed. Herbicide applications were completed by RCDTC staff along with contracted field personnel obtained from the Western Shasta Resource Conservation District.

Project CO-8 Benson-Bassler /Quail Ridge Fuel Break

The goal of this fuel break project was to reduce the direct threat of wildfire to the Bowman community (a federally listed at-risk community), the Quail Ridge development and surrounding rural home sites. Protection of public (BLM) and private wild lands surrounding this developed area was also improved. Through funding provided by the California Fire Safe Council, the RCDTC developed shaded fuel breaks along Benson Road, Bassler Road and Quail Ridge Road. This portion of Tehama County contains contiguous stands of oak woodlands which have a dense understory of brush species including manzanita and ceanothus. Fire hazard is rated high with large areas of brush stands and flashy grassland fuels both live and dead. Project work entailed hand treatments along 18 miles of paved and unpaved portions of the

three roads mentioned above. (CDC) Conservation Camp crews were used to conduct thinning treatments as well as to pile and burn some of the removed vegetation. RCDTC provided a chipper unit and operator to reduce biomass and broadcast it back onto the project area where pile burning was unfeasible, would threaten fire safety or pose a public health risk from smoke generation. RCDTC also provided a certified herbicide applicator to chemically treat cut brush. Project work was completed to a width of 100 feet on both sides of road edge and once completed totaled approximately 436 acres. In addition to reducing roadside ignition risk and providing a line from which fire suppression operations can occur, these fuel treatments have improved access and egress for local landowners and firefighting personnel. They also better protect numerous oak stands in the area.

Project CO-9 R Wild Horse Ranch Fuel Break

This community fire protection project was developed in order to protect the R Wild Horse Ranch from northerly wind driven wildfires that pose a significant threat of ignition to dense chaparral fuel that grow on the steep slopes surrounding this recreational community. Project work was also completed to improve emergency ingress and egress to developed sites. Project work included the development of a 2.9-mile, 200-foot wide (70 acres) fuel break through the use of hand work (cutting, piling, and burning of live vegetation) as well as mechanical treatments such as dozer piling and brush crushing.

Project CO-10 Quail Ridge Water Storage Project

This water tank installation project now provides 5,000 gallons of fire protection water to residents of the Quail Ridge development located in the grasslands and oak woodlands of northern Tehama County. RCDTC is in the process of identifying a site and obtaining funding for up to four more 5,000 gallon tanks over the next several years.

Project CO-11 Lake California Multi-Hazard Emergency Evacuation Plan

This hazard and evacuation plan developed in cooperation between CalFire and the Lake California Property Owners Association consists of pre-fire, fire safety, and evacuation components. The planning document provides residence of the Lake California area with measures to take in order to prepare for wildland fires. The plan describes how to make rural homes fire safe in terms of design, construction methods and materials, as well as landscaping techniques. In addition, information is provided on what to do if a wildfire occurs. Project work was completed by CalFire.

Project CO-12 Lake California Drive Road Vegetation Treatments

Lake California Drive is the only road leading into the Lake California. The area through which the road passes is vulnerable to northerly wind-driven wildfires that can rapidly spread into roadside fuels and onto dense brush stands located on steep terrain. In order to protect residential and agricultural properties as well as to improve emergency ingress/egress, this project entailed the development of a 4.3 mile, 200-foot wide (104 acres) shaded fuel break between Interstate 5 and the Lake California Community. Project work was completed by CalFire.

In Progress Projects in Cottonwood-Beegum Creeks Planning Unit

Project CO-13 Lake California Fuels Reduction

Lake California is a residential development located on 6,500 acres in northern Tehama County near the community of Cottonwood just west of the Sacramento River. The development contains 535 homes and 30 duplexes, which, together, house 1,500 residents. Since 1993, the Lake California Homeowners Association has been contracting with the California Department of Corrections and the Tehama-Glenn Unit of the California Department of Forestry and Fire Protection to complete fuel reduction projects on Association lands. In 2011 a change in State regulations prevented the POA from contracting directly with the CalFire/CDC Conservation Camps to complete this work. In order to efficiently continue fuel treatments within this significant Wildland Urban Interface area, the Lake California POA now contracts with the RCDTC to procure the services of the Ishi Camp whose crews continue to complete fuel treatments. This work normally entails Camp crews cutting, stacking, chipping and burning vegetative fuel. Recently, the RCDTC proposed the incorporation of herbicide applications into these yearly fuel treatments in order to extend the protective capabilities of this fuels work.

Planned/Proposed Projects in Cottonwood-Beegum Creeks Planning Unit

Project CO-14 Old Man Springs Fuel Break Project/Tedoc Road Tie-In Fuel Break

The goal of these related projects was to connect the west fork of the in-place Tedoc Mountain Fuel Break with fuel treatments that have been completed along Tedoc Road between Pattymocus Butte and Highway 36W. As proposed, the 1.6-mile, 300-foot wide (58 acres) Old Man Springs Fuel Break would connect the Tedoc Mountain Fuel Break's west fork with the Pattymocus Fuel Break's south end. The Tedoc Road Tie-In project would entail 2.4 miles of fuel treatments to a width of 300 feet (87 total acres) connecting the Old Man Springs and Pattymocus fuel breaks with the Tedoc Road fuel treatments at a point just north of Pattymocus Butte.

Project CO-15 Highway 36W Fuel Break Maintenance and Extension

At the present time, the RCDTC is in the process of identifying and securing funding for future maintenance and expansion of the Highway 36W Fuel Break Project described above. As proposed a combination of CalTrans budget dollars and those from other funding sources focused on community wildfire protection would be utilized. Maintenance treatments would be similar to those of the original project with the exception of follow up herbicide applications provided by CalTrans or RCDTC personnel.

Project CO-16 Raney Peak South Maintenance Treatments

This fuel break maintenance project would result in follow up vegetation treatments within the original 8.3-mile Raney Peak Fuel Break to a width of 200 feet, resulting in 201 acres of improved fuel break infrastructure.

Project CO-17 Ball Road Fuel Break

Wind, vegetation and slope conditions in the R Wild House Ranch area are similar to those found around Platina. This project is recommended in that it would provide additional protection to the R Wild Horse Ranch recreation development along with emergency ingress/egress. As proposed, a shaded fuel break would be developed along Ball Road to distance of 2.9 miles. Treatments would be completed to a maximum width of 200 feet, or a total area of 70 acres.

Project CO-18 Tedoc/Raney Fuel Break Maintenance Treatments

This effort consists of maintenance treatments completed within the project area of the Tedoc and Raney Peak Fuel Breaks developed by the RCDTC in 2009/2010. These treatments would be completed along 10.7 miles of in-place fuel break infrastructure to a width of approximately 200 feet, resulting in 260 acres of retreated vegetation.

Project CO-19 Tedoc Mountain North Shaded Fuel Break

This project entails the developmental of a shaded fuel break along 8.2 miles of Tedoc Road which would connect with the in place Tedoc/Raney Fuel Break and Raney Peak Fuel Break projects. Treatments would be completed to a width of 200 feet, resulting in 199 acres of new fuel break infrastructure.

Project CO-20 Stewart Ranch/Bland Road Shaded Fuel Break

In order to protect scattered residences and ranchettes, this project entails the development of a shaded fuel break and brush clearance as needed along Bland Road from Middle Fork Cottonwood Creek to Platina Road, a distance of approximately 8.7 miles. Vegetation treatments would be developed to a width of 200 feet, resulting in 211 acres of vegetation reduction.

Project CO-21 Bowman Road Shaded Fuel Break

Numerous residences, ranchettes and ranching operations are located along the well-travelled Bowman Road. As a result, there is an increased risk of roadside ignitions within the area's flashy grass fuels and dense brush stands rapidly spreading onto developed sites. Vegetation treatments would be completed along the road between I-5 and the road's junction with Highway 36W. As proposed, a shaded fuel break would be developed along 8.7 miles of Bowman Road through cutting and chipping of live and dead fuels. Vegetation treatments would include the use of State and County approved herbicides if permission were granted by project area landowners. These roadside treatments would be completed to a width of 200 feet, resulting in 211 acres of vegetation reduction. In addition, project work would be completed to the northwest of the recently completed Benson-Bassler/Quail Ridge Fuel Break developed by the RCDTC and would provide protection to homes along Bowman Road as well as create an additional northerly fuel break that would protect homes within the Benson-Bassler/Quail Ridge Fuel Break project area. As a result of their location and proximity to one another, these proposed and completed fire/fuels management projects will complement and improve the protective capabilities of each, thus leveraging project dollars.

Project CO-22 Pattymocus Fuel Break Maintenance
Proposed treatments within this 2.3-mile, 300-foot wide fuel break include the use of prescribed fire in order to reduce stands of live and dead vegetative material that resulted from the project's original mechanical treatments.

Project CO-23 R Wild Horse Ranch Fuel Break Maintenance
In order to providing continued protection to the R Wild Horse Ranch, this proposed vegetation maintenance project entails follow up treatments along the in-place 2.9 mile long fuel break. Maintenance treatments would include lopping and scattering of vegetative regrowth and the application of approved herbicides.

Project CO-24 Elkhorn Ridge Fuel Break Maintenance
This proposed maintenance project would entail follow up treatments along the 2.6-mile, 200-foot wide Elkhorn Ridge Fuel Break. In order to complete the 63 acres of maintenance treatments, a combination of mechanical vegetation clearing and prescribed burns are proposed. In addition to maintaining the protective capabilities of the original fuel treatments, this proposed maintenance project will improve firefighter access to a large portion of the Sunflower CRMP located in the Red Bank Creek and South Fork Cottonwood Creek watersheds.

Project CO-25 Lake California Drive Road Vegetation Maintenance Treatments
Proposed maintenance treatments for this 4.3-mile road include follow up cutting and chipping or piling and burning of woody vegetation regrowth, and pruning of roadside trees to a height of 8 feet above ground level. Approved herbicides would be applied to grass and brush species in order to maintain the integrity of fuel treatments over a longer period of time.

Project CO-26 Hammer Loop Fuel Break Maintenance – Phase III
The Hammer Loop Project was developed in 2008-2009 through funds provided by the Cottonwood Creek Watershed Group and the California Fire Safe Council. These treatment areas are rapidly redeveloping into dense stands of chemise and other chaparral species thus diminishing the protective capabilities of the original fuel treatments. This maintenance project would entail the retreatment of vegetation along the 4.1-mile fuel break to a width of 200 feet, resulting in 99 acres of newly maintained vegetation treatments. Proposed treatments would include a combination of prescribed fire in the form of broadcast burns along with mechanical treatments such as brush crushing, dozer piling and pile burning.

Project CO-27 Pattymocus Butte/Nelson Creek Fuel Break Maintenance
The Pattymocus Butte/Nelson Creek Fuel Break Maintenance Project would result in the completion of maintenance treatments along 1.7 miles of the original Pattymocus Fuel Break near Pattymocus Butte and Nelson Creek. Treatments would be completed to a width of 200 feet, or approximately 41 acres and include both mechanical and hand brush removal, pile burning along with herbicide applications.

Project CO-28 Pattymocus East/Fox Street Fuel Break Maintenance
This fuel break maintenance project would improve 3.3 miles of in place fuel treatments near Pattymocus Butte to a width of 200 feet, or roughly 80 acres, and would include the use of prescribed fire, mechanical and hand brush removal, pile burning, and herbicide applications.

Project CO-29 Deaton/Mills Fuel Break
Proposed maintenance treatments would be completed along an in-place fuel break north of the Platina Road/Highway 36W junction. Hand treatments would be completed along .08 miles of an in-place fuel break for a width of 200 feet, resulting in approximately 2 acres of improved fuel break infrastructure.

Project CO-30 Quail Ridge Fuel Break Maintenance
Proposed project work entails as-needed maintenance treatments including cutting and chipping along the ridgetop portions of Quail Ridge for a distance of 5.4 miles. In addition, herbicide applications would be made on specific parcels if approved by property owners. With treatments completed to a width of 200 feet, 131 acres of fuel break infrastructure would be maintained.

Project CO-31 Benson-Bassler Fuel Break Maintenance
This project would entail the completion of maintenance treatments along the in-place Benson-Bassler Fuel Break Maintenance project area. As proposed, fuel treatments would be completed along Benson Road for 5.4 miles and along Bassler Road for 3.5 miles, resulting in a total of 153 total treated acres. Fuel treatments would be the same as those completed during the original project's work program, including cutting and chipping of roadside vegetation and the application of herbicide as approved by project area landowners.

Project CO-32 Extension of RCDTC Fuel Break Efforts North from Platina to the Whiskeytown National Recreation Area
Over the past ten years, the RCDTC, Mendocino National Forest, Shasta-Trinity National Forest, Bureau of Land Management, CalFire, along with members of the Sunflower CRMP and other private landowners have completed fuels treatments throughout Tehama County's westside wildland area from just north of the Glenn County line to Highway 36W and the Shasta County line. At the same time the Western Shasta Resource Conservation District has completed various fuel treatments in western Shasta County near Platina, Igo, Ono, and Zogg Mine Road, among other westside areas.

In order to continue efforts in developing a chain of fuel breaks and other treatments north from Tehama County into western Shasta County, the RCDTC proposed the development of a programmatic collaborative fuels treatment effort with the Western Shasta RCD, Trinity County RCD, Watershed Research and Training Center, Tehama-Glenn Fire Safe Council, Shasta Fire Safe Council, Trinity County Fire Safe Council, the National Park Service, Shasta-Trinity National Forest, Bureau of Land Management, Crane Mills and Sierra Pacific Industries. The ultimate goal of this effort would be to create a continuous belt of fuel treatments from the community of Platina and Highway 36W to the Whiskeytown National Recreation Area where these efforts would connect with the significant amount of fuels project work being conducted on federal lands by the National Park Service. In addition to protecting communities and watershed resources north of the Tehama/Shasta County line, these fuel treatments would utilize and leverage the knowledge, funding, resources, personnel and in place fuel treatments of participating entities thus increasing the effectiveness and cost efficiency of large scale fuels management efforts. At the present

time, several projects proposed for the Middle Fork Cottonwood Creek watershed, the Bully Choop Fuel Break and Platina Road Fuel Break, could if connected to project work to the northwest become initial treatment areas for this large scale multi-watershed fire and fuels management effort.

REEDS CREEK PLANNING UNIT

(Project numbers refer to the Countywide Fire Plan Base Map)

Completed Projects in Reeds Creek Planning Unit

None Identified

In Progress Projects in Reeds Creek Planning Unit

None Identified

Planned/Proposed Projects in Reeds Creek Planning Unit

Project R-1 Extension of Pine Creek Road to Highway 36W

During development of the 2005 Tehama West Fire Plan, several residents in the Pine Creek Road area made the observation that this route does not currently connect Reeds Creek Road with Highway 36W. Consequently, approximately 150 area residents and firefighters have only one way in and out in the event of wildfire, which could result in delays or gridlock in the event of a traffic accident. In addition, the closest fire station is at the community of Dibble Creek. With Pine Creek Road currently inaccessible to Highway 36W, fire response crews must travel east to Baker Road and then travel west along Reeds Creek Road in order to access homes and properties along Pine Creek Road, which can significantly increase response times.

RED BANK CREEK PLANNING UNIT

(Project numbers refer to the Countywide Fire Plan Base Map)

Completed Projects in Red Bank Creek Planning Unit

None Identified

In Progress Projects in Red Bank Creek Planning Unit

None Identified

Planned/Proposed Projects in Red Bank Creek Planning Unit

None Identified

ELDER CREEK PLANNING UNIT

(Project numbers refer to the Countywide Fire Plan Base Map)

Completed Projects in Elder Creek Planning Unit

Project E-1a Eagle Peak Fuel Break - Phase I

A total of 387 acres of chaparral vegetation were treated using ball and chain techniques by RCDTC staff. The fuel break treatment area averaged 300 feet wide with some areas developed to 500 feet wide and others to 100 feet wide, depending on terrain. A straight dozer blade was used on top of main ridges riding 4-6 inches above the ground scraping off brush. Soil disturbance was largely confined to areas scuffed by the dozer tracks and where brush piles were burned. Brush fuel volume were significantly reduced by the dozer blade and tracks crushing and incorporating vegetation into the soil surface. Once vegetation treatments were completed, seeding of native grasses was implemented in order to provide wildlife habitat feed for various species. 150-foot "No Treatment Buffers" were established on both sides of Elder Creek's North, Middle and South Fork stream channels. All other wet and dry stream courses within the project area were protected by a 100-foot or break-in-slope "No Treatment Buffer." Seeps and other wet areas were protected by a 75-foot "No Treatment Buffer," and treatment areas were water barred to Forest Service and CalFire standards. Crushed brush areas are to be treated with a series of mosaic burns and other broadcast burning on lands adjacent to the project area through CalFire's Vegetation Management Program.

Project E-1b Eagle Peak Fuel Break Follow Up - Phase I

In addition to the use of prescribed burns, project work included a combination of grazing with sheep and goats in order to maintain the fuel break's effectiveness. In addition, one third of the fuel break area was seeded to native perennial grasses and annual clover in order to minimize erosion, assist in site conversion from brush to grass and to maintain the fuel break's effectiveness. Grass species used include a combination of native and improved non-native varieties approved by the Tehama County Agriculture Department.

Project E-2 Eagle Peak Fuel Break Phase II

At the south end of the overall Eagle Peak project area near where treatments terminate with County Roads 122 and M2, several short segments are located in areas where heavy equipment could not operate due to steep slopes, rocky terrain, and other impediments. The dollars provided for Phase II work were used to complete cutting and chipping operations in these areas in order to fully develop the protective properties of the overall fuel break. This work was completed utilizing RCDTC chipper and operator along with crew services provided under contract with the CalFire/Department of Corrections Salt Creek Conservation Camp.

Project E-3 Eagle Peak Fuels Reduction - Phase III

To reduce the threat of wildfire to the rural property owners who live above the town of Paskenta and to the surrounding natural resources, the Eagle Peak Fuels Reduction – Phase III project extended and complemented the 10-mile Eagle Peak Fuel Break that terminates at Eagle Peak west of the Paskenta community. The RCDTC completed an additional 2 miles (approximately 50 acres) of fuels treatments along this route by cutting and chipping chaparral vegetation adjacent to several wild land roads from Eagle

Peak to the junction of these roads with Tehama County Road 122 and Forest Route M-2. The main vegetation types treated included mixed chaparral and a small amount of montane hardwood-conifer. Project work included the use of CalFire Conservation Camp crews to cut brush and a number of small trees (10-inch dbh and under). This material was chipped and broadcast back onto the project site as stabilizing mulch utilizing the RCDTC's chipper and operator. Conservation Camp crews limbed and scattered larger trees (greater than 10 inches in diameter) up to 8 feet above ground height in order to further reduce ladder fuels. Project work occurred along these wildland roads to a maximum width of 75 feet on both sides of the road edge.

Project E-4 Raglin Ridge Fuel Break

This 5.5-mile, 300-foot wide (200 acres) fuel break was developed using ball and chain techniques. Project work created an east-west extension to the overall Eagle Peak Fuel Break – Phase I described above and was developed with cooperation between the RCDTC, Sunflower CRMP, and CalFire.

Project E-5 Crane Mills Raglin Ridge Fuel Break

Project work was developed by Crane Mills in order to create a shaded fuel break or defensible space in the Raglin Ridge area to reduce the potential for wildfires and the damage they might cause. Project work entailed the following standards based upon regulations found in the California Forest Practices Act related to Shelterwood Preparation:

- At least the following basal area of seed trees per acre which are 18 inches dbh or greater shall be retained: (1) thirty square feet basal area on Site I, II and III lands and (2) twenty-four square feet basal area on Site IV and V lands. The seed trees must be of full crown, capable of seed production and representative of the best phenotypes available in the preharvest stand.
- No point within the logged area shall be more than 100 feet from a seed tree.
- Seed tree species shall be specified in the plan by the Registered Professional Forester.
- At least 125 square feet of basal area per acre on Site I lands, 75 square feet of basal area per acre on Site II and III lands, and 50 square feet of basal area per acre on Site IV and V lands shall be retained.
- The minimum stocking standards of 14 CCR § 912.7(b)(1) [932.7(b)(1), 952.7(b)(1)] shall be met immediately upon completion of operations. Within six months following completion of work described in the plan, a report of stocking shall be filed as stated in PRC § 4587.

Project E-6 Rancho Tehama Fuel Treatments

Based upon discussions between RCDTC staff, the Tehama-Glenn Fire Safe Council Coordinator and CalFire Tehama-Glenn Unit personnel, it was determined that fuel treatments were needed along roads within and surrounding the Rancho Tehama development. This rural community is located approximately 15 miles west of Interstate 5 at Corning and has a population of approximately 1,406 residents. The development covers an area of roughly 21.5 square miles and has a population density of 66 residents per square mile. Now completed, this vegetation treatment project reduces the threat of wildfire faced by rural private property owners living along various roads within the Rancho Tehama community.

Project work entailed roadside fuel treatments to 75 feet on both sides of the road rights-of-way within the community. Approximately 6.5 miles of community roads were treated at strategic locations in order to

maximize the area protected from wildfire. Vegetation treatments included cutting and chipping of brush, along with removal of small trees 6 inches dbh and less. Those trees 6 inches dbh and greater were pruned to a height of 8 feet above ground level or roadway surface to further reduce ladder fuels. If approved by landowners, appropriate herbicides were applied to cut areas in order to increase the effectiveness and long term sustainability of treatments. Project work focused on treating vegetation near structures throughout more developed portions of the community and then on less developed areas. The width of these fuel treatments varied according to the needs of landowners. In addition to fire protection, vegetation treatments completed in connection with this project are expected to improve access and egress by local landowners and firefighting personnel. They are also expected to greatly improve sightlines for motorists using community roads on a daily basis. All project work was completed by the RCDTC.

Project E-7 Pellows Road Maintenance and Improvement Project

This construction project entailed the replacement of 20 undersized or inoperable culverts and related drainage infrastructure along Pellows Road between Tehama County Road M-2 to the south and Colyear Springs Road to the north. At the time of their replacement, these drainage features were ineffective at directing water off the road surface and out of the road prism. As a result, head cutting, surface erosion of the roadway, and erosion of adjacent banks was occurring. These deteriorating road conditions impacted the ability of firefighting forces to quickly access a large portion of southwestern Tehama County range and chaparral lands. Current road conditions were also impacting water quality through the introduction of road related sediments into the Elder Creek watershed system. Primitive rock crossings at Elder Creek's North, Middle, and South forks were refurbished in order to improve water quality and access during those times of the year when streams were flowing. Project funds were also provided to CalFire related to road grading in connection with project work and an additional year of road maintenance treatments. With project work including the follow up grading completed, CalFire will continue with their intermittent program of grading and maintenance work using internally generated sources of funding. Project funding for construction work and initial grading were provided by the RCDTC with labor provided by Sunflower CRMP members.

Project E-8 Top of the World Fuel Breaks

Project work was developed by Crane Mills as shaded fuel breaks or defensible spaces in multiple areas of western Tehama County between 2005 and 2011 in order to reduce the potential for wildfires and the damage they might cause. Project work spans multiple planning units, including Cottonwood-Beegum Creeks, Thomes Creek, and Elder Creek Planning Units. Project work entailed the following standards based upon regulations found in the California Forest Practices Act related to Shelterwood Preparation:

- At least the following basal area of seed trees per acre which are 18 inches dbh or greater shall be retained: (1) thirty square feet basal area on Site I, II and III lands and (2) twenty-four square feet basal area on Site IV and V lands. The seed trees must be of full crown, capable of seed production and representative of the best phenotypes available in the preharvest stand.
- No point within the logged area shall be more than 100 feet from a seed tree.
- Seed tree species shall be specified in the plan by the Registered Proferssional Forester.
- At least 125 sq. ft. of basal area per acre on Site I lands, 75 sq. ft. of basal area per acre on Site II and III lands, and 50 sq. ft. of basal area per acre on Site IV and V lands shall be retained.
- The minimum stocking standards of 14 CCR § 912.7(b)(1) [932.7(b)(1), 952.7(b)(1)] shall be met immediately upon completion of operations. Within six months following completion of work

described in the plan, a report of stocking shall be filed as stated in PRC § 4587.

Herbicide applications were completed in 2015 and 2016.

In Progress Projects in Elder Creek Planning Unit

Project E-9 Eagle Peak Lookout Annual Maintenance and Improvement

On a yearly basis, maintenance and improvement work is completed along the access road to Eagle Peak Lookout which intersects County Road 122 near Patton Mill. This work is implemented by CalFire Tehama-Glenn Unit Heavy Equipment Operators in connection with yearly trainings completed in the spring prior to fire season.

Planned/Proposed Projects in Elder Creek Planning Unit

Project E-10 Elder Creek Assessment

Based upon discussions with Mendocino National Forest personnel the need for a watershed assessment of the Upper Elder Creek Watershed would be of significant benefit to that agency's efforts in maintaining fuels and watershed resources within this significant westside watershed and major tributary to the Sacramento River. The Elder Creek system includes the three forks of Elder Creek along with a number of smaller tributaries and includes 96,350 acres of grasslands, oak woodlands, chaparral, and low elevation conifer forests. As proposed, this analysis would be completed using the U.S. Forest Service Region 5 format. With such analysis completed, Mendocino National Forest resource personnel would be able to develop fuels and other watershed improvement projects. Such future U.S. Forest Service efforts within the newly analyzed Upper Elder Creek Watershed would require the development of federal NEPA environmental analysis documents that analyze the impacts of project work. This analysis could also be used by the RCDTC when developing project proposals for federally funded fuels work outside but adjacent to Mendocino National Forest lands. As a result of developing a watershed assessment, both federal and private land managers would accrue significant benefits.

Project E-11 Rancho Tehama Recommended Improvements

Formally Developed Safety Zone at the Rancho Tehama Airport

The requirements for safe flight operations have resulted in the development of a very fire safe environment in around the Rancho Tehama Airport. For the most part, airport structures have been constructed of fire safe materials, away from trees and brush. In addition, grass fuels in the area would at best support only very low intensity fires. In addition, there are numerous access points to these facilities, allowing fast and efficient access by firefighters and other emergency personnel and equipment. Given these factors, the

Rancho Tehama community airport could provide a large safety zone that would be accessible for many residents located over a large portion of the development.

Rancho Tehama Community Fire Safe Plans

Rancho Tehama contains an array of population densities, fuels conditions, and environmental characteristics. The original Tehama West Fire Plan describes the fire and fuels conditions of western Tehama County on a landscape basis and is not detailed enough to address wildfire and fuels conditions at the scale of a rural community or subdivision. In addition, the significant number of residents living in the area have a number of fire related concerns as well as suggestions for their mitigation that can most efficiently be addressed in a community level fire plan. Consequently, it is recommended that a community fire plan be developed specifically for the Rancho Tehama development and the immediately surrounding area. Tactical fuel breaks, road clearances, evacuation routes, and safe areas could be developed with extensive community input in a detailed community fire safe plan which could be incorporated into this planning document as an appendix at a later date.

Rancho Tehama Water Tanks

The community of Rancho Tehama has limited water sources and water storage facilities available for use when wildfires occur. The Rancho Tehama Water Tank project entails the installation of cisterns in which water for firefighting can be stored. Two tanks were installed during 2001 and a 10,000-gallon tank in 2004. Additional tank locations are currently being identified.

Installation of Piping on 10,000 Gallon Water Tank at Yolo Court

At the present time, a 10,000-gallon water tank is located near Yolo Court on the west side of the Rancho Tehama area. Currently, the tank has no piping to a down slope fire hydrant and cannot be used other than to fill fire equipment parked immediately next to it. This proposed project would entail the plumbing of an outlet line to a fire hydrant located at the corner of Yolo Court and Humboldt Drive as well as the installation of a high volume fill spout on the tank itself. With these improvements, rapid dispersal of water could be accomplished both at the tank as well as down slope at the hydrant.

Reconstruction of Glove Lake Dam and Repair of Adjacent Well and Pump Equipment

The dam at Glove Lake near the intersection of Stagecoach Road and Oak Ridge Road was breached and washed out a number of years ago. In addition, a well and pump located at the site, once used to charge a hydrant at that intersection, is in disrepair. It is recommended that a study be conducted in order to determine the feasibility and cost effectiveness of reconstructing Glove Lake dam as well as reconstructing and retrofitting the pump and well facility as a means to provide adequate water pressure to the adjacent hydrant.

Installation of Pump at the Yuba Road Water Tank

The water tank at the top of Yuba Road has no pump supply, and the piping from the tank to a hydrant near the foot of Yuba Road is unable to withstand the head pressure when the valves are opened. When filled by a water truck, the tank could be used as a ready source of water supply to a pumper. The Rancho Tehama Association should consider obtaining cost estimates for the installation of a pump and plumbing infrastructure sufficient to supply adequate water supply to the hydrant on Yuba Road.

Repair of Pump and Piping Systems at Beaver Lake

Beaver lake, located between Wagon Wheel Road and Hillcrest, is not a regularly maintained water body. At the present time, it has a pump and piping system that has not operated since a fire destroyed the hydrant and switchbox. The RTA should consider obtaining cost estimates for the installation of a new pump and piping system at Beaver Lake

Assessment of the Boot, Border, and Mule Containments

At the present time, there is no current assessment of the condition and operability of water supply infrastructure at the Boot, Border, and Mule Containments. At a minimum, Rancho Tehama Association personnel could inspect these facilities. If repairs are needed, cost estimates could be obtained for repair and retrofitting of water delivery infrastructure.

Traffic Congestion at Street Intersections

A significant traffic bottleneck is found at the intersection of Stagecoach Road and Rancho Tehama Road. At this location, these two major east-west arteries out of Rancho Tehama merge into a single easterly exit. In the event of a large wildland fire within the community's boundaries, gridlock could occur, stifling attempts by residents to leave and fire personnel to enter. Also of significance is the lack of north-south exits out of the urban area, which exacerbates traffic problems in the event of an emergency. To mitigate these shortcomings in the community's road network, individual residents, community groups, the Tehama-Glenn Fire Safe Council, and the RCDTC could consider lobbying the Tehama County Public Works Department for funds to:

- Extend Rancho Tehama Road west so that that it intersects Lowrey Road, thus providing an alternate route out of the Rancho Tehama Community in the event of a large wildfire or other emergency.

- Construct a new alignment for Stagecoach Road which would allow direct access to Boggs and Champlin Road and thus a southerly escape route out of the community.

- Extend Lariat Loop south so that it intersects with Boggs and Champlin Roads, thus providing yet another route out of the Rancho Tehama area.

- Extend Tulare Road to Gallatin Road, which would provide a second westerly escape route out of the Rancho Tehama community.

- Extend Fawn Lane near the community's southern limit to Boggs and Champlain Roads.

- Replace the Humboldt Bridge in order to assure residents within the most northwest corner of the community have access to Rancho Tehama Road and an escape route out of the community.

Project E-12 Tatham Ridge Fuel Break and Thinning

The goal of this project was to reduce stand density and understory vegetation on both Mendocino National Forest and Crane Mills lands through the development by Crane Mills of a fuel break along Tatham Ridge and thinning within plantations located in the project area. As a result of these efforts, fuel volumes will be reduced and both fire behavior and vegetation conditions modified thus reducing the impact of wildfire

when it occurs. Vegetation treatments include a combination of mastication and thinning of small, poorly developed trees that not only hinder the growth of healthier individuals, but greatly add to the volume of understory fuels within the project area. A total of 272 treatment acres were included in the project area.

THOMES CREEK PLANNING UNIT

(Project numbers refer to the Countywide Fire Plan Base Map)

Completed Projects in Thomes Creek Planning Unit

Project T-1 Glenn County Resource Conservation District Glenn County Community Wildfire Protection Plan

During 2010 and 2011the RCDTC working under contract with the Glenn County Resource Conservation District completed fire planning analysis and a plan document which analyzed fire and fuels conditions within Glenn County's State Responsibility Area and Federal Responsibly Area including those within that portion of the Thomas Creek Watershed located in Glenn County. In addition, fire and fuels management conditions along the Sacramento River corridor, the Lower Stony Creek Riparian corridor and the Sacramento National Wildlife Refuge were described and improvements to current infrastructure recommended. The development of this document was recognized in the original Tehama West Fire Plan given the extensive interface of County lines in the westside area that artificially divide the area's fire prone landscapes. In addition, a number of projects proposed for completion within the Thomes Creek Planning Unit inside Tehama County connect with features in Glenn County. Consequently, in order to develop logical project areas, that protect resources, considerable collaboration is needed between the Resource Conservation Districts of both counties and other fire management entities, which this document hopefully promotes.

Project T-2 Crane Mills Fuel Break

This 109-acre shaded fuel break project was completed through a combination mastication treatments along with thinning and chipping of small trees and understory brush species. The mechanical treatments were limited to shallow slopes and sites away from riparian areas and other sensitive sites. These untreated areas currently reduce the effectiveness of project work in reducing the spread and impact of wildfire within the Tatham Ridge area of western Tehama County. In order to improve the value of this project, the RCDTC partnered with Crane Mills in the development and future implementation of the Project T-5 Log Springs Ridge Fuel Break Improvement Project described below in order to improve the usefulness of the Crane Mills Fuel Break effort.

Project T-3 Timber Ridge Fuel Break

Project work was developed by Crane Mills as a shaded fuel break or defensible space along Timber Ridge in order to reduce the potential for wildfires and the damage they might cause. Project work entailed the following standards based upon regulations found in the California Forest Practices Act related to

Shelterwood Preparation:

- At least the following basal area of seed trees per acre which are 18 inches dbh or greater shall be retained: (1) thirty square feet basal area on Site I, II and III lands and (2) twenty-four square feet basal area on Site IV and V lands. The seed trees must be of full crown, capable of seed production, and representative of the best phenotypes available in the preharvest stand.
- No point within the logged area shall be more than 100 feet from a seed tree.
- Seed tree species shall be specified in the plan by the Registered Proferssional Forester.
- At least 125 sq. ft. of basal area per acre on Site I lands, 75 sq. ft. of basal area per acre on Site II and III lands, and 50 sq. ft. of basal area per acre on Site IV and V lands shall be retained.
- The minimum stocking standards of 14 CCR § 912.7(b)(1) [932.7(b)(1), 952.7(b)(1)] shall be met immediately upon completion of operations. Within six months following completion of work described in the plan, a report of stocking shall be filed as stated in PRC § 4587.

Herbicide applications were completed during the fall of 2017.

Project T-4 RCDTC Patton Mill Fuel Break

Fuel treatments included hand cutting and chipping or piling and burning of brush and small trees along the road segments for a distance of 100 feet on both sides of the roadway (approximately 84 acres). The project area is generally located on a variety of terrain types, with slopes ranging from 0 to 50%. The RCDTC provided a chipper and operator through its Chipper Services Program to process the vegetation and contracted with the CalFire/CDC Salt Creek Conservation Camp, which provided crew labor to cut and handle brush, feed the chipper, and conduct pile burning. Some small trees 10 inches dbh or less were removed for fuel reduction purposes. Trees large than 10 inches dbh were limbed by crews to a height of 10 feet above ground level. The Patton Mill Fuel Break complements the current system of fuel treatments in southwestern Tehama County that have been completed by the RCDTC, CalFire, and the Mendocino National Forest. These treatments also improve ingress and egress by fire service personnel and equipment in the event of a fire; creates defensible space and allows firefighters the ability to control wild fires and prescribed burns. In addition, project work improves overall fire safety within the Mendocino National Forest and protects historical/functional resources such as the Eagle Peak look-out and Patton Mill site. Finally, this fire management infrastructure will protect communities and homes in lowland areas along with those in the surrounding watershed. Project funding was provided by the U.S. Forest Service thought the Tehama County Resource Advisory Committee.

Project T-5 Crane Mills Patton Mill Fuel Break

Project work was developed by Crane Mills as a shaded fuel break or defensible space in the Patton Mill area between 2005 and 2011 in order to reduce the potential for wildfires and the damage they might cause. Project work entailed the following standards based upon regulations found in the California Forest Practices Act related to Shelterwood Preparation:

- At least the following basal area of seed trees per acre which are 18 inches dbh or greater shall be retained: (1) thirty square feet basal area on Site I, II and III lands and (2) twenty-four square feet basal area on Site IV and V lands. The seed trees must be of full crown, capable of seed production and representative of the best phenotypes available in the preharvest stand.
- No point within the logged area shall be more than 100 feet from a seed tree.

- Seed tree species shall be specified in the plan by the Registered Professional Forester.
- At least 125 sq. ft. of basal area per acre on Site I lands, 75 sq. ft. of basal area per acre on Site II and III lands, and 50 sq. ft. of basal area per acre on Site IV and V lands shall be retained.
- The minimum stocking standards of 14 CCR § 912.7(b)(1) [932.7(b)(1), 952.7(b)(1)] shall be met immediately upon completion of operations. Within six months following completion of work described in the plan, a report of stocking shall be filed as stated in PRC § 4587.

Herbicide maintenance treatments were completed during the fall of 2016.

In Progress Projects in Thomes Creek Planning Unit

Project T-6 Log Springs Ridge Fuel Break Improvement Project

This project was recently selected for funding by the US Forest Service through the Tehama County Resource Advisory Committee (RAC). The overall goal of this effort is to improve and expand upon in-place fuel break infrastructure that has been developed on private timberlands owned by Crane Mills. The additional fuel break work will improve the ability of this fire management infrastructure to break up the continuity of wildland fuels. It will also improve the ability of firefighting personnel to conduct wildfire initial attack and control operations on fires originating from the east that threaten Mendocino National Forest lands or originating from National Forest lands threatening residents near or on the valley floor. Included among developed areas that will be protected by this project is the community of Paskenta, rural ranches west of Paskenta, development along High Flat Road, and the Salt Creek Conservation Camp. It is also anticipated that this and other already in-place fuel breaks in the area will be used as anchor points from which prescribed burns or other fuels management efforts can be conducted. The Log Springs Ridge Fuel Break Improvement Project will complement fuel reduction work currently being developed by the Mendocino National Forest on the western flank of the project area as well as mastication work that has been completed by that agency to the southeast of the project area. This fuel break expansion and improvement effort will also connect with the future USFS Whiskey Restoration Project to be located immediately east of the project area.

More specifically, this fuel break project will improve and expand a two-mile segment of the Crane Mills Fuel Break described above along Log Springs Ridge located on Crane Mills timberland adjacent to the Mendocino National Forest. Project work will include hand treatments (cutting and chipping, or piling and burning) of roadside fuels including brush and small trees along Tehama County Road M-9. Scattered fuel treatment areas will be completed to a maximum width of 150 feet on both sides of the road edge or up to 200 feet on one side of the road edge, depending upon slope, resulting in approximately 44 acres of fuel treatments. Some small trees 10 inches dbh and under will be cut and chipped or will be piled and burned. Those trees greater than 10 inches dbh will have limbs removed to 10 feet above ground level in order to prevent ground fires from spreading into tree crows.

These hand treatments will be in addition to the mechanical mastication treatments that have already been completed by Crane Mills and will focus on untreated areas within the fuel break where vegetation could not be mechanically treated due to steep slopes or proximity to streams. The project area is generally located on a variety of terrain, with slopes ranging from 0 to 50%. Hand treatments are considered to be very cost effective in this situation. The RCDTC will provide a chipper and operator through its Chipper Services operation to process the vegetation. The RCDTC will contract with the CalFire/CDC Salt Creek

Conservation Camp, which will provide crew labor to cut and handle brush, feed the chipper, and conduct pile burning. Herbicide maintenance treatments will be completed in the fall of 2017.

Project T-7 2017 Crane Mills Fuel Break

This 160-acre fuels treatment project was developed along a north-south trending ridgetop in order to provide a significant area in which firefighters can control oncoming wildfire moving upslope from steep canyons that surround the ridgeline.

Proposed Projects in Thomes Creek Planning Unit

Project T-8 Whiskey Fuel Treatment Project

The Mendocino National Forest Grindstone Ranger District proposes to thin plantations and small diameter trees, construct multiple fuel breaks, and conduct road brushing activities in the vicinity of the 2008 Whiskey Fire over an area of approximately 360 acres. Fuel breaks will be constructed along major roads in the area and will assist in fire suppression activities from fires originating from the east that may threaten National Forest or private lands, or from the west that would threaten residents and infrastructure near the valley floor, including the towns of Paskenta and Newville along with the Salt Creek Conservation Camp. The fuel break would also complement the current system of fuel treatments on federal and private lands, breaking up the continuity of wildland fuels. The proposed project area is located approximately 7 miles southwest of the town of Paskenta within the watersheds of Bennet Creek, Bowers Creek, and Browns Creek, which are tributaries to Thomes Creek, and the watershed of Salt Creek, which is a tributary to North Fork Stony Creek.

Project T-9 Four Beetles Forest Health and Habitat Improvement Project

The project is being proposed as a management response to forest health decline, in compliance with the 2014 Farm Bill. In addition to fuels management, this project is being developed in order to improve wildlife and fish habitat along with conditions for rare plants. In addition, forested areas within two watersheds are significantly impacted by tree mortality from insects and disease. As initially proposed, the project area includes Tatham Ridge, Howell Saddle, Kenny Ridge, Log Springs Ridge, Horse Trough Ridge, Daves Ridge, Harvey Springs Ridge, Log Springs Ridge and Plaskett Meadows.

Project T-10 Connection of Patton Mill Fuel Break with Whiskey Fuel Treatment Project

At the present time, the RCDTC has completed approximately 50 miles of mechanical and hand developed fuel treatments between Patton Mill due west of Paskenta north to the community of Platina located along Highway 36W (see Tehama West Community Wildfire Protection Plan and Tehama East CWPP Base map). It is recommended that fuel treatments continue south into Thomes Creek Canyon in order to connect these with the Mendocino National Forest's proposed Whiskey Fuel Treatment Project located on the south side of Thomes Creek watershed. Making this connection is complicated by the fact that much of the area in

Thomes Creek canyon has been classified as a federal Roadless Area which limits the types of fuel treatments that can be completed. The RCDTC is working with Mendocino National Forest fire and fuels management personnel and other stakeholders to develop potential prescribed fire projects within these formally established federal Roadless Area in the Thomes Creek watershed. Based upon discussion with Forest Service personnel, such non-impactive fuel treatments, if appropriately implemented, could be used as an alternative to more impactive mechanical treatments inside Roadless Areas as a means to connect in-progress vegetation treatments being completed in the Patton Mill and Tatham Ridge area with future fuels projects to be completed by the Forest Service and Crane Mills along Hall Ridge and Log Springs Ridge to the south.

TEHAMA EAST COMMUNITY WILDFIRE PROTECTION PLAN COMPLETED, IN PROGRESS, AND PLANNED FIRE AND FUELS MANAGEMENT PROJECTS

SACRAMENTO RIVER CORRIDOR PLANNING UNIT

(Project numbers refer to the Countywide Fire Plan Base Map)

Completed Projects in Sacramento River Corridor Planning Unit

Project S-1 Project Work Completed by the US Fish and Wildlife Service, North Central Valley

Fire Management Zone

During development of the 2008 Tehama East Community Wildfire Protection Plan, US Fish and Wildlife Service (USFWS), North Central Valley Fire Management Zone personnel provided a list of fire and fuels management projects to the RCDTC and the Tehama-Glenn Fire Safe Council for inclusion into the CWPP document. The majority of USFWS Wildland Urban Interface treatments have been focused on reducing nonnative vegetation and hazardous fuels as well as managing habitat. The mechanical fuel treatments that have been completed include hand thinning, chipping, mowing, disking, and grazing. Prescribed fire and grazing are often the preferred management tools (depending on habitat type), as they provide many habitat benefits as well as hazardous fuels reduction. A majority of the prescribed fire activities on USFWS lands follow minimum impact strategies so as to reduce impacts to sensitive/protected plants, fish, and wildlife. The following are projects that were proposed in the 2008 Tehama East CWPP and that have now been completed:

- 07-SAC-CNFH Piles—Two acres of thinning around structures and pile burning at Coleman National Fish Hatchery Complex for approximately $5,560

- 07-SAC-Sacramento Rx—287 acres of prescribed burning at the Sacramento National Wildlife Refuge Complex (NWRC) for hazardous fuels reduction and habitat management for approximately $48,480

- 07-SAC-Sac Complex- CCC Project— 30 acres of mechanical work on USFWS and private lands in the WUI for approximately $31,000

• 07-SAC Complex- Tribal & CSUC Fuel Reduction Projects— 50 acres of fuels reduction, vegetation management, and research (treatment options for native plant and cultural resource management) on USFWS and private lands for approximately $50,000

• 07-SAC-Cmplx-RFD Partnership Defensible Space Projects— 30 acres of mechanical treatments on USFWS and private lands in the Wildland Urban Interface for approximately $30,000

• 07-SAC-Sac River Rx— 79 acres of prescribed burning on the Sacramento NWRC for hazardous fuels reduction and for fish and wildlife habitat management for approximately $13,720

• 07-SAC-Sac River WUI— 2,248 acres of mechanical fuel break maintenance (mowing, disking, and thinning) and grazing for approximately $99,500

• O70SAC-RBFO-RX— 21 acres of prescribed burning around properties adjacent to roads, railroad, and facilities to reduce hazardous fuels for approximately $6,740

Project S-2 Rio Vista Tract Prescribed Burn

A 23-acre prescribed burn was completed by the US Fish and Wildlife Service for the Rio Vista Tract of the Sacramento River National Wildlife Refuge located just south of Woodson Bridge State Park. The primary goal of this project was to reduce hazardous fuels and nonnative invasive species.

Project S-3 Sacramento River National Wildlife Refuge Hazardous Fuel Break

The Sacramento River National Wildlife Refuge (NWR) was established to preserve, restore, and enhance riparian habitat for threatened and endangered species, breeding and wintering migratory birds, anadromous fish, resident species, and native plants. The refuge is managed to maintain, enhance and restore habitats for these species. Riparian forests are being restored by converting flood prone agricultural lands along the Sacramento River in cooperation with The Nature Conservancy, River Partners, and local farmers. The restored lands are highly susceptible to fires in the summer and pose a threat to adjacent homes. This project entailed the use of California Conservation Corps (CCC) crews to complete hazardous fuels reduction projects near Wildland Urban Interface areas of the Sacramento River NWR. Crews used chainsaws to thin vegetation along established fuel breaks and emergency egress routes. Limbs of larger trees left on site were chipped and material spread across the site in order to create a protective mulch for treatment areas. Elderberry plants were flagged and protected from treatment activities. Now completed, these treatments will help protect structures and critical endangered species habitat from wildfires burning on the refuge properties.

Project S-4 East Sand Slough Vegetation Management and Fuels Reduction

In June 2013 wildfire burned within a significant portion of the East Sand Slough channel on the north and south sides of the Antelope Boulevard Bridge adjacent to Interstate Five near Red Bluff. The fire consumed a considerable amount of dead and dying vegetation that had succumbed to the dewatering of the slough since the removal of Lake Red Bluff. A significant amount of desiccated vegetation remained, which created a considerable risk of wildlife to the surrounding community as well as I-5 traffic. Project work

consisted of felling, bucking, chipping, and piling treated brush and trees; developing fire lines around vegetation piles for future burning; and bucking large trees into designated lengths and leaving them on site as woody debris for wildlife habitat. In completing these treatments, fire safety and aesthetic conditions within the project area were greatly improved. Project work was completed through a partnership that included the RCDTC (which provided project and field personnel), CalFire North Region Training Operations (whose faller trainees fell standing dead trees), and CalFire/Ishi Conservation Camp and Tehama County inmate crews (who cut and stacked brush and fed the RCDTC's chipper). Crew members also created wildlife habitat piles that remained on site after project work was completed. In addition to managing the project, RCDTC field personnel provided chipping equipment to process live and dead vegetation in areas where smoke from pile burning would prove detrimental to public safety and public health. A majority of project funding for this effort was provided by the Red Bluff City Council along with financial contributions of the Durango RV Park. Labor match was provided by the RCDTC.

In Progress Projects in Sacramento River Corridor Planning Unit

Project S-5 East Sand Slough Vegetation Management

In late 2016, RCDTC's East Sand Slough Vegetation Management project was selected for funding by the Tehama County Resource Advisory Committee (RAC) with implementation of project work anticipated to be initiated in mid-2017. This project will continue efforts of the Tehama County RCD in controlling flammable live and dead fuel along with flammable invasive plants within the East Sand Slough north of Antelope Boulevard and due east of Interstate 5 near Red Bluff. Project work would entail the removal and reduction of biomass along with chemical treatment of various invasive species located on lands owned by the City of Red Bluff. Project work would also include cutting, chipping, and piling and burning of downed trees and ground fuel generated during the 2013 East Sand Slough Fire.

Planned/Proposed Projects in Sacramento River Corridor Planning Unit

Project S-6 Surry Village Fuels Reduction Project

In order to reduce the direct threat of wildfire to the Surrey Village community and scattered individual home sites along the Sacramento River, this project would maximize wildfire protection to these developed areas by creating shaded fuel breaks along roads located within and surrounding the development. This portion of Tehama County contains contiguous stands of oak woodlands which in a number of areas have developed an understory of grass and brush species, including manzanita. As a result, fire hazard within the community is rated as high. Project work would entail hand treatments along paved and unpaved portions of roads within the developed community. California Department of Corrections Conservation Camp crews would be used to conduct thinning treatments as well as to pile and burn removed vegetation. Trees having a dbh of 10 inches and under plus oak trees 6 inches dbh and under would be removed. Trees of all species would be trimmed to a height of 8 feet in order to reduce the threat of ground fire moving into tree crowns. Cut material would be chipped and broadcasted back onto treatment areas as a protective mulch wherever pile burning would be unfeasible, would threaten fire safety personnel, or would pose a public health risk from smoke generation. Once these treatments were completed, state and county approved herbicides would be applied in order to provide long term control of grass and brush species. Treatment practices at all sites would be based upon the requirements of individual property owners. Project work would occur to a width of 100 feet on both sides of road edges.

BATTLE CREEK-MANTON PLANNING UNIT

(Project numbers refer to the Countywide Fire Plan Base Map)

Completed Projects in Battle Creek-Manton Planning Unit

Project B-1 Gray Gulch Mechanical Treatment Project

The 4,439-acre Gray Gulch Mechanical Treatment Project is being implemented by the Lassen National Forest in order to improve fire and fuels management conditions as well as improve habitat and ecological functioning within a large portion of the Battle Creek watershed on federal lands. In general project work entails plantation thinning and establishment of a Defensible Fuel Profile Zone. To accomplish these goals, project work will entail a combination of commercial, pre-commercial, and area thinning in order to reduce fuel loading. In addition, habitat restorations such as riparian zone and aspen stand improvements are to be implemented.

Project B-2 A-Line Road/F-Line Road/Road 90A Shaded Fuel Break

This large-scale fuels management project entailed the development of an 18-mile-long fuel break along three forest roads managed by Sierra Pacific Industries located north of Highway 36E approximately 4 miles northeast of the Ponderosa Sky Ranch, 8 miles southeast of the Manton community and six miles west of Mineral. Project work entailed the use of tracked mastication equipment to cut and chip brush along with small conifer and deciduous trees having a diameter of 10 inches and under and oak species 6 inches dbh and under. These treatments were conducted to a distance of 150 feet on both sides of the

roadway. Along those portions of the road on steep slopes or that were otherwise unsuitable for equipment, hand cutting and chipping was completed by the RCDTC along with crews provided by the CalFire/CDC Ishi Conservation Camp. The project's total treatment area was roughly 654 acres. Funding for project implementation was provided by the U.S. Forest Service and Sierra Pacific Industries. The Sierra Nevada Conservancy provided funding for required environmental analysis and project development. Project work was managed by RCDTC personnel.

Project B-3 Mineral Roadside Fuel Reduction Project

The Mineral Roadside Fuel Reduction project was completed in and around the community of Mineral. The objective of this project was to reduce fuels around developed sites within the community and surrounding area. Now completed, project work provides a defensible space around homes, improve access roads and complements the Mineral Community Fuel Break project the Lassen National Forest has implemented over the past few years. Mineral Roadside Fuel Reduction Project treatments consisted of hand cutting and chipping small trees and brush, along 5 miles of roads to a width of 75 feet on both sides of the roadway (91 acres). In a number of instances, treatments involved removing some trees and brush on private property, along the boundary of the Lassen National Forest and adjacent property owners. The RCDTC provided a chipper and operator through its Chipper Services operation to process the vegetation and contracted with the CalFire/CDC Ishi conservation Camp to provide crew labor related to cutting and handling of bush that was fed into the chipper.

Project B-4 Forward Road Fuel Break Project

This 8-mile, 200-foot wide (193 acres) shaded fuel break was developed in order to reduce the threat of wildfire near the community of Manton as well as to the scattered residences along the road. Project work occurred along that portion of the road between Manton's urban core and the Forward Mill site which is located approximately 6.5 miles east of Manton. Within this Wildland Urban Interface area near Manton are scattered stands of mixed chaparral along with large contiguous stands of extremely dense, suppressed, mixed conifer and Ponderosa Pines, much of which contains a dense understory of brush species. Specific project work included the use of CalFire/CDC Conservation Camp crews, who cut brush and small trees (6-inches dbh and under). This material was then chipped and broadcast back onto the project site utilizing the RCDTC's chipper and operator. Camp crews also limbed larger trees (greater than 6-inches dbh) up to 8 feet above ground or roadway surface in order to further reduce ladder fuels.

Project work for this effort began shortly before the 2012 Manton Fire which passed through a portion of the project's treatment area. Work continued on the unburned portion of the fuel break shortly after the fire, and herbicide was applied to both the burned and unburned portions of the project area. In addition, adjacent timberlands were replanted to conifer species and treated with herbicide in order to hinder the regrowth of brush. Through the combined efforts of the RCDTC and local timberland owners, a large area of managed vegetation has been created that will greatly hinder the movement of fire during wildfire events. In addition, the roadside treatments will improve access and egress for local landowners and firefighting personnel on a long-term basis. Of equal importance, they have improved the road as a significant fuel break between upslope forests and chaparral/grasslands surrounding the Manton and Forward Mill communities. Finally, the fuel break created by these treatments will reduce the threat of roadside ignitions attributable to significant traffic flows along Forward Road, Ponderosa Way, and the Manton area, as a whole.

Project B-5 CalFire Forward Road Fuel Break (Completed by CalFire in Cooperation with the RCDTC)

Additional fuel treatments were completed along a 1.5-mile segment of Forward Road near its intersection with Ponderosa Way. The specific objectives of this project were to reduce surface and ladder fuel loadings and modify fuel spacing arrangement, density, and type within the project area in order to create a more fire-safe landscape. All work was conducted by CalFire/CDC Conservation Camp crews using hand tools and chainsaws. Hand crews developed the fuel break by cutting brush and removing live (10 inches dbh and under) and downed trees. The crews cut and piled excess fuels, and the piles were disposed of by pile burning. Preference for trees left within the fuel break was given to Ponderosa pine, Incense cedar, Douglas fir and Black oak. Trees to left on site (those with a diameter of 10 inches dbh and greater) had their branches pruned up to 8 feet above ground level resulting in a minimum live crown cover of 50%. The hand pruned vegetation was also placed in piles and burned.

Project B-6 Post Fire Treatments along Ponderosa Way between Manton and Rock Creek Roads

In the aftermath of the 2012 Manton Fire, large numbers of dead and dying trees remained along Ponderosa Way. As this vegetation deteriorated, it rapidly became a road and fire hazard to those residents rebuilding along that portion of the road between Manton Road and Rock Creek Road. Working in collaboration with CalFire/CDC Camp crews, the RCDTC completed falling and chipping of trees and other vegetation along the road that posed a threat to local residents. Project work was completed through a combination of labor contributions provided by CalFire/CDC Ishi Conservation Camp crews and with financial contributions provided by the RCDTC.

Project B-7 BLM Juniper Removal Projects

Juniper has begun to invade oak stands within the Bureau of Land Management (BLM) Bend Area of Critical Environmental Concern along Highway 36E to the north and south of Hog Lake, and infestations have also been identified on the BLM Sacramento FMU property just south of Battle Creek's main stem near the Coleman Fish Hatchery. In 2010, BLM and CalFire Conservation Camp crews treated approximately 190 acres of juniper-infested blue oak woodlands by cutting and piling stems with funding from the California Deer Association. In 2016, drought funding allowed the California Conservation Corps to aid in removal of juniper near Coleman Fish Hatchery. The goal of these projects was to reduce fire intensities under mature oaks in order to prevent crowning of regularly occurring grassfires, thus preventing the destruction of valuable oak woodland habitat.

Project B-8 Spring Branch Road Repair and Maintenance (Tehama County Public Works Department and BLM Initiated Project)

Working in cooperation with the Tehama County Public Works Department, the Bureau of Land Management completed repairs and graveled that portion of Spring Branch Road from the BLM parking lot at Jelly's Ferry Road to the agency's shooting range further east. A significant portion of the Battle Creek–Manton Planning fire planning unit's west side can be accessed in an emergency using Spring Branch Road although much of the roadway outside of this project area is in poor condition resulting in slow movement by firefighting equipment and other emergency vehicles. To improve emergency access, it

was recommended that the surface of Spring Branch Road be improved through grading and gravelling. With these improvements in place, not only will emergency access be improved, but the roadway will be developed into a more effective fire control feature for fast moving grass fires that occur frequently within this area.

Project B-9 Canyon View Loop Water Tank

Project work included the installation of water storage infrastructure along Canyon View Loop in order to provide sufficient fire suppression water near developed sites in the vicinity of Canyon View Loop, Ponderosa Sky Ranch, the Battle Creek Estates, and the Battle Creek Rod and Gun Club. The tank structure and installation was funded through the CalFire Vegetation Management Program.

Project B-10 Bear Cub Hand Thin

This Lassen National Forest project completed in 2004 entailed hand thinning, piling, and burning on Lassen National Forest lands within various Wildland Urban Interface areas in and around the Mineral community.

Project B-11 Battle Defensible Fuel Profile Zone

Completed in 2011, this Lassen National Forest project consisted of commercial and pre-commercial thinning. Fuel treatments included grapple piling and burning in various locations on the north and south sides of Highway 36E both east and west of the Mineral community.

Project B-12 Grey Gulch Service Contract

Completed in 2015, this project was a site preparation component to a larger Lassen National Forest fuels effort north of the Mineral Community. Project work entailed mastication and pre-commercial thinning techniques in order to reduce the density of brush and mixed conifer vegetation. All work was completed through the Lassen National Forest.

Project B-13 Plantation Gulch Defensible Fuel Profile Zone

This 2015 completed project consisted of commercial and pre-commercial thinning in mixed conifer stands north of the Mineral community. Work was completed through the Lassen National Forest.

In Progress Projects Battle Creek-Manton Planning Unit

Project B-14 Hazen Road/C-Line Fuel Break

This fire and fuels management project was developed on private timberlands in order to reduce the threat of wildfire that has the potential to impact public and private lands in and around the communities of Manton, Ponderosa Sky Ranch, Lyman Springs, and Mineral, along with developed sites including the Battle Creek Rod and Gun Club, Canyon View Loop, Lassen Lodge, and others located along the Highway 36E corridor. In addition to private timberlands and ranchlands, a large area of watershed resources within the Lassen National Forest and Lassen Volcanic National Park will be protected, along with a number of Bureau of Land Management parcels adjacent to Highway 36E. Fuel treatments completed in connection with this project will disrupt the continuity of wildland fuels and improve access and egress

for landowners, land managers, and firefighting personnel as well as improve roads within the project area as significant fuel breaks and defensible space from which fire suppression operations can be conducted.

In addition, approximately 9 miles of the original C-Line fuel break developed by CalFire during 2011 and 2012 was retreated in order to maintain its protective capabilities. Project work also extended this fuel break infrastructure an additional 3.5 miles to the northeast in order to connect it with another large fuel break, thus extending the network of fuel treatments located between the community of Manton and Highway 36E. Approximately 536 acres of wildland fuels were treated during expansion of the original fuel break and maintenance of in-place treatments. Project work was completed using CalFire/California Department of Conservation Camp crews, who cut brush and thinned stands of roadside conifers and oaks (conifers 10 inches dbh and oaks 6 inches dbh and under) in order to improve spacing of desired trees and decrease unnatural levels of ladder fuels. Cut vegetation was placed in piles and burned or chipped on site. Preference for trees left within the fuel break were given to Ponderosa pine, Incense cedar, Douglas fir, and Black oak. Large trees left on site had their branches pruned up to 8 feet above ground level resulting in a minimum live crown cover of roughly 50%. Treatment areas were generally within 150 feet along both sides of the C-Line Road right-of-way. Funding for project implementation was provided through the CalFire State Responsibility Area Fire Prevention Fund Project Drought Funding Opportunity Program.

Project B-15 Dry Hills Forest Restoration Project

The Almanor Ranger District of the Lassen National Forest is currently using a combination of treatment methods to implement a variety of vegetation management strategies that address a number of ecological concerns related to the Dry Hills area located near the eastern boundary of the Lassen National Forest. It was found that many of the forested stands within the project area have developed stand densities that negatively affect the health of the trees and associated vegetation. The proposed project area also lacks vegetative diversity, and the accumulation of ground fuels and amount of ladder fuels serve to promote high intensity fire. To improve current conditions, the Dry Hills Forest Restoration Project was designed to (1) develop defensible fuel profile zones; (2) implement group selection and conduct area thinning; (3) improve aquatic, riparian and meadow areas; (4) promote conifer growing conditions and resiliency to disturbance; and (5) maintain and improve habitat opportunities for wildlife. Project work will be completed using a combination of commercial timber sales, service contracts, stewardship contracts, and Forest Service crews. The proposed project area varies in elevation from approximately 4,700 feet in the southwest corner to over 7,000 feet in the northeast corner. The majority of the area lies at an elevation range of approximately 5,800 feet to 6,400 feet. Red and white fir communities are the dominant vegetation types, with mixed conifer being more prevalent on the west side of the proposed project area. There are several meadow complexes of various sizes, including Dry Lake and Cowslip Meadow.

The general location of the Dry Hills project is north of the town of Mineral. The proposed project lies within LNF Management Area 26 and would be implemented in all or part of Township 29N Range 3E Sections 1-4, 9-15, and 22-24; Township 29N, Range 4E, Sections 6 and 7; and Township 30N, Range 3E, Sections 26, 27, 34, 35, and 36.

Project B-16 Grays Peak Defensible Fuel Profile Zone

In progress project work entails commercial and pre-commercial thinning utilizing mastication equipment in mixed conifer and brush stands. This work complements that completed in connection with the Lassen National Forest's Gray Gulch Service Contract.

Planned/Proposed Projects in Battle Creek-Manton Planning Unit

Project B-17 Stringtown Fuel Break

This project would entail completing 200 to 400 feet of fuel reduction behind the Stringtown community due east of Mineral's urban core along Highway 36E. This fuel break would be created along both sides of Highway 36E to a distance of one mile east past the Mineral community.

Project B-18 Manton Road Fuel Reduction and Community Protection Project

Proposed fuel treatments include cutting, piling, and burning, plus (when off road access permits) chipping of brush and small trees less than 10 inches dbh and under and oaks 6 inches dbh and under along both sides of the 7-mile Manton Road segment west of the road's junction with Forward Road and the Manton community. Larger trees remaining on site would be limbed to 8 feet above ground level. Treatments would be completed 100 feet on both sides of the road edge, resulting in 169 treated acres.

Project B-19 Manton Area Canal Improvements

As described below, the array of canals, ditches, flumes, and other water conveyance infrastructure in the Manton area provide an array of linear features that could be of service in relation to fire control and fuels management. For those portions of this infrastructure not located on PG&E property, easements exist which limit vegetation clearance to the scope of the easement and which does not allow additional vegetation removal unless access approval is obtained either by the RCDTC or another entity from all property owners who would be impacted by such project work. Pursuant to the Battle Creek Restoration Project Phase 2, portions of PG&E's canal infrastructure are planned to be decommissioned and no longer maintained by the company. Included are sections from the South Diversion Dam to Union Canal along with portions of Soap Creek. Once sections of this infrastructure have been decommissioned, their former route could be used as a liner feature from which additional fuel treatments could be conducted once access was granted by adjacent landowners.

Project B-19a: Boole Ditch Improvements and Vegetation Management

The water in Boole Ditch could be made available for firefighting. This linear feature also provides a break in vegetation that could be developed as a fuel break through the thinning of small trees along the watercourse, thus protecting a number of homes, small farms, and woodlots within this portion of the Manton–Battle Creek Planning Unit. One recommendation for enhancing the use of the ditch as a water source for firefighting was construction of a small drafting pond or water tank along Forward Road installed with fittings appropriate for tanker use.

Project B-19b: Cross-Country Canal Improvements

This water distribution structure could be developed as a significant fuel break through the removal and

continued control of vegetation, protecting portions of the Manton community during wildfires moving from the east or west. In addition, by clearing vegetation along the canal, firefighters could move more quickly when conducting initial attacks on wildfires threatening the community and would have a substantial water supply immediately at hand. With additional maintenance, the penstocks connecting the Cross-Country Canal with Grace Lake and Nora Lake could be used to continue the fire protection provided by this water distribution infrastructure.

Project B-19c: Union Canal Improvements

This water transport structure runs south approximately four miles from the Cross-Country Canal to the South Powerhouse and the Inskip Dam along Battle Creek's south fork. Through improvements similar to those recommended for the Cross-Country Canal, this feature would extend the fire protection provided by the Cross-Country Canal from the slopes of Shingletown Ridge to the South Fork of Battle Creek.

Project B-19d: South Inskip Canal/Coleman Canal (Inskip Dam-Coleman Dam Segment)

The South Inskip Canal is located just upslope from South Fork Battle Creek and transports water westward from the area near the South Powerhouse to the Inskip Dam and then to the Coleman Dam, where it joins the Coleman Canal and continues northwest to the Darrah Springs Fish Hatchery. If this structure could be properly cleared and maintained, it would create a midslope fuel break and would allow firefighter access to the canyon of South Fork Battle Creek, which contains significant stands of riparian vegetation. The combined canal system that runs for approximately ten miles from Grace and Nora Lakes, along the Cross-Country and Union Canals, and then along the South Inskip and Coleman Canals, offers an opportunity to create a significant and continuous fuel break in this area.

Project B-19e: South Battle Creek Canal

Roughly four miles southeast of Manton, the South Battle Creek Canal moves water northwest from the Soap Creek/Devils Canyon/Initial Gulch area in order to join the Union Canal and Cross-Country Canal south of Manton. Much like the South Inskip Canal, through the clearing of brush and small timber along this canal's right of way, fire protection could be provided in an east-west direction along a four mile path directly south of the Manton area. Considering that the canal is midslope from the South Fork of Battle Creek, vegetation removal would have to be fairly extensive (100 feet or more) on each side of the structure in order to be effective. Another consideration is that once vegetation clearing was completed, the South Battle Creek Canal route would allow firefighters access into steep portions of Battle Creek Canyon and would provide protection to the riparian and aquatic habitats found within this portion of the south fork's stream channel.

Project B-20 Manton School - Installation of 50,000 Gallon Water Tank

The Manton School is located along Forward Road, a main rural route in the area. In addition, the school has extensive clearance and would be accessible during almost all wildfire events. A recommendation was made to install a 50,000-gallon water tank on the school grounds which would be available for service to the Manton community and would also serve as fire protection infrastructure to the school itself.

Project B-21 Battle Creek – Manton Planning Unit - Installation of 10,000-Gallon Water Tanks

Portions of the Battle Creek-Manton Planning Unit have limited sources of firefighting water in the form of ponds, tanks, flumes, and close access to streams. In addition, such sources of water can be easily cut off from firefighting equipment in the event of large, fast moving wildfires. Ten thousand-gallon water tanks provide flexibility in staging firefighting resources, as they are relatively inexpensive and portable. Tanks of this size can be moved to maximize their utility as yearly fire conditions change or as fire threats change in the face of community development. Members of the Manton Fire Safe Council provided a list of locations considered to be candidate sites, as listed below:

Project B-21a Rock Creek Road at Jack Tom Road

Project B-21b Forward Road at Ponderosa Way

Project B-21c Hazen Road at Rolling Hills Road

Project B-21d Manton Road at Lanes Valley Road

Project B-21e Lanes Valley Road at Inskip Road

Project B-21f Lanes Valley Road at Moulton Loop

Project B-21g Spring Branch Road at Manton Road

Project B-21h Spring Branch Road at Jelly's Ferry Road

Project B-21i Lassen Lodge and Highway 36E (2 tanks)

Project B-22 Formal Establishment of Fire Safety Zones

In the event of a large, fast moving fire in the Manton area, various routes out of the community may become blocked, preventing egress to other parts of Shasta and Tehama Counties. In such an event, the creation of formal safety zones and emergency evacuation routes would be essential. A possible site for a safety zone is the CalFire station on the south side of Digger Creek just east of the Manton community's urban core. This site could provide protection to residents in the event of a wildfire moving toward the community. In addition, irrigated grazing lands in the Forward Valley area are a possible location for a formally designated safety area, providing protection to Forward Valley residents and those residents living along Forward Road, Forwards Mill Road, and Rock Creek Road who may become cut off from escape via Manton Road, Ponderosa Way, or Viola Mineral Road. If these areas were formally designated as Fire Safety Zones, it would be important to get these safety areas placed on evacuation maps prepared by CalFire personnel.

Project B-23 Expansion of Manton Wild land Urban Interface Area

At the present time, the Manton Wildland Urban Interface (WUI) area falls within the pre-established zones as described in the National Fire Plan and related strategy. Based upon input from members of the Tehama-Glenn Fire Safe Council, it is recommended that the Manton Wildland Urban Interface Area be expanded further into the surrounding wildland area. In expanding the WUI, increased attention, funds, and efforts can be directed at developing fuel breaks and other fuel treatments in areas located in public and private timberlands and rangelands surrounding the Manton community. In that way, it is anticipated that small fires can be controlled before they become major conflagrations. It is also anticipated that fuels work can be efficiently and effectively conducted that will reduce fire risk and that will aid in the reestablishment of natural fire regimens on these lands. The exact location of the outer WUI boundary would be based upon input and consensus of Tehama-Glenn Fire Safe Council members and would be presented to CalFire Tehama-Glenn Unit personnel for formal review and approval.

PAYNES-ANTELOPE-HWY 36E CORRIDOR PLANNING UNIT

(Project numbers refer to the Countywide Fire Plan Base Map)

Completed Projects in Paynes-Antelope-Hwy 36E Corridor Planning Unit

Project P-1 Tehama Wildlife Area Vegetation and Fuels Management Plan

Among the primary goals of the California Department of Fish and Wildlife (CDFW) and /Tehama Wildlife Area (TWA) staff in managing approximately 46,890 acres of State land is the protection of watershed resources from the impact of wildfire and fire suppression activities. In addition, the CDFW is attempting to manage vegetation within the TWA on a landscape scale in a manner that mimics natural ecological functioning and that provides habitat and other resources to the array of wildlife for which the property is being managed. To accomplish these goals in an environmentally effective and cost efficient manner, a number of techniques need to be utilized on a site specific basis. With limited management funding to develop and execute vegetation protection and management efforts, recommended measures need to be prioritized so that the most important projects are accomplished first. The programmatic goals listed below related to fire and fuels management were developed during the planning process conducted in the development of the Tehama Wildlife Area Vegetation and Fuels Management Plan, which was completed in 2011 by the RCDTC in cooperation with the CDFW and Tehama Wildlife Area staff.

- Protect and enhance habitat for wildlife species and provide the public with wildlife-related recreational uses.
- Maintain and enhance native plant diversity and forage quality.
- Promote chaparral regeneration for deer and other early successional species and maintain open range conditions for livestock by integrating wildfire response and prescribed fire efforts on an opportunistic basis.
- Promote oak regeneration as forage for deer and other wildlife species.

- Protect riparian and riverine habitats from wildfires in order to maintain quality wildlife habitat, stream habitat, and plant diversity for both anadromous fish and terrestrial species through an array of vegetation management techniques that include prescribed fire.

- Control invasive nonnative species such as medusahead (Taeniatherum caputmedusae), yellow star-thistle (Centaurea solstitialis), and Klamath weed (Hypericum perforatum) through an array of vegetation management techniques that include prescribed fire.

- Reduce the negative ecological and economic impacts of catastrophic wildfire through an integrated, landscape-level approach to fuels management.

In order to efficiently and effectively implement the goals developed through the planning process, an array of recommended implementation measures was developed.

- Use fire to control invasive weeds as seasonal weather conditions and livestock operations dictate.

- Develop CalFire Vegetation Management Program contracts for vegetation manipulation that utilizes the array of techniques permitted through that program.

- Develop fire management units and prioritize treatment areas for weed control and chaparral regeneration through the use of prescribed fire that correspond to the goals of CalFire's Vegetation Management Program. These units should be developed based upon power line infrastructure, roads, rock walls, fences, and TWA property boundaries. They should also be based upon fire control feasibility along with shared fire and resource management objectives. Some of these fire management units could be used for both implementing prescribed burns and for controlling wildfires, while other large, rugged units will only be used for containing wildfires.

- Use black lines created during small prescribed fires conducted during late April through June to create fire lines for hot-season chaparral and weed burns.

- Use delineated fire management units to contain wildfires and minimize the negative economic impact of wildfires on grazing operations. Establish the acreage of the largest fire management unit at each site as the maximum area impacted by wildfires in setting acreage targets for wildfire control efforts.

Project P-2 Hogsback Project

This project was located approximately five miles southeast of the Paynes Creek community and entailed prescribed burning and mechanical fuel treatment on approximately 3,400 acres of land managed largely by the U.S. Forest Service. The goal of the project was to reduce the intensity and severity of a wildland fire in an area that has experienced numerous large fires over the past 15 years. One portion of the project area consisted of a 40-acre pine plantation located along Ponderosa Way which required some mechanical brush removal prior to burning. The project design called for low to moderate intensity prescribed burns extending up to 600 feet on both sides of Hogsback Road with mechanical treatments conducted along Hogsback Road and Ponderosa Way near the Boondocks community. In addition to this project, a 10,000-

gallon water tank has been placed approximately nine miles up Hogsback Road that is filled and ready for fire suppression use.

Project P-3 Boondocks Fuel Break Project

The RCDTC received funding from the Lassen National Forest to complete roadside fuel reductions in and around the community of Boondocks. These fuel treatments involved the removal of brush and small suppressed trees along various roads. Once completed, the Boondocks Fuel Break Project encompassed approximately 7 miles of brush clearing. The width of these fuel treatments was roughly 75 feet on both sides of the road edge or approximately 127 treated areas. The intent of this effort was to improve defensible space around the Boondocks community as well as improve the accessibility and safety of roads for residents and emergency vehicles. Project work included the removal of brush and small trees (usually less than 6 inches dbh). Any remaining trees were limbed up to a height of eight feet. Cut material was chipped and broadcast back onto the landowner's property as groundcover. The RCDTC chipper and field technician along with crews provided by the CalFire/CDC Ishi Conservation Camp completed treatment work. The RCDTC provided overall project management.

Project P-4 Panther Spring Fuels Reduction/Hogsback/Plum Creek Fuels Reduction Project

This combined project was developed in order to improve protection and fire management capabilities within a large portion of Tehama County's eastside Wildland Urban Interface area as well as to improve wildlife habitat. The Panther Spring portion of this project complements the RCDTC's Boondocks Fuel Break project which together provide the Boondocks community and surrounding area with an estimated 12.5 miles (454 acres) of fuel treatments.

Project P-5 Brokenshire Project

The Brokenshire area of the Lassen National Forest provides recreation. In addition, there are private recreation residences and an organization camp operating under a special use permit issued by the U.S. Forest Service. In order to protect and improve area resources and surrounding developed sites, the Lassen National Forest implemented the Brokenshire Project. That portion of the overall project related to fire and fuel management entailed hand cutting, piling, and burning of small trees and shrubs around the Summit Springs Recreation Residence Tract, Camp Tehama Organizational Camp, and other recreational sites. A 50-foot buffer was established along the east side State Route 172 in order to reduce the threat of roadside ignitions and to develop a fuel break from which backfire operations can be conducted in the event of a wildfire event. These vegetation and fuel treatments covered an area of approximately 53 acres.

Project P-6 Little Giant Mill Fuel Break (Completed by CalFire with Additional Financial and Logistical Assistance Provided by the RCDTC)

Project work consisted of hand cutting and chipping or piling and burning mixed conifer, oak, and brush species adjacent to the 5-mile long Little Giant Mill Road. This paved, County-maintained road provides primary access to Highway 36E from Lyman Springs. Specific treatments included cutting conifer species 10 inches dbh and under and oaks 6 inches dbh and under along with live and dead brush and downed trees. Preference for trees left on site within the project's treatment area were given to Ponderosa pine, Incense cedar, Douglas fir, and Black oak. Those trees to be left on site had their

branches pruned to 8 feet above ground level resulting in a minimum live crown cover of 50%. Vegetation was removed to an average of 150 feet on both sides of the road edge resulting in a total treatment area of 167 acres. Once vegetation removal was completed, the landowner (Sierra Pacific Industries) applied California approved herbicides in order to maintain the reduction in roadside vegetation for an extended period of time. With the completion of these fuel treatments, additional protection from wildfire will accrue to Lyman Springs, Ponderosa Sky Ranch, and the Paynes Creek Sportsman Club. In addition to these communities, watershed resources found within the Paynes Creek and Antelope Creek systems will be protected as well.

Project P-7 Paynes Creek Community/Plum Creek Road/High Trestle Road/Finley Lake Fuel Break

Plum Creek Road traverses the summit of Plum Creek Ridge which runs east to west separating the watersheds of Oak Creek and Plum Creek. Numerous fires have swept through this area including the very large Finley Fire of 1990. High Trestle Road traverses the south slope of Plum Creek Ridge connecting Plum Creek Road with Hogsback Road, a primitive yet highly used county road. In 2009, the RCDTC completed development of the Paynes Creek Community/Plum Creek Road/High Trestle Road/Finley Lake Fuel Break. Fuel treatments completed in connection with this project entailed hand cutting of roadside vegetation along Plum Creek Road, High Trestle Road near Finley Lake and others in and around the community of Paynes Creek. These treatments were completed along 14 miles of paved and unpaved road maintained by the County of Tehama and other entities.

Project work entailed cutting and chipping or cutting, piling and burning brush and small trees to a distance of 75 feet on both sides of the road edge. Conifers species 10 inches dbh and under and oaks 6 inches dbh and under, along with chaparral brush species found in the understory of roadside forest stands, were cut and processed. The number of treated acres totaled 509. With project work completed, significant protection against roadside ignitions and subsequent wildfire now accrue to communities of Paynes Creek, Ponderosa Sky Ranch, Lyonsville, Paynes Creek Rod and Gun Club along with California Department of Fish and Wildlife, CalFire and California Department of Corrections facilities along Plum Creek Road. In addition, watershed resources found with the Paynes Creek, Judd Creek and North Fork Antelope Creek systems will be protected. Crew services for this project were provided by the CalFire/CDC Conservation Camp Crews. The RCDTC provided a chipper and operator/field technician along with project management services. Sierra Pacific Industries provided follow up herbicide applications within those portions of the project area on Company owned lands in order to extend the protective capabilities of project work. Funding for this effort was provided by the California Fire Safe Council.

Project P-8 Paynes Creek Timber Harvest Plan Defensible Fuel Profile Zone

Created in connection with the Paynes Creek Timber Harvest Plan of Sierra Pacific Industries, this project is an attempt to develop fire and fuels management infrastructure within an area of timber harvest operations. Specific project work entailed the development of a 135-acre defensible fuel profile zone along both sides of Little Giant Mill Road between Highway 36E and the road's junction with Plum Creek Road at Lyman Springs. Project work entail the harvest of merchantable trees along with small poorly formed trees, brush, and downed fuel. Once these treatments were completed, County approved herbicides were

applied in order to maintain vegetation control for a longer period of time.

Project P-9 Refuge Timber Harvest Plan Defensible Fuel Profile Zone

Much like the Paynes Creek Timber Harvest Plan Defensible Fuel Profile Zone Project, this 51-acre effort entailed the harvest of merchantable trees along with small poorly formed trees, brush, and downed fuel along a ridge line above Mill Creek Rim. Once these treatments were completed, County-approved herbicides were applied in order to maintain vegetation control for a longer period of time.

Project P-10 Paynes Creek Sportsman Club Water Tank Project

Project work included the installation of water storage infrastructure within the Paynes Creek Sportsman Club in order to provide sufficient fire suppression water near developed sites and as an alternate source of water within this area of the Paynes-Antelope-Hwy 36E Corridor Planning Unit. The tank structure and installation was funded through the CalFire Vegetation Management Program.

Project P-11 Shelton Ridge Fuel Break

Project work entailed vegetative fuel treatments within 102 acres of brush and low elevation conifer stands along Shelton Ridge located southwest of the Ponderosa Sky Ranch community. This completed project complements in-process fuel reduction work being completed in the area by Sierra Pacific Industries as described below. Funding for this effort was provided by CalFire through its Vegetation Management Program.

In Progress Projects in Paynes-Antelope-Hwy 36E Corridor Planning Unit

Project P-12 Highway 36 Fuels Maintenance

The California Department of Transportation (CalTrans), CalFire, and California Department of Conservation continue to collaborate on a shaded fuel break and fuels reduction project along the Highway 36 right-of-way from Hog Lake just east of Red Bluff to the Plumas County line. The fuels treatments completed in connection with these efforts creates an east-west fuel break along the south rim of Battle Creek Canyon and provide partial protection to the communities of Dales, Paynes Creek, Ponderosa Sky Ranch, Battle Creek Estates, and Mineral along with the developed sites at Battle Creek Rod and Gun Club and Paynes Creek Sportsman Club. Project work is partially funded by CalTrans in order to meet its sight clearance standards. This project is ongoing, although not all areas are treated each year. Annually, project work is completed along approximately 25 miles of roadway. These efforts include mechanical removal of chaparral and timber species along both sides of the highway right-of-way as well as along a number of auxiliary roads immediately adjacent to the highway prism that intersect with fuels projects that have been developed by various public and private land management entities.

Project P-13 Highway 36 Power Line Fuel Break

This continual maintenance effort entails the maintenance of a 70-foot wide fuel hazard reduction project along the south side of Highway 36 under power lines between Hog Lake and Ishi Road.

Project P-14 Ponderosa Sky Ranch Fuel Break

This project is an ongoing effort between CalFire, the California Conservation Corps (CCC), and area landowners. Over the past six years, various fuel treatments have been completed using CalFire equipment and fire crews from Ishi Conservation Camp and the CCCs. The fuel break incorporates fuel reductions along existing roads as well as the development of a fuel break that encircles the Ponderosa Sky Ranch community. The project also includes opening roads for fire engine access to water sources and tree removal to provide a flight path for helicopters using local ponds. In 2003 members of the Ponderosa Sky Ranch community initiated an ongoing maintenance plan to keep this circular fuel break in effective condition. As part of this plan, the southern portion of the fuel break was widened and improved using CalFire equipment and crew. The intent is to improve one section annually, thus reducing yearly costs while still preserving the fuel break. Additional roadside thinning along Highway 36E is completed yearly using CalFire/CDC crews.

Project P-15 Ponderosa Way Fuel Break from Ponderosa Sky Ranch to Plum Creek Road

Based upon discussions between RCDTC staff, members of the Tehama-Glenn Fire Safe Council and the CalFire Tehama-Glenn Unit Pre-Fire Engineer, it was determined that fuel treatments are needed along Ponderosa Way between the Battle Creek Rod and Gun Club located adjacent to South Fork Battle Creek to the road's intersection with Plum Creek Road, a distance of approximately 4.5 miles. As proposed, this project would entail hand treatments of vegetation along various previously untreated segments of Ponderosa Way. Project work would also include treatments along 1 mile of previously untreated roadside vegetation adjacent to Ponderosa Way between Highway 36E and South Fork Battle Creek, the paved 1-mile Canyon View Loop, and retreatment in the area surrounding the Battle Creek Estates located immediately northwest of Ponderosa Sky Ranch.

As proposed, CalFire Conservation Camp crews would be used to cut brush, conifers 10 inches dbh and under, and oaks 6 inches dbh and under. This material would then be piled and burned within that portion of the roadway that has already been impacted by road construction. In those areas where pile burning is not feasible or would create a fire hazard or impact public health through the generation of smoke, cut material would be chipped using the RCDTC's portable chipper. Chipped material would be broadcast back onto treatment areas to create protective mulch. RCDTC personnel who are certified herbicide applicators would then apply chemicals along roadside areas using back pack pumps and spray wands. All project work would occur to a maximum width of 150 feet on both sides of the road edge although narrower treatment areas would be established as appropriate or as approved by landowners. Once completed, approximately 113 acres of cutting, chipping, piling, and burning treatments along with 75 acres of herbicide applications would be completed. The RCDTC has applied for funding through a number of sources to complete project work.

Project P-16 Paynes Creek Sportsman Club Fuels Reduction Project (Completed by CalFire)

The Paynes Creek Sportsman Club has partnered with CalFire and the USDA Natural Resources Conservation Service on project work which addresses fire and fuels management and wildlife resource improvement issues within one of Tehama County's Wildland Urban Interface areas. This vegetation treatment and fuel break project will, when completed, encompass roughly 150 acres of recreational

wildlands. More specifically, project work entails brush crushing and winter burning in an effort to provide defensible space for cabins located within the project boundaries as well as to improve wildlife habitat.

Project P-17 SPI Shelton Ridge Fuels Reduction Project

Sierra Pacific Industries is conducting fuels reduction work along Ponderosa Way near the confluence of the north fork of Antelope Creek and Dead Horse Creek in the vicinity of Shelton Ridge. This work will be completed within the next several years and will result in the creation of a 103-acre shaded fuel break.

Project P-18 Plum Creek Timber Harvest Plan Defensible Fuel Profile Zone

Project work entails the removal of merchantable timber, small or poorly formed trees, brush, and dead ground fuels along both sides of Plum Creek Road to a distance of one mile north from the road's junction at Little Giant Mill Road near Lyman Springs. Similar treatments will be completed along the west side of Plum Creek Road to a distance of 1.5 miles south of the road junction. At the present time 50 acres of roadside treatments have been completed out of 75 total acres of project work. Once all fuel break and harvest operations are completed, county-approved herbicides will be applied to treatment areas to extend the life of vegetation treatments.

Project P-19 The Line Timber Harvest Plan Defensible Fuel Profile Zone

Project work consists of a roadside timber harvest operation along with additional treatment to remove small, poorly formed, and suppressed trees together with brush and other ground fuels along roughly 16 miles of wildland roads managed by Sierra Pacific Industries. This effort will result in 1,147 acres of roadside fuel treatments and related timber harvest operations. Once all fuel break and harvest operations are completed, County-approved herbicides will be applied to treatment areas to extend the life of vegetation treatments.

Project P-20 Two Barrel Timber Harvest Plan Defensible Fuel Profile Zone

Project work entails roadside timber harvest operations along with the removal of small trees, brush, and other ground fuels within an area of approximately 165 acres. These linear fuel treatments will connect with other completed, in progress, and proposed timber harvest areas. Once developed, this combination of roadside treatments and the harvest of commensal timber will result in a large area of significantly reduced wildland fuels thus creating an effective Defensible Fuel Profile Zone that will provide protection to a large area of the Paynes-Antelope-Hwy 36E Corridor Planning Unit.

Planned/Proposed Projects in Paynes-Antelope-Hwy 36E Corridor Planning Unit

Project P-21 Proposed Fuel Reduction Zone between State Managed Tehama Wildlife Area Lands and Federal Lands Managed by the Lassen National Forest

At the present time watershed resources within the Tehama Wildlife Area (TWA) are often negatively impacted by mechanical CalFire suppression activities (dozer developed fire lines) used to protect timberlands to the east of the TWA during wildfire events. In response to these occurrences, a determination was made in the TWA Vegetation and Fuels Management Plan to develop "Fuel Reduction

Zones" along the eastern boundary of the Tehama Wildlife Area that adjoin Lassen National Forest lands. Fuel Reduction Zones in this area of the TWA would entail the development of strategically located blocks and strips of land where vegetation has been altered to achieve a low fuel volume, which greatly reduces flammability. As envisioned, these zones would be developed so that extensive areas of vegetation would be initially removed and maintained in a relatively low seral state through a combination of prescribed fire and increased cattle grazing within treatment areas. Within these zones, most trees and grasses would be retained through the control of shrubs, other woody species and dead ground fuels.

The aim of this effort is to provide a zone where fuel loads are too low to produce or carry damaging wildfire into upslope timber lands and where upslope forest fires will be prevented from moving down into low elevation chaparral and grasslands. These vegetation reductions will also allow access by fire crews that can rapidly create black fire lines by quickly burning off light fuels that developed within the buffer zones. This compares with current fire line development that often entails the creation of dozer lines that sometimes crosses stream channels, riparian areas and other sensitive sites. To increase the effectiveness and cost efficiency of this effort, vegetation reductions would be linked to other natural and manmade containment barriers such as rocky cliff faces, rock walls, roads, and lakes.

In order for these efforts to be effective in both reducing fire suppression damage and preventing fire spread throughout the Tehama Wildlife Area, they must align with other vegetation manipulations such as large scale prescribed fire within the TWA. If properly executed, the use of prescribed fire will not only add to the protective capabilities of the Fuel Reduction Zones but will improve the condition of wildlife habitat and forage throughout the TWA. Once the Fuel Reduction Zone was fired out, additional firing of adjacent untreated vegetation would become possible during both wildlife events and in connection with prescribed fire treatments implemented on TWA lands that improve habitat conditions.

Project P-22 Tehama Wildlife Area Vegetation Management

The prescribed burns and other vegetation management projects conducted throughout the Tehama Wildlife Area are generally completed with wildlife habitat improvement in mind. If properly developed and conducted, these projects could also be expanded to reduce fuels in strategic areas. It is recommended that Department of Fish and Wildlife personnel involved with developing vegetation improvement and fuels reduction projects coordinate with CalFire, the Tehama-Glenn Fire Safe Council, the Lassen National Forest, the Bureau of Land Management, and the RCDTC in order to develop large scale multi-agency and multi-resource improvement projects that leverage the financial and logistical resources of each entity as well as impact each agency's efforts in order to develop cost effective landscape vegetation management projects.

Project P-23 Paynes Creek Fuels Reduction and Shaded Fuel Break

The community of Paynes Creek contains an array of important urban assets and is surrounded by chaparral stands, oak woodlands, and grasslands on four sides. Members of the community recommended that a combination of prescribed burns, oak thinning, and shaded fuel breaks be developed and maintained around the urban core as well as along Highway 36.

Project P-24 Collaboration with CalTrans and PG&E

In order to expand current fuels reduction and thinning work along the portion of Highway 36 adjacent to the Paynes Creek community, any projects in this area should be coordinated with CalTrans and PG&E. As tentatively envisioned, removal and processing of chaparral and small trees would extend approximately 200 feet from the highway right-of-way along a two mile stretch between the PG&E twin tower transmission line crossing to roughly one mile south of the junction of Highway 36, Lanes Valley Road, and Plum Creek Road. The primary goals of this proposed project are to develop greater community protection and to maximize project cost efficiency by tying together newly developed fuels reduction work with fuel treatments that are already being conducted on an ongoing basis by CalTrans within the state highway right-of-way and by PG&E along their power line right-of-way.

Project P-25 Paynes Creek School Shaded Fuel Break

A shaded fuel break would be developed and oaks trimmed along the southern property line of the new Paynes Creek School. This portion of the project would protect the school facilities from fires originating in wildland areas to the south, and it would prevent the spread of fires that may develop within the Paynes Creek urban core.

Project P-26 Howell Ridge Fuels Reduction

Howell Ridge parallels Highway 36E, beginning just south of Ponderosa Sky Ranch and ending just east of the Paynes Creek community. This major ridge borders Paynes Creek to the south along the stream's ecologically significant riparian corridor. Howell Ridge also lies north of the property boundaries of the Paynes Creek Sportsman Club, Wilson Ranch, and the state facilities on Plum Creek Road. Both the north and south faces of Howell Ridge have very heavy accumulations of chaparral fuel that are at risk of ignition from sources of development along Ponderosa Way, Plum Creek Road, and an undeveloped wildland road on the ridgetop that connects these two more traveled routes.

In addition, numerous potential ignition sources are also found within the Ponderosa Sky Ranch and Paynes Creek urban areas. Fuels reduction work along the north side of Howell Ridge could be leveraged by fuels reduction efforts already completed at a nearby pine plantation managed by Sierra Pacific Industries. In addition, the unpaved wildland road on the top of Howell Ridge could be utilized as a fire control line during initial prescribed burning activities and could then be developed into a larger, more developed, permanent fuel break. Opportunities may exist for shared project funding between private landowners and federal agencies holding nearby lands (i.e., Lassen National Forest and Bureau of Land Management), as these federally owned lands would be protected by this project. Financial contributions or in kind match of equipment and labor might also be provided by the California Department of Fish & Wildlife, which manages lands within the nearby Tehama Wildlife Area.

Project P-27 Ponderosa Sky Ranch Airport Fuels Reduction, Maintenance, and Extension

Over the years, numerous attempts have been made to utilize the airstrip at Ponderosa Sky Ranch as fire protection infrastructure for that community. Chaparral species adjacent to this area continue to develop into heavy stands of flashy fuels that threaten the community from ignition sources along Highway 36. A recommendation was made that the Ponderosa Sky Ranch community develop the means with which to

permanently maintain the fuels within the airstrip area. It was also suggested that additional prescribed burning or other types of fuels reduction work be conducted between the community and Highway 36. Such project work would help to protect Ponderosa Sky Ranch and would also protect valuable aquatic and riparian habitats found along nearby Paynes Creek if it was extended several miles east to west along the state highway. With fuels under permanent control, the Sky Ranch Airport area could also be used as a safety zone and staging area for firefighting forces.

Project P-28 Ponderosa Sky Ranch and Lyman Springs - Power Line Right-Of-Way Maintenance

The Lyman Springs area contains the historic site of a lumber mill that once operated in the 1900's. At the present time, a small collection of houses and recreational structures is located there. A wooden pole power line connects utility facilities at Ponderosa Sky Ranch with the Lyman Springs community. If more fully managed for vegetation such as the widening of current treatments, this power line could provide a fuel break extending roughly two miles between these two communities. If properly developed and maintained, the right-of-way area could be used for initial attack of chaparral fires moving upslope from chaparral lands to the west, or down slope from immediately adjacent timber stands. Such a linear fuel break would also provide partial protection to the Lyman Springs community and to the developing pine plantations managed by Sierra Pacific Industries just east of the power line right of way.

Project P-29 Rim Fire Timber Harvest Plan Defensible Fuel Profile Zone

Proposed project work entails a combination of timber harvest and removal of small suppressed trees, brush, and other ground fuels along a linear treatment area totaling approximately 140 acres located above Mill Creek Rim. Once all fuel break and harvest operations are completed, County-approved herbicides will be applied to treatment areas to extend the life of vegetation treatments. With the completion of these treatments, the Rim Fire project will connect with the Refuge Timber Harvest Plan Defensible Fuel Profile Zone and a major ridge line fuel break will have been developed between the Mill Creek and Antelope Creek watersheds.

Project P-30 Knass Spring Improvements

The Knass Spring recreational community is located just south of Panther Spring along Ponderosa Way. Within the area, a number of cabins, a road system, and a small pond have been developed. With some improvements, many of the development features found in the area could be developed into significant firefighting and fire management infrastructure. The most significant linear feature in the area is Ponderosa Way, which lies less than a mile to the west of these communities. With some clearing and annual grading, Ponderosa Way would provide east-west fire protection and would also speed access to wildfires occurring in the immediate area and further south towards the Mill Creek and Deer Creek watersheds. In addition, it is recommended that funding be developed for roadside thinning of interior secondary roads throughout the Knass Spring area and of other rural roads surrounding the structures in the vicinity of Tail Holt Spring. Improvements to these roads would enhance their use as fuel breaks and would improve access to the north, south, and east sides of these communities. Finally, it is recommended that the pond located in the center of the inhabited area of Knass Spring be developed to increase its capacity and that water tanks be installed as a backup source for firefighters in the event the pond goes dry.

Project P-31 Yellowjacket Road–Tamarack Road Shaded Fuel Break

If properly developed as a shaded fuel break, the parallel alignment of Yellowjacket Road with Ponderosa Way would make this linear feature an additional source of fire protection that could be used to defend against wildfires moving in either an easterly or westerly direction. The road is located near the transition line between chaparral and timber lands, making it particularly useful in defending valuable pine stands from fires moving upslope out of the east. Tamarack Road could also be developed into an additional east-west fuel break if a significant volume of brush and forest fuels were removed.

Project P-32 Paynes Creek School – Water Tank

In the near future, a new elementary/middle school will be opened on the southeast side of the Paynes Creek community. Although the school grounds are cleared, the facility is located adjacent to a considerable amount of wildland fuels that have developed in adjacent oak woodlands and grasslands. Through the installation of a 50,000-gallon water tank with high volume fill spout fittings on the school's property, a considerable volume of water would be available for fires occurring within the community and at its urban fringe. This tank would also provide water for fires occurring further south in the vicinity of the Tehama Wildlife Area or on lands adjacent to the Ishi Wilderness. By locating the tank in this highly visible area, vandalism could be kept to a minimum.

Project P-33 Lyonsville/Lyman Springs – Water Tank

The combination of Plum Creek Road, Little Giant Mill Road, and Tramway Road provides primary access to the Lyonsville community from Highway 36. All of these roads are well maintained and can provide rapid access to the Lyonsville and Lyman Springs urban areas. Consequently, the installation of a 50,000 gallon water tank with high volume fill spout fittings either at the intersection of Plum Creek Road and Little Giant Mill Road or at the intersection of Tramway Road and Little Giant Mill Road would provide a water source that would benefit firefighting needs in the immediate vicinity and would also be of considerable value to fire equipment traveling Highway 36 or to units fighting fire further south in the wildland areas of the Central-Cohasset Planning Unit.

Project P-34 Dye Creek Preserve Water Tank

Installation of a 10,000-gallon water tank was recommended at the ranch facilities at the Dye Creek Preserve headquarters.

Project P-35 Boondocks - Pond Improvements

Presently the Boondocks community is provided water for fire control through an undersized pond that is currently in poor condition for drafting. It is recommending that members of the Boondocks community work with the RCDTC, CalFire, and the Lassen National Forest in identifying and securing funding in order to improve the pond's condition as a useful source of water in the event of a wildfire on public and private lands.

Project P-36 Dales - Water Tank

The community of Dales is located at the major intersection of Manton Road and Highway 36. During very dry months when surface flows within Paynes Creek are lowest, drafting of water supplies can be time consuming. In addition, the heavy fuels and high fire danger found along the Lanes Valley Road could result in a very large wildfire that would cut off the transport of water from the Paynes Creek area, resulting in lengthier travel from Red Bluff or Manton. The installation of a 50,000-gallon water tank with high volume fill spout fittings at this location would provide protection to the immediate Manton community and would make water readily available to firefighting crews working within the central and western portions of both the Battle Creek–Manton and the Paynes-Antelope-Hwy 36E Corridor Planning Units.

Project P-37 Installation of Water Tanks throughout Planning Unit

Like other areas of eastern Tehama County, this planning unit has limited sources of water with which to refill tanker units. The Paynes Creek Volunteer Fire Department, the Manton Fire Safe Council, CalFire staff, and members of the Paynes Creek community have recommended candidate sites for installation of 10,000-gallon water tanks with high volume fill spout fittings:

Project P-37a Intersection of Plum Creek Road and Hogsback Road,

Project P-37b Intersection of Plum Creek Road and Ponderosa Way, and

Project P-37c Intersection of Highway 36 and Lanes Valley Road.

Project P-38 Ponderosa Sky Ranch - Water Tank Retrofit

At the present time, the water tank located in Ponderosa Sky Ranch stands unused and is in need of new quick fill fittings. If refurbished and maintained, this water supply infrastructure could provide considerable firefighting water to Ponderosa Sky Ranch, Battle Creek Estates, Lyonsville, and the Lyman Springs area further to the south.

Project P-39 Mud Springs - Water Tank Improvements

Project work would entail repairing and refurbishing the 10,000-gallon water tank located at the junction of Hogsback Road and High Trestle Road east of Red Bluff.

Project P-40 Construction of Secondary Access Road from Ponderosa Way to Highway 36E

Ponderosa Way forms the major access road into the community of Ponderosa Sky Ranch. During a wildfire event, residents would have to evacuate either east via the paved portion of Ponderosa Way and onto

Highway 36 or by way of the rough, unpaved portion of Ponderosa Way to the south. Both routes could become congested if large numbers of residents attempted to evacuate at the same time using this road. It is recommended that a second access route be developed to the west by the construction of a connecting spur between Highway 36 and Ponderosa Way on the west side of the community.

Project P-41 Power Line Access Improvements within the Dye Creek Preserve

At the present time, power line access roads within the upper reaches of the Dye Creek Preserve are discontinuous, poorly maintained, and bisected by many stringers of live oak and other vegetation. A 2002 mastication project under power lines generated considerable dead fuel which could generate high fire intensities when wildfire occurs. In addition, steep areas near canyon bottoms have not been cleared of either live or dead fuels. As a result, these utility access roads cannot be safely or effectively used for prescribed burning forward operations. In order to correct this situation, fuels reduction projects need to be undertaken that improve the ability of fire equipment to rapidly travel these electrical utility roads, that reduce previously generated dead fuels, and that remove both live and dead fuels in canyon bottoms.

Project P-42 Tramway Road Fuel Break

Tramway Road is a County-maintained wildland road that connects the Lyman Springs area with Highway 36E at Lassen Lodge. As proposed, fuel treatments would include cutting and chipping or cutting, piling, and burning of brush and small trees (conifers 10 inches dbh and under and oaks 6 inches dbh and under) to a distance of 100 feet on both sides of the road edge. Large trees left within roadside treatment areas would be limbed to a height of 8 feet above ground level. In 2014, the RCDTC completed CEQA related environmental analysis of this proposed project as well as the completed A-Line Road/F-Line Road/Road 90A Shaded Fuel Break Project (B-2) which took the form of an Initial Study/Mitigated Negative Declaration (IS/MND) document. If the Tramway Road Fuel Break project were completed within the next 3 years, the analysis described in the CEQA IS/MND could be utilized in order to obtain agency approval for implementation of these efforts with minimal updating, thus expediting the completion of project work once funding was secured.

Project P-43 TGU-Ponderosa Sky Ranch Piney Fuels Reduction

The goal of this CalFire Tehama-Glenn Unit project is to reduce hazardous fuel profiles within the Wildland/Urban Interface area of the Ponderosa Sky Ranch community and to improve fire protection to existing timber and forest lands surrounding the community. This will be accomplished by CalFire augmentation crews, who will use hand tools and chainsaws in the maintenance and further development of Defensible Fuel Profile Zones within and around the community of Ponderosa Sky Ranch. This community located along State Route 36E is located within a Fire Hazard Severity Zone indicating that this community is in an area of high risk for large scale vegetation fires. Project work will entail maintaining an existing fuel break, brushing, plus thinning and removing live trees 10 inches dbh. and under, together with any downed trees, thus decreasing unnatural levels of ladder fuels. Preference for trees to be left within the fuel break will be given to Ponderosa pine, incense cedar, Douglas fir and black oak. Trees to be left on site (those with a dbh. of 10 inches and greater) will have their branches pruned up to 8 feet above ground level, resulting in a minimum live crown cover of 50 percent. The treatment area will be 75 feet from the center of the existing dozer line, resulting in a 150-foot fuel break around the perimeter of the Sky Ranch community. The fuel break will be approximately 2.7 miles in length, totaling roughly 48 acres. Cut vegetation will be chipped, scattered, and/or put in piles for burning. The Piney Fuels Reduction Project will connect to an ongoing RCDTC fuel break (Project P-15 Ponderosa Way Fuel Break from Ponderosa Sky Ranch to Plum Creek Road) and thus provide the community and residents of eastern Tehama county greater fire protection measures.

CENTRAL-COHASSET PLANNING UNIT

(Project numbers refer to the Countywide Fire Plan Base Map)

Completed Projects in Central-Cohasset Planning Unit

Project CE-1 Collins Pine Company Roadside Fuel Breaks

Since 2008, the Collins Pine Company has completed numerous roadside fuel treatments on Company lands in Tehama County. In general, these treatments consisted of mechanical thinning and chipping along with conventional logging practices to thin from below in order to open the understory and remove ladder fuels. Understory treatments are combined with an individual tree selection prescription in the overstory to space crowns of residual dominant trees. Post-harvest stocking levels within treatment areas range from 80-120 square feet of basal area with the retention of some canopy closure maintained in larger trees to manage brush cover. Thinning of standing timber is normally increased along ridgetops and major roads. Roadside treatments are normally completed to a distance of 100 feet on both sides of the road edge. Similar widths are completed cross county on ridge tops. Development of treatment areas are completed through consultation with local experts and firefighting personnel. Over the past several years, the Collins Pine Company has completed approximately 250 acres of fuel treatments with another 170 acres proposed for future completion.

Project CE-2 Mill Creek Homeowners Association Fuel Treatments

Working in cooperation with the Mill Creek Homeowners Association (MCHA), the CalFire/CDC Ishi Camp Conservation Camp, and Lassen National Forest fuels personnel, the RCDTC coordinated fuel treatments on MCHA-managed properties to expand upon those developed on adjacent National Forest parcels. Utilizing crews from Ishi Conservation Camp, small conifers 12 inches dbh and under along with understory vegetation and dead woody fuels were removed. Those trees left standing were limbed to 8 feet above ground level. The RCDTC provided chipping services including a chipper unit and field technical/operator through its Chipper Services Program. All work was completed exclusively on Mill Creek Homeowners Association lands. The total number of acres that were treated totaled approximately 5 acres.

Project CE-3 Mill Creek Fuel Break

Project work entailed hand thinning, piling, and burning of excess vegetation within mixed conifer stands along Mill Creek to the south of the Highway 36E bridge. Project work was completed by the Lassen National Forest.

Project CE-4 Sierra Pacific Industries Shaded Fuel Break

Per Standards established in the California Forest Practices Act, a 1,207-acre shaded fuel break is under development on lands managed by Sierra Pacific Industries. These treatments are in connection with various harvest operations, of which 882 acres have been completed and another 325 acres are in the planning stage. These treatments have been reviewed by CalFire in order to ensure that the resultant fuel breaks are located in areas that will provide that agency and other firefighting organizations maximum capability in controlling wildfire. The fuel breaks are strategically located along portions of paved public and seasonal roads and have been designed to follow natural topographic features while taking into account previous silvicultural treatments, access, and topographic constraints. The fuel break design will contribute to the Sierra Pacific Industries long term goal of creating additional defensible space across its ownership and thus better controlling the spread of fire originating in the vicinity of paved and seasonal roads, giving initial attack resources time to respond with suppression efforts. The preharvest fuel break area consists of natural stands as well as plantations composed of Ponderosa pine, sugar pine, Douglas fir, white fir, incense cedar, tanoak, black oak, and madrone. There is a variety of brush and shrub species, including manzanita, blackberry, and deer brush. The understory vegetation and submerchantable material within the fuel break will be treated in order to reduce ladder fuels and to break up vertical and horizontal continuity of fuels. Understory vegetation, tops, and submerchantable material will be treated (i.e., eliminated or reduced into smaller pieces) by chipping, lopping, or mastication. When selecting trees for retention within treatment areas, preference will be given to dominant and codominant trees with crown base heights higher off the ground, and these will be well spaced to reduce the rate of spread of fire and to break up the vertical and horizontal continuity of fuels, providing a safer working area for fire suppression activities. Treatment of ladder fuels and spacing of residual trees will modify the continuity of fuels and reduce fuel loading over the entire treatment area. The timber harvest plan under which this project will be completed allows for the removal of merchantable saw logs and intermediate trees while leaving healthy residual trees in accordance with the California Forest Practice Rules stocking standards.

In Progress Projects in Central-Cohasset Planning Unit

Project CE-5 Smokey AOP Enhancement

This Lassen National Forest project's scope of work includes aspen, oak, and pine enhancement using commercial and precommercial thinning treatments to be followed up with prescribed understory burns. Thinning treatments have been completed with burning to be conducted in the fall of 2018.

Project CE-6 Cold Springs Prescribed Burn

Fuel treatments completed in connection with this project connect with work completed by Sierra Pacific Industries along the Company's H-Line Road west of Butte Meadows. The scope of work for this Lassen National Forest project includes prescribed understory burning within mixed conifer stands.

Project CE-7 Sierra Pacific Industries Shaded Fuel Break

This project relates to the 325 acres of planned project work described under Project CE-4 Sierra Pacific Industries Shaded Fuel Break above.

Planned/Proposed Projects in Central-Cohasset Planning Unit

Project CE-8 Collins Pine Company Roadside Fuel Breaks

Collins Pine Company will be implementing 30 acres of planned fuel treatments during 2017.

Project CE-9 Collins Pine Company Childs Meadows/Guernsey Creek Restoration/Shaded Fuel Break

As proposed, this project would restore 100 acres of the Childs Meadows complex that is now being encroached by lodgepole pine. In addition, project work would entail the creation of a shaded fuel break totaling roughly 80 acres along and between Guernsey Creek and Highway 36E. If approved by Lassen National Forest personnel, project work would also include Collins Pine Company managing Forest Service lands along the shaded fuel break corridor.

Project CE-10 Improvements to Existing Ponds and Lakes

Throughout the Central–Cohasset Planning Unit, a number of ponds and small natural lakes would provide water during fire emergencies. If properly developed with pumping facilities and storage tanks, the time it takes to fill tankers and other firefighting equipment could be dramatically reduced. After improvements have been made, these existing water sources could provide one of the most significant firefighting infrastructures within this portion of the project area.

Project CE-11 Los Molinos Mutual Water Company Canal Fuel Break

The Los Molinos Mutual Water Company maintains approximately 6 miles of water transport infrastructure within grasslands located in the easternmost portion of the Central Cohasset Planning Unit. If vegetation along water canal infrastructure were cleared to a distance of 50-100 feet along both sides of the canal with herbicides applied on an ongoing basis, a relatively permanent fuel break would be established. Such treatments would effectively disconnect highly flammable grassy fuels along roads and developed sites to the west from more remote upslope areas where controlling fire and access is more difficult. In addition, throughout the summer, water is passed through the canal that could be used in the event of a grass fire.

SUMMARY AND CONCLUSIONS

In establishing priorities for fire and fuels management projects to be completed within eastern Tehama County, the lives of area stakeholders and firefighters as well as public and private property were first and foremost in consideration. Those projects that provided immediate and direct impact on the threat and intensity of wildfire were given the highest priority. Among these critically important projects were those that entailed fuels reduction and infrastructure improvements, particularly those involving access for firefighting forces and egress of residents. In addition, water storage and water delivery projects were considered of equal importance. Projects of somewhat less urgency were those involving regulatory matters such as changes in laws, ordinances, and codes that related to fire safety and fire management. Projects considered important but not urgent were initiatives to formally classify a number of small communities as officially recognized communities at risk as well as the development of Wildland Urban Interface areas. Finally, planning initiatives were considered to be the least time-critical. From this prioritization process, the following broad action items were developed by the RCDTC with extensive input from the project's work group, the Tehama–Glenn Fire Safe Council, and area stakeholders:

- Tehama-Glenn Fire Safe Council should develop a list of all currently unfunded fire and fuels management projects.

- Tehama-Glenn Fire Safe Council, with assistance from the RCDTC, Tehama County Resource Advisory Committee, and Manton Fire Safe Council, should identify possible sources of public and private funding for unfunded projects. Funding is expected to be in the form of public and private grants, and self-funding through the sale of biomass products, the assessment of fees and taxes, or other revenue sources. Proceeds from such funding could be used to finance both the initial completion of project work as well as the permanent maintenance of already completed infrastructure improvements.

- Tehama–Glenn Fire Safe Council in conjunction with CalFire and county regulatory agencies should establish a work group to review those local ordinances that impact fire safety and development within the fire prone areas throughout Tehama County.

PLANNING UPDATES

The efforts of the Tehama–Glenn Fire Safe Council, the United States Forest Service, and Bureau of Land Management personnel should be coordinated in order to create additional Wildland Urban Interface areas. The overall goal of fire and fuels management for Tehama County is to develop countywide coordination of fire management related projects and policies. With the completion of this update, the documents, maps, and recommendations generated through the planning process will be incorporated either by reference or directly into the CalFire Tehama–Glenn Unit Fire Plan, which is updated annually. On a yearly basis, the coordinator of the Tehama–Glenn Fire Safe Council will work with the CalFire Tehama–Glenn Unit Pre-Fire Engineer to update the unit fire plan document's list of projects as well as to identify newly developed projects throughout Tehama County. This project information will also be used to update the RCDTC's online map and database of fire and fuels management projects. Members of the Tehama–Glenn Fire Safe Council will be canvassed for input regarding changes to federal, state, and local policies and any laws or ordnances pertaining to fire safety, fire management, and fuels reduction projects.

NEXT STEPS

In order to efficiently and effectively initiate the efforts described in this planning document, the Coordinator of the Tehama–Glenn Fire Safe Council will immediately begin to work with the members of the Tehama–Glenn Fire Safe Council to identify unfunded project work within Tehama County. The Coordinator will also discuss with the RCDTC the possibility of their assistance in identifying funding sources for project work, developing project funding proposals, and providing financial management of project work. Finally, the Tehama–Glenn Fire Safe Council Coordinator will work with the CalFire Tehama–Glenn Unit Pre-Fire Engineer and the Tehama–Glenn Fire Safe Council members in order to establish a process to officially incorporate this planning document into the Tehama–Glenn Unit fire plan. CalFire unit staff will then establish formal procedures to update project work as well as stakeholder policies related to fire and fuels management. This effort is expected to be completed by December 31 of each year.

APPENDIX A

GLOSSARY

The following is a list of fire related terms that are in common usage among members of the fire and fuels management community and that are found in much of the literature pertaining to wildfire issues.

Aerial Fuels: All live and dead vegetation in the forest canopy or above surface fuels, including tree branches, twigs and cones, snags, moss, and high brush.

Aerial Ignition: Ignition of fuels by dropping incendiary devices or materials from aircraft.

Air Tanker: A fixed-wing aircraft equipped to drop fire retardants or suppressants.

Agency: Any federal, state, or county government organization participating with jurisdictional responsibilities.

Anchor Point: An advantageous location, usually a barrier to fire spread, from which to start building a fire line. An anchor point is used to reduce the chance of firefighters being flanked by fire.

Aramid: The generic name for a high-strength, flame-resistant synthetic fabric used in the shirts and jeans of firefighters. Nomex, a brand name for aramid fabric, is the term commonly used by firefighters.

Aspect: Direction toward which a slope faces.

Backfire: A fire set along the inner edge of a fire line to consume the fuel in the path of a wildfire and/or change the direction of force of the fire's convection column.

Backpack Pump: A portable sprayer with hand-pump, fed from a liquid-filled container fitted with straps, used mainly in fire and pest control. (See also Bladder Bag.)

Bambi Bucket: A collapsible bucket slung below a helicopter. Used to dip water from a variety of sources for fire suppression.

Behave: A system of interactive computer programs for modeling fuel and fire behavior that consists of two systems: BURN and FUEL.

Bladder Bag: A collapsible backpack portable sprayer made of neoprene or high-strength nylon fabric fitted with a pump. (See also Backpack Pump.)

Blow-up: A sudden increase in fire intensity or rate of spread strong enough to prevent direct control or to upset control plans. Blow-ups are often accompanied by violent convection and may have other characteristics of a fire storm. (See Flare-up.)

Brush: A collective term that refers to stands of vegetation dominated by shrubby, woody plants, or low growing trees, usually of a type undesirable for livestock or timber management.

Brush Fire: A fire burning in vegetation that is predominantly shrubs, brush and scrub growth.

Bucket Drops: The dropping of fire retardants or suppressants from specially designed buckets slung below a helicopter.

Buffer Zones: An area of reduced vegetation that separates wildlands from vulnerable residential or business developments. This barrier is similar to a greenbelt in that it is usually used for another purpose such as agriculture, recreation areas, parks, or golf courses.

Bump-up Method: A progressive method of building a fire line on a wildfire without changing relative positions in the line. Work is begun with a suitable space between workers. Whenever one worker overtakes another, all workers ahead move one space forward and resume work on the uncompleted part of the line. The last worker does not move ahead until completing his or her space.

Burn Out: Setting fire inside a control line to widen it or consume fuel between the edge of the fire and the control line.

Burning Ban: A declared ban on open air burning within a specified area, usually due to sustained high fire danger.

Burning Conditions: The state of the combined factors of the environment that affect fire behavior in a specified fuel type.

Burning Index: An estimate of the potential difficulty of fire containment as it relates to the flame length at the most rapidly spreading portion of a fire's perimeter.

Burning Period: That part of each 24-hour period when fires spread most rapidly, typically from 10:00 a.m. to sundown.

Campfire: As used to classify the cause of a wildland fire, a fire that was started for cooking or warming that spreads sufficiently from its source to require action by a fire control agency.

Candle or Candling: A single tree or a very small clump of trees which is burning from the bottom up.

Chain: A unit of linear measurement equal to 66 feet.

Closure: Legal restriction, but not necessarily elimination of specified activities such as smoking, camping, or entry that might cause fires in a given area.

Cold Front: The leading edge of a relatively cold air mass that displaces warmer air. The heavier cold air may cause some of the warm air to be lifted. If the lifted air contains enough moisture, the result may be cloudiness, precipitation, and thunderstorms. If both air masses are dry, no clouds may form. Following the passage of a cold front in the Northern Hemisphere, westerly or northwesterly winds of 15 to 30 or more miles per hour often continue for 12 to 24 hours.

Cold Trailing: A method of controlling a partly dead fire edge by carefully inspecting and feeling with the hand for heat to detect any fire, digging out every live spot, and trenching any live edge.

Command Staff: The command staff consists of the information officer, safety officer and liaison officer. They report directly to the incident commander and may have assistants.

Complex: Two or more individual incidents located in the same general area which are assigned to a single incident commander or unified command.

Contain a fire: A fuel break around the fire has been completed. This break may include natural barriers or manually and/or mechanically constructed line.

Control a fire: The complete extinguishment of a fire, including spot fires. Fireline has been strengthened so that flare-ups from within the perimeter of the fire will not break through this line.

Control Line: All built or natural fire barriers and treated fire edge used to control a fire.

Cooperating Agency: An agency supplying assistance other than direct suppression, rescue, support, or service functions to the incident control effort; e.g., Red Cross, law enforcement agency, telephone company, etc.

Coyote Tactics: A progressive line construction duty involving self-sufficient crews that build fire line until the end of the operational period, remain at or near the point while off duty, and begin building fire line again the next operational period where they left off.

Creeping Fire: Fire burning with a low flame and spreading slowly.

Crew Boss: A person in supervisory charge of usually 16 to 21 firefighters and responsible for their performance, safety, and welfare.

Crown Fire (Crowning): The movement of fire through the crowns of trees or shrubs more or less independently of the surface fire.

Curing: Drying and browning of herbaceous vegetation or slash.

Dead Fuels: Fuels with no living tissue in which moisture content is governed almost entirely by atmospheric moisture (relative humidity and precipitation), dry-bulb temperature, and solar radiation.

Debris Burning: A fire spreading from any fire originally set for the purpose of clearing land or for rubbish, garbage, range, stubble, or meadow burning.

Defensible Space: An area either natural or manmade where material capable of causing a fire to spread has been treated, cleared, reduced, or changed to act as a barrier between an advancing wildland fire and the loss to life, property, or resources. In practice, "defensible space" is defined as an area a minimum of 30 feet around a structure that is cleared of flammable brush or vegetation.

Deployment: See Fire Shelter Deployment.

Detection: The act or system of discovering and locating fires.

Direct Attack: Any treatment of burning fuel, such as by wetting, smothering, or chemically quenching the fire or by physically separating burning from unburned fuel.

Dispatch: The implementation of a command decision to move a resource or resources from one place to another.

Dispatcher: A person employed who receives reports of discovery and status of fires, confirms their locations, takes action promptly to provide people and equipment likely to be needed for control in first attack, and sends them to the proper place.

Dispatch Center: A facility from which resources are directly assigned to an incident.

Division: Divisions are used to divide an incident into geographical areas of operation. Divisions are established when the number of resources exceeds the span-of-control of the operations chief. A division

is located with the Incident Command System organization between the branch and the task force/strike team.

Dozer: Any tracked vehicle with a front-mounted blade used for exposing mineral soil.

Dozer Line: Fire line constructed by the front blade of a dozer.

Drip Torch: Hand-held device for igniting fires by dripping flaming liquid fuel on the materials to be burned; consists of a fuel fount, burner arm, and igniter. Fuel used is generally a mixture of diesel and gasoline.

Drop Zone: Target area for air tankers, helitankers, and cargo dropping.

Drought Index: A number representing net effect of evaporation, transpiration, and precipitation in producing cumulative moisture depletion in deep duff or upper soil layers.

Dry Lightning Storm: Thunderstorm in which negligible precipitation reaches the ground. Also called a dry storm.

Duff: The layer of decomposing organic materials lying below the litter layer of freshly fallen twigs, needles, and leaves and immediately above the mineral soil.

Energy Release Component (ERC): The computed total heat released per unit area (British thermal units per square foot) within the fire front at the head of a moving fire.

Engine: Any ground vehicle providing specified levels of pumping, water and hose capacity.

Engine Crew: Firefighters assigned to an engine. The Fireline Handbook defines the minimum crew makeup by engine type.

Entrapment: A situation where personnel are unexpectedly caught in a fire behavior-related, life-threatening position where planned escape routes or safety zones are absent, inadequate, or compromised. An entrapment may or may not include deployment of a fire shelter for its intended purpose. These situations may or may not result in injury. They include "near misses."

Environmental Assessment (EA): EAs were authorized by the National Environmental Policy Act (NEPA) of 1969. They are concise, analytical documents prepared with public participation that determine if an Environmental Impact Statement (EIS) is needed for a particular project or action. If an EA determines an EIS is not needed, the EA becomes the document allowing agency compliance with NEPA requirements.

Environmental Impact Statement (EIS): EISs were authorized by the National Environmental Policy Act (NEPA) of 1969. Prepared with public participation, they assist decision makers by providing information, analysis and an array of action alternatives, allowing managers to see the probable effects of decisions on the environment. Generally, EISs are written for large-scale actions or geographical areas.

Equilibrium Moisture Content: Moisture content that a fuel particle will attain if exposed for an infinite period in an environment of specified constant temperature and humidity. When a fuel particle reaches equilibrium moisture content, net exchange of moisture between it and the environment is zero.

Escape Route: A preplanned and understood route firefighters take to move to a safety zone or other low-risk area, such as an already burned area, previously constructed safety area, a meadow that won’t burn,

natural rocky area that is large enough to take refuge without being burned. When escape routes deviate from a defined physical path, they should be clearly marked (flagged).

Escaped Fire: A fire which has exceeded or is expected to exceed initial attack capabilities or prescription.

Extended Attack Incident: A wildland fire that has not been contained or controlled by initial attack forces and for which more firefighting resources are arriving, en route, or being ordered by the initial attack incident commander.

Extreme Fire Behavior: "Extreme" implies a level of fire behavior characteristics that ordinarily precludes methods of direct control action. One of more of the following is usually involved: high rate of spread, prolific crowning and/or spotting, presence of fire whirls, strong convection column. Predictability is difficult because such fires often exercise some degree of influence on their environment and behave erratically, sometimes dangerously.

Faller: A person who fells trees. Also called a sawyer or cutter.

Field Observer: Person responsible to the Situation Unit Leader for collecting and reporting information about an incident obtained from personal observations and interviews.

Fine (Light) Fuels: Fast-drying fuels, generally with a comparatively high surface area-to volume ratio, which are less than ¼" in diameter and have a time lag of one hour or less. These fuels readily ignite and are rapidly consumed by fire when dry.

Fingers of a Fire: The long narrow extensions of a fire projecting from the main body.

Fire Behavior: The manner in which a fire reacts to the influences of fuel, weather and topography.

Fire Behavior Forecast: Prediction of probable fire behavior, usually prepared by a Fire Behavior Officer, in support of fire suppression or prescribed burning operations.

Fire Behavior Specialist: A person responsible to the Planning Section Chief for establishing a weather data collection system and for developing fire behavior predictions based on fire history, fuel, weather and topography.

Fire Break: A natural or constructed barrier used to stop or check fires that may occur, or to provide a control line from which to work.

Fire Cache: A supply of fire tools and equipment assembled in planned quantities or standard units at a strategic point for exclusive use in fire suppression.

Fire Crew: An organized group of firefighters under the leadership of a crew leader or other designated official.

Fire Front: The part of a fire within which continuous flaming combustion is taking place. Unless otherwise specified the fire front is assumed to be the leading edge of the fire perimeter. In ground fires, the fire front may be mainly smoldering combustion.

Fire Intensity: A general term relating to the heat energy released by a fire.

Fire Line: A linear fire barrier that is scraped or dug to mineral soil.

Fire Load: The number and size of fires historically experienced on a specified unit over a specified period (usually one day) at a specified index of fire danger.

Fire Management Plan (FMP): A strategic plan that defines a program to manage wildland and prescribed fires and documents the Fire Management Program in the approved land use plan. The plan is supplemented by operational plans such as preparedness plans, preplanned dispatch plans, prescribed fire plans, and prevention plans.

Fire Perimeter: The entire outer edge or boundary of a fire.

Fire Regime Condition Class

The Fire Regime Condition Class (FRCC) describes the amount of departure of an area or landscape from the historic to present conditions. This departure from the natural state may be a result of changes in one or more ecosystem components such as fuel composition, fire frequency, or other ecological disturbances. The FRCC classification system and other considerations are used in the fire management program to rank existing ecosystem conditions and prioritize areas for fuels treatment. As taken from the Cohesive Implementation Strategy, FRCC is defined as follows:

FRCC1: "…fire regimes in this condition class are within historical ranges. Thus, the risk of losing key ecosystem components from the occurrence of fire remains relatively low. Maintenance management such as prescribed fire, mechanical treatments, or preventing the invasion of non-native weeds, is required to prevent these lands from becoming degraded."

FRCC2: "Fire Regimes on these lands have been moderately altered from their historical range by either increased or decreased fire frequency. A moderate risk of losing key ecosystem components has been identified in these lands. To restore their historical CalFire regimes, these lands may require some level of restoration as through prescribed fire, mechanical or chemical treatments, and the subsequent reintroduction of native plants."

FRCC3: "These lands have been significantly altered from their historical range. Because fire regimes have been extensively altered, risk of losing key ecosystem components from fire is high. Consequently, these lands verge on the greatest risk of ecological collapse. To restore their historical CalFire regimes before prescribed fire can be utilized to manage fuel or obtain other desired benefits these lands may require multiple mechanical or chemical restoration treatments, or reseeding."

Fire Season: 1) Period(s) of the year during which wildland fires are likely to occur, spread, and affect resource values sufficient to warrant organized fire management activities. 2) A legally enacted time during which burning activities are regulated by state or local authority.

Fire Shelter: An aluminized tent offering protection by means of reflecting radiant heat and providing a volume of breathable air in a fire entrapment situation. Fire shelters should only be used in life-threatening situations, as a last resort.

Fire Shelter Deployment: The removing of a fire shelter from its case and using it as protection against fire.

Fire Storm: Violent convection caused by a large continuous area of intense fire. Often characterized by destructively violent surface in-drafts, near and beyond the perimeter, and sometimes by tornado-like whirls.

Fire Triangle: Instructional aid in which the sides of a triangle are used to represent the three factors (oxygen, heat, fuel) necessary for combustion and flame production; removal of any of the three factors causes flame production to cease.

Fire Use Module (Prescribed Fire Module): A team of skilled and mobile personnel dedicated primarily to prescribed fire management. These are national and interagency resources, available throughout the prescribed fire season, that can ignite, hold and monitor prescribed fires.

Fire Weather: Weather conditions that influence fire ignition, behavior and suppression.

Fire Weather Watch: A term used by fire weather forecasters to notify using agencies, usually 24 to 72 hours ahead of the event, that current and developing meteorological conditions may evolve into dangerous fire weather.

Fire Whirl: Spinning vortex column of ascending hot air and gases rising from a fire and carrying aloft smoke, debris, and flame. Fire whirls range in size from less than one foot to more than 500 feet in diameter. Large fire whirls have the intensity of a small tornado.

Firefighting Resources: All people and major items of equipment that can or potentially could be assigned to fires.

Flame Height: The average maximum vertical extension of flames at the leading edge of the fire front. Occasional flashes that rise above the general level of flames are not considered. This distance is less than the flame length if flames are tilted due to wind or slope.

Flame Length: The distance between the flame tip and the midpoint of the flame depth at the base of the flame (generally the ground surface); an indicator of fire intensity.

Flaming Front: The zone of a moving fire where the combustion is primarily flaming. Behind this flaming zone combustion is primarily glowing. Light fuels typically have a shallow flaming front, whereas heavy fuels have a deeper front. Also called fire front.

Flanks of a Fire: The parts of a fire's perimeter that are roughly parallel to the main direction of spread.

Flare-up: Any sudden acceleration of fire spread or intensification of a fire. Unlike a blow-up, a flare-up lasts a relatively short time and does not radically change control plans.

Flash Fuels: Fuels such as grass, leaves, draped pine needles, fern, tree moss and some kinds of slash, that ignite readily and are consumed rapidly when dry. Also called fine fuels.

Forb: A plant with a soft, rather than permanent woody stem, that is not a grass or grass-like plant.

Fuel: Combustible material. Includes, vegetation, such as grass, leaves, ground litter, plants, shrubs and trees that feed a fire. (See Surface Fuels.)

Fuel Bed: An array of fuels usually constructed with specific loading, depth and particle size to meet experimental requirements; also, commonly used to describe the fuel composition in natural settings.

Fuel Loading: The amount of fuel present expressed quantitatively in terms of weight of fuel per unit area.

Fuel Model: Simulated fuel complex (or combination of vegetation types) for which all fuel descriptors required for the solution of a mathematical rate of spread model have been specified.

Fuel Moisture (Fuel Moisture Content): The quantity of moisture in fuel expressed as a percentage of the weight when thoroughly dried at 212 degrees Fahrenheit.

Fuel Reduction: Manipulation, including combustion, or removal of fuels to reduce the likelihood of ignition and/or to lessen potential damage and resistance to control.

Fuel Type: An identifiable association of fuel elements of a distinctive plant species, form, size, arrangement, or other characteristics that will cause a predictable rate of fire spread or difficulty of control under specified weather conditions.

Fusee: A colored flare designed as a railway warning device and widely used to ignite suppression and prescription fires.

General Staff: The group of incident management personnel reporting to the incident commander. They may each have a deputy, as needed. Staff consists of operations section chief, planning section chief, logistics section chief, and finance/administration section chief.

Geographic Area: A political boundary designated by the wildland fire protection agencies, where these agencies work together in the coordination and effective utilization

Ground Fuel: All combustible materials below the surface litter, including duff, tree or shrub roots, punchy wood, peat, and sawdust that normally support a glowing combustion without flame.

Haines Index: An atmospheric index used to indicate the potential for wildfire growth by measuring the stability and dryness of the air over a fire.

Hand Line: A fireline built with hand tools.

Hazard Reduction: Any treatment of a hazard that reduces the threat of ignition and fire intensity or rate of spread.

Head of a Fire: The side of the fire having the fastest rate of spread.

Heavy Fuels: Fuels of large diameter such as snags, logs, large limb wood, that ignite and are consumed more slowly than flash fuels.

Helibase: The main location within the general incident area for parking, fueling, maintaining, and loading helicopters. The helibase is usually located at or near the incident base.

Helispot: A temporary landing spot for helicopters.

Helitack: The use of helicopters to transport crews, equipment, and fire retardants or suppressants to the fire line during the initial stages of a fire.

Helitack Crew: A group of firefighters trained in the technical and logistical use of helicopters for fire suppression.

Holding Actions: Planned actions required to achieve wildland prescribed fire management objectives. These actions have specific implementation timeframes for fire use actions but can have less sensitive implementation demands for suppression actions.

Holding Resources: Firefighting personnel and equipment assigned to do all required fire suppression work following fireline construction but generally not including extensive mop-up.

Hose Lay: Arrangement of connected lengths of fire hose and accessories on the ground, beginning at the first pumping unit and ending at the point of water delivery.

Hotshot Crew: A highly trained fire crew used mainly to build fireline by hand.

Hotspot: A particular active part of a fire.

Hotspotting: Reducing or stopping the spread of fire at points of particularly rapid rate of spread or special threat, generally the first step in prompt control, with emphasis on first priorities.

Historic Fire Regime

The Historic Fire Regime (HFR) represents the fire return interval prior to Euro-American settlement and are calculated and classified by analyzing natural vegetation, known fire cycles, and fire history data. Based on the FRCC and HFR classifications, the Cohesive Strategy established the following national priorities for implementing vegetation treatments: Treat vegetation types within HFR Groups I, II, and III; Treat lands that have been either significantly altered (CC3) or moderately altered (CC2) from their historic range, and; Treat at least 2% of an agency's administered lands annually.

Incident: A human-caused or natural occurrence, such as wildland fire, that requires emergency service action to prevent or reduce the loss of life or damage to property or natural resources.

Incident Action Plan (IAP): Contains objectives reflecting the overall incident strategy and specific tactical actions and supporting information for the next operational period. The plan may be oral or written. When written, the plan may have a number of attachments, including: incident objectives, organization assignment list, division assignment, incident radio communication plan, medical plan, traffic plan, safety plan, and incident map.

Incident Command Post (ICP): Location at which primary command functions are executed. The ICP may be co-located with the incident base or other incident facilities.

Incident Command System (ICS): The combination of facilities, equipment, personnel, procedure and communications operating within a common organizational structure, with responsibility for the management of assigned resources to effectively accomplish stated objectives pertaining to an incident.

Incident Commander: Individual responsible for the management of all incident operations at the incident site.

Incident Management Team: The incident commander and appropriate general or command staff personnel assigned to manage an incident.

Incident Objectives: Statements of guidance and direction necessary for selection of appropriate strategy(ies), and the tactical direction of resources. Incident objectives are based on realistic expectations of what can be accomplished when all allocated resources have been effectively deployed.

Infrared Detection: The use of heat sensing equipment, known as Infrared Scanners, for detection of heat sources that are not visually detectable by the normal surveillance methods of either ground or air patrols.

Initial Attack: The actions taken by the first resources to arrive at a wildfire to protect lives and property, and prevent further extension of the fire.

Job Hazard Analysis: This analysis of a project is completed by staff to identify hazards to employees and the public. It identifies hazards, corrective actions and the required safety equipment to ensure public and employee safety.

Jump Spot: Selected landing area for smokejumpers.

Jump Suit: Approved protection suite work by smokejumpers.

Keech Byram Drought Index (KBDI): Commonly-used drought index adapted for fire management applications, with a numerical range from 0 (no moisture deficiency) to 800 (maximum drought).

Knock Down: To reduce the flame or heat on the more vigorously burning parts of a fire edge.

Ladder Fuels: Fuels which provide vertical continuity between strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease. They help initiate and assure the continuation of crowning.

Large Fire: 1) For statistical purposes, a fire burning more than a specified area of land, e.g., 300 acres. 2) A fire burning with a size and intensity such that its behavior is determined by interaction between its own convection column and weather conditions above the surface.

Lead Plane: Aircraft with pilot used to make dry runs over the target area to check wing and smoke conditions and topography and to lead air tankers to targets and supervise their drops.

Light (Fine) Fuels: Fast-drying fuels, generally with a comparatively high surface area-to volume ratio, which are less than ¼" in diameter and have a time lag of one hour or less. These fuels readily ignite and are rapidly consumed by fire when dry.

Lightning Activity Level (LAL): A number, on a scale of 1 to 6 that reflects frequency and character of cloud-to-ground lightning. The scale is exponential, based on powers of 2 (i.e., LAL 3 indicates twice the lightning of LAL 2).

Line Scout: A firefighter who determines the location of a fire line.

Litter: Top layer of the forest, scrubland, or grassland floor, directly above the fermentation layer, composed of loose debris of dead sticks, branches, twigs, and recently fallen leaves or needles, little altered in structure by decomposition.

Live Fuels: Living plants, such as trees, grasses, and shrubs, in which the seasonal moisture content cycle is controlled largely by internal physiological mechanisms, rather than by external weather influences.

Micro-Remote Environmental Monitoring System (Micro-REMS): Mobile weather monitoring station. A Micro-REMS usually accompanies an incident meteorologist and ATMU to an incident.

Mineral Soil: Soil layers below the predominantly organic horizons; soil with little combustible material.

Mobilization: The process and procedures used by all organizations, federal, state and local for activating, assembling, and transporting all resources that have been requested to respond to or support an incident.

Modular Airborne Firefighting System (MAFFS): A manufactured unit consisting of five interconnecting tanks, a control pallet, and a nozzle pallet, with a capacity of 3,000 gallons, designed to be rapidly mounted inside an unmodified C-130 (Hercules) cargo aircraft for use in dropping retardant on wildland fires.

Mop-up: To make a fire safe or reduce residual smoke after the fire has been controlled by extinguishing or removing burning material along or near the control line, felling snags, or moving logs so they won't roll downhill.

Multi-Agency Coordination (MAC): A generalized term which describes the functions and activities of representatives of involved agencies and/or jurisdictions who come together to make decisions regarding the prioritizing of incidents, and the sharing and use of critical resources. The MAC organization is not a part of the on-scene ICS and is not involved in developing incident strategy or tactics.

Mutual Aid Agreement: Written agreement between agencies and/or jurisdictions in which they agree to assist one another upon request, by furnishing personnel and equipment.

National Environmental Policy Act (NEPA): NEPA is the basic national law for protection of the environment, passed by Congress in 1969. It sets policy and procedures for environmental protection, and authorizes Environmental Impact Statements and Environmental Assessments to be used as analytical tools to help federal managers make decisions.

National Fire Danger Rating System (NFDRS): A uniform fire danger rating system that focuses on the environmental factors that control the moisture content of fuels.

National Wildfire Coordinating Group: A group formed under the direction of the Secretaries of Agriculture and the Interior and comprised of representatives of the U.S. Forest Service, Bureau of Land Management, Bureau of Indian Affairs, National Park Service, U.S. Fish and Wildlife Service and Association of State Foresters. The group's purpose is to facilitate coordination and effectiveness of wildland fire activities and provide a forum to discuss, recommend action, or resolve issues and problems of substantive nature. NWCG is the certifying body for all courses in the National Fire Curriculum.

Nomex ®: Trade name for a fire resistant synthetic material used in the manufacturing of flight suits and pants and shirts used by firefighters (see Aramid).

Normal Fire Season: 1) A season when weather, fire danger, and number and distribution of fires are about average. 2) Period of the year that normally comprises the fire season.

Operations Branch Director: Person under the direction of the operations section chief who is responsible for implementing that portion of the incident action plan appropriate to the branch.

Operational Period: The period of time scheduled for execution of a given set of tactical actions as specified in the Incident Action Plan. Operational periods can be of various lengths, although usually not more than 24 hours.

Overhead: People assigned to supervisory positions, including incident commanders, command staff, general staff, directors, supervisors, and unit leaders.

Pack Test: Used to determine the aerobic capacity of fire suppression and support personnel and assign physical fitness scores. The test consists of walking a specified distance, with or without a weighted pack, in a predetermined period of time, with altitude corrections.

Paracargo: Anything dropped, or intended for dropping, from an aircraft by parachute, by other retarding devices, or by free fall.

Peak Fire Season: That period of the fire season during which fires are expected to ignite most readily, to burn with greater than average intensity, and to create damages at an unacceptable level.

Personnel Protective Equipment (PPE): All firefighting personnel must be equipped with proper equipment and clothing in order to mitigate the risk of injury from, or exposure to, hazardous conditions encountered while working. PPE includes, but is not limited to: 8" highlaced leather boots with lug soles, fire shelter, hard hat with chin strap, goggles, ear plugs, aramid shirts and trousers, leather gloves and individual first aid kits.

Preparedness: Condition or degree of being ready to cope with a potential fire situation

Prescribed Fire: Any fire ignited by management actions under certain, predetermined conditions to meet specific objectives related to hazardous fuels or habitat improvement. A written, approved prescribed fire plan must exist, and NEPA requirements must be met, prior to ignition.

Prescribed Fire Plan (Burn Plan): This document provides the prescribed fire burn boss information needed to implement an individual prescribed fire project.

Prescription: Measurable criteria that define conditions under which a prescribed fire may be ignited, guide selection of appropriate management responses, and indicate other required actions. Prescription criteria may include safety, economic, public health, environmental, geographic, administrative, social, or legal considerations.

Prevention: Activities directed at reducing the incidence of fires, including public education, law enforcement, personal contact, and reduction of fuel hazards.

Project Fire: A fire of such size or complexity that a large organization and prolonged activity is required to suppress it.

Pulaski: A combination chopping and trenching tool, which combines a single-bitted axe blade with a narrow adze-like trenching blade fitted to a straight handle. Useful for grubbing or trenching in duff and matted roots. Well-balanced for chopping.

Radiant Burn: A burn received from a radiant heat source.

Radiant Heat Flux: The amount of heat flowing through a given area in a given time, usually expressed as calories/square centimeter/second.

Rappelling: Technique of landing specifically trained firefighters from hovering helicopters; involves sliding down ropes with the aid of friction-producing devices.

Rate of Spread: The relative activity of a fire in extending its horizontal dimensions. It is expressed as a rate of increase of the total perimeter of the fire, as rate of forward spread of the fire front, or as rate of increase in area, depending on the intended use of the information. Usually it is expressed in chains or acres per hour for a specific period in the fire's history.

Reburn: The burning of an area that has been previously burned but that contains flammable fuel that ignites when burning conditions are more favorable; an area that has reburned.

Red Card: Fire qualification card issued to fire rated persons showing their training needs and their qualifications to fill specified fire suppression and support positions in a large fire suppression or incident organization.

Red Flag Warning: Term used by fire weather forecasters to alert forecast users to an ongoing or imminent critical CalFire weather pattern.

Rehabilitation: The activities necessary to repair damage or disturbance caused by wildland fires or the fire suppression activity.

Relative Humidity (Rh): The ratio of the amount of moisture in the air, to the maximum amount of moisture that air would contain if it were saturated. The ratio of the actual vapor pressure to the saturated vapor pressure.

Remote Automatic Weather Station (RAWS): An apparatus that automatically acquires, processes, and stores local weather data for later transmission to the GOES Satellite, from which the data is re-transmitted to an earth-receiving station for use in the National Fire Danger Rating System.

Resources: 1) Personnel, equipment, services and supplies available, or potentially available, for assignment to incidents. 2) The natural resources of an area, such as timber, crass, watershed values, recreation values, and wildlife habitat.

Resource Management Plan (RMP): A document prepared by field office staff with public participation and approved by field office managers that provides general guidance and direction for land management activities at a field office. The RMP identifies the need for fire in a particular area and for a specific benefit.

Resource Order: An order placed for firefighting or support resources.

Retardant: A substance or chemical agent which reduced the flammability of combustibles.

Run (of a fire): The rapid advance of the head of a fire with a marked change in fire line intensity and rate of spread from that noted before and after the advance.

Running: A rapidly spreading surface fire with a well-defined head.

Safety Zone: An area cleared of flammable materials used for escape in the event the line is outflanked or in case a spot fire causes fuels outside the control line to render the line unsafe. In firing operations, crews

progress so as to maintain a safety zone close at hand allowing the fuels inside the control line to be consumed before going ahead. Safety zones may also be constructed as integral parts of fuel breaks; they are greatly enlarged areas which can be used with relative safety by firefighters and their equipment in the event of a blowup in the vicinity.

Scratch Line: An unfinished preliminary fire line hastily established or built as an emergency measure to check the spread of fire.

Severity Funding: Funds provided to increase wildland fire suppression response capability necessitated by abnormal weather patterns, extended drought, or other events causing abnormal increase in the fire potential and/or danger.

Single Resource: An individual, a piece of equipment and its personnel complement, or a crew or team of individuals with an identified work supervisor that can be used on an incident.

Size-up: To evaluate a fire to determine a course of action for fire suppression.

Slash: Debris left after logging, pruning, thinning or brush cutting; includes logs, chips, bark, branches, stumps and broken understory trees or brush.

Sling Load: Any cargo carried beneath a helicopter and attached by a lead line and swivel.

Slop-over: A fire edge that crosses a control line or natural barrier intended to contain the fire.

Smokejumper: A firefighter who travels to fires by aircraft and parachute.

Smoke Management: Application of fire intensities and meteorological processes to minimize degradation of air quality during prescribed fires.

Smoldering Fire: A fire burning without flame and barely spreading.

Snag: A standing dead tree or part of a dead tree from which at least the smaller branches have fallen.

Spark Arrester: A device installed in a chimney, flue, or exhaust pipe to stop the emission of sparks and burning fragments.

Spot Fire: A fire ignited outside the perimeter of the main fire by flying sparks or embers.

Spot Weather Forecast: A special forecast issued to fit the time, topography, and weather of each specific fire. These forecasts are issued upon request of the user agency and are more detailed, timely, and specific than zone forecasts.

Spotter: In smokejumping, the person responsible for selecting drop targets and supervising all aspects of dropping smokejumpers.

Spotting: Behavior of a fire producing sparks or embers that are carried by the wind and start new fires beyond the zone of direct ignition by the main fire.

Staging Area: Locations set up at an incident where resources can be placed while awaiting a tactical assignment on a three-minute available basis. Staging areas are managed by the operations section.

Strategy: The science and art of command as applied to the overall planning and conduct of an incident.

Strike Team: Specified combinations of the same kind and type of resources, with common communications, and a leader.

Strike Team Leader: Person responsible to a division/group supervisor for performing tactical assignments given to the strike team.

Structure Fire: Fire originating in and burning any part or all of any building, shelter, or other structure.

Suppressant: An agent, such as water or foam, used to extinguish the flaming and glowing phases of combustion when direction applied to burning fuels.

Suppression: All the work of extinguishing or containing a fire, beginning with its discovery.

Surface Fuels: Loose surface litter on the soil surface, normally consisting of fallen leaves or needles, twigs, bark, cones, and small branches that have not yet decayed enough to lose their identity; also grasses, forbs, low and medium shrubs, tree seedlings, heavier branchwood, downed logs, and stumps interspersed with or partially replacing the litter.

Swamper: (1) A worker who assists fallers and/or sawyers by clearing away brush, limbs and small trees. Carries fuel, oil and tools and watches for dangerous situations. (2) A worker on a dozer crew who pulls winch line, helps maintain equipment, etc., to speed suppression work on a fire.

Tactics: Deploying and directing resources on an incident to accomplish the objectives designated by strategy.

Temporary Flight Restrictions (TFR): A restriction requested by an agency and put into effect by the Federal Aviation Administration in the vicinity of an incident which restricts the operation of nonessential aircraft in the airspace around that incident.

Terra Torch ®: Device for throwing a stream of flaming liquid, used to facilitate rapid ignition during burn out operations on a wildland fire or during a prescribed fire operation.

Test Fire: A small fire ignited within the planned burn unit to determine the characteristic of the prescribed fire, such as fire behavior, detection performance and control measures.

Time lag: Time needed under specified conditions for a fuel particle to lose about 63 percent of the difference between its initial moisture content and its equilibrium moisture content. If conditions remain unchanged, a fuel will reach 95 percent of its equilibrium moisture content after four time lag periods.

Torching: The ignition and flare-up of a tree or small group of trees, usually from bottom to top.

Two-way Radio: Radio equipment with transmitters in mobile units on the same frequency as the base station, permitting conversation in two directions using the same frequency in turn.

Type: The capability of a firefighting resource in comparison to another type. Type 1 usually means a greater capability due to power, size, or capacity.

Uncontrolled Fire: Any fire which threatens to destroy life, property, or natural resources, and

Underburn: A fire that consumes surface fuels but not trees or shrubs. (See Surface Fuels.)

Vectors: Directions of fire spread as related to rate of spread calculations (in degrees from upslope).

Volunteer Fire Department (VFD): A fire department of which some or all members are unpaid.

Water Tender: A ground vehicle capable of transporting specified quantities of water.

Weather Information and Management System (WIMS): An interactive computer system designed to accommodate the weather information needs of all federal and state natural resource management agencies. Provides timely access to weather forecasts, current and historical weather data, the National Fire Danger Rating System (NFDRS), and the National Interagency Fire Management Integrated Database (NIFMID).

Wet Line: A line of water, or water and chemical retardant, sprayed along the ground, that serves as a temporary control line from which to ignite or stop a low-intensity fire.

Wildland Fire: Any nonstructure fire, other than prescribed fire, that occurs in the wildland.

Wildland Fire Implementation Plan (WFIP): A progressively developed assessment and operational management plan that documents the analysis and selection of strategies and describes the appropriate management response for a wildland fire being managed for resource benefits.

Wildland Fire Situation Analysis (WFSA): A decision-making process that evaluates alternative suppression strategies against selected environmental, social, political, and economic criteria. Provides a record of decisions.

Wildland Fire Use: The management of naturally ignited wildland fires to accomplish specific prestated resource management objectives in predefined geographic areas outlined in Fire Management Plans.

Wildland Urban Interface: The line, area or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.

Wind Vectors: Wind directions used to calculate fire behavior.

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