CFLR Project (Name/Number): Burney-Hat Creek Basins 014

National Forest(s): Lassen

1. CFLRP Expenditures, Match, and Leveraged Funds:

a. FY20 CFLN and Matching Funds Documentation

Fund Source – (CFLN Funds Expended)	Total Funds Expended in Fiscal Year 2020
CFLN1420	$875,890.72

This amount should match the amount of CFLN dollars obligated in the FMMI CFLRP expenditure report. Include prior year CFLN dollars expended in this Fiscal Year. CFLN funds can only be spent on NFS lands.

Fund Source – (FS Matching Funds)	Total Funds Expended in Fiscal Year 2020
CFKV1416	$380,402.15

This amount should match the amount of matching funds in the FMMI CFLRP expenditure report, *minus* any partner funds contributed through agreements (such as NFEX, SPEX, WFEX, CMEX, and CWFS) listed below. Per the updated Program Funding Guidance, federal dollars spent on non-NFS lands (for example, through Wyden authority) may be included here if aligned with CFLRP proposal implementation within the CFLRP landscape. NOTE: In FY20, projects received their allocation only in CFLN – there are no "Washington Office funds" to report.

Fund Source – Partner Match	In-Kind Contribution or Funding Provided?	Total Estimated Funds/Value for FY20	Description of CFLRP implementation or monitoring activity	Where activity/item is located or impacted area
Fall River RCD	**In-kind contribution**	$625,598	Tamarack Fuel break on SPI land $216,620 and Shasta College program on training truck drivers, equipment operators, purchase of logging equipment, etc. $408,978	**Other lands within CFLRP landscape:**
Great Basin Institute	**In-kind contribution**	$14,135	Layout and Marking on the 49er Timber Sale	**National Forest System Lands**
Mule Deer Foundation	**Funding** Budget Line Item, if relevant: [1]	$271,000	Manzanita Chutes Mastication $220,000 and Crossroads Project Layout $51,000	**National Forest System Lands**

Fund Source – Partner Match	In-Kind Contribution or Funding Provided?	Total Estimated Funds/Value for FY20	Description of CFLRP implementation or monitoring activity	Where activity/item is located or impacted area
CalTrout	**In-kind contribution**	$40,000	Lower Hat Creek Project	**Other lands within CFLRP landscape:**
Lassen Volcanic National Park	**Funding** Budget Line Item, if relevant: [1]	$27,000	Northwest Gateway Project, Weed Management and Summit Lake Campground	**Other lands within CFLRP landscape:**
Pacific Crest Trail Association	**In-kind contribution**	$2,687	Pacific Crest Trail	**National Forest System Lands**
Spring Rivers Foundation	**In-kind contribution**	$90,000	Outdoor Education $20,000 Rock Creek Meadow Restoration $70,000	**Other lands within CFLRP landscape:**
Symbiotic Restoration	**Funding** Budget Line Item, if relevant: [1]	$95,000	Intermountain Recreation Collaborative Grant	**National Forest System Lands** **Other lands within CFLRP landscape:**
Forest Service State and Private Forest Health	**Funding** Budget Line Item, if relevant: [1]	$30,000	Plum Biomass	**National Forest System Lands**
Forest Service KV Funds	**Funding** Budget Line Item, if relevant: [1]	$125,000	Manzanita Chutes Mastication (Mule Deer Association)	**National Forest System Lands**
Sierra Nevada Conservancy	**Funding** Budget Line Item, if relevant: [1]	$100,000	Badger Restoration Project	**National Forest System Lands**
Sierra Institute for Community and Environment	**In-kind contribution**	$24,338	Socio Economic Monitoring	**National Forest System Lands**

Fund Source – Partner Match	In-Kind Contribution or Funding Provided?	Total Estimated Funds/Value for FY20	Description of CFLRP implementation or monitoring activity	Where activity/item is located or impacted area
Sierra Institute for Community and Environment	**In-kind contribution**	$6,448	Sierra Institute PCREW	**National Forest System Lands**
University of Nevada	**In-kind contribution**	$17,700	Hydrologic Monitoring	**National Forest System Lands**
Pacific Northwest Research Station	**In-kind contribution**	$9,000	Hydrologic Monitoring	**National Forest System Lands**
US Geological Survey	**In-kind contribution**	$107,000	Hydrogeologic and Thermal Models, Water Quality and Flow Monitoring	**National Forest System Lands** **Other lands within CFLRP landscape:**

Total partner in-kind contributions for implementation and monitoring of a CFLR project across **all lands** within the CFLRP landscape.

Service work accomplishment through goods-for services funding within a stewardship contract (for contracts awarded in FY20)	Totals
Total revised non-monetary credit limit for contracts awarded in FY20	$ 0
Revenue generated through Good Neighbor Agreements	**Totals**
NA	$ 0

Revised non-monetary credit limits should be the amount in contract's "Progress Report for Stewardship Credits, Integrated Resources Contracts or Agreements" in cell J46, the "Revised Non-Monetary Credit Limit," as of September 30. Additional information on the Progress Reports is available in CFLR Annual Report Instructions document. Information for contracts awarded prior to FY20 were captured in previous annual reports. Revenue generated from GNA should only be reported for CFLRP match if the funds are intended to be spent within the CFLRP project area for work in line with the CFLRP project's proposed restoration strategies and in alignment with the CFLRP authorizing legislation

b. *(If needed)* Describe additional leveraged funds in your landscape in FY2020

Founded in 2009, the Burney-Hat Creek Community Forest and Watershed Group (BHCCFWG) is a community-based collaborative of citizens, businesses, organizations, governments, and landowners who share a vision for a sustainable

future of our communities and the surrounding landscape. This collaborative land management effort is dedicated to improving social, environmental, and economic conditions in the Burney Creek and Hat Creek Watersheds. The collaborative footprint encompasses 364,250 acres of public, private, and tribal lands, as well as the communities of Burney, Johnson Park, Hat Creek, Cassel, and Old Station. Fifty eight percent of this land is within the Lassen National Forest. Another 29 percent is owned by large private forestland owners, seven percent by Lassen Volcanic National Park, and four percent by large ranches.

In recent decades, local communities have experienced high rates of unemployment and increased risk of high-severity wildfires, issues the collaborative actively works to mitigate. The group's vision is to create a fire-resilient forest ecosystem with sustainable populations of wildlife, fisheries, and habitat; functioning and restored watersheds and water quality; protected cultural resources; and appropriate recreational opportunities while also helping to support quality of life; jobs for diverse community members; and economic benefits in local communities. BHCCFWG receives federal support through the U.S. Forest Service's Collaborative Forested Landscape Restoration (CFLR) Program, which augments available local resources to advance landscape-scale fuels reduction, forest health, and ecological restoration projects through coordinated public-private efforts.

The following projects were completed this year by partners and support overall project goals within the Basins CFLR Boundary.

California Department of Forestry and Fire (CAL FIRE)

CAL FIRE treated approximately 65 acres of the Burney Community Fuel Break, Johnson Park Fuel Break, and the Bunchgrass Repeater Facility Protection Projects.

CAL FIRE, in cooperation with private landowners and the California Conservation Corps (CCC), is expanding a 135-acre shaded fuel break west of the community of Burney, CA. Additionally, a shaded fuel break on the westside of Johnson Park, CA was completed. There are three phases of the Burney Community Fuel Break:

- Phase I is located on the east to southeast side Burney;
- Phase II is on the south and Southwest sides of Burney; and
- Phase III is located on the west side of Burney.

The Johnson Park Fuelbreak runs along the westside of the community, from the CAL FIRE station on the south to Rocky Ledge, on the northside of the town.

The CCC re-treated (cutting resprouts), piled, and burned approximately 25 acres in Burney Phase II, and finished the last 15 acres in Burney Phase III. Approximately 20 acres of piles were burned on the Johnston Park Fuel Break and five acres where cut and chipped in place around the Bunchgrass repeater site.

The treatments associated with all three projects consist of the reduction and/or rearrangement of vertical and horizontal fuels through the methods of hand-cutting, cut/haul offsite, cut/pile/chip, cut/pile/burn, and lop and scatter. The timber understory varies from 2-10 ft. tall deer brush, manzanita, small conifers, oaks, and other brush species. Timber stand age varies greatly as a result of the area's fire history, and timber overstory ranges from approximately 60-year-old mixed conifer forests to 4-year-old pine plantations.

CalTrout

In FY20, CalTrout worked with Lomakatsi Tribal crews doing weed management on the Lower Hat Creek Project, primarily to address an infestation of yellow star thistle ($15,000). Additionally, hydraulic and geomorphic monitoring of this reach was completed by the UC Davis Center for Watershed Sciences in order to quantify the effects of the large woody debris structures, which were installed in 2015 ($25,000).

Fall River RCD (FRRCD)

The Fall River RCD continued developing and advancing bioenergy facilities in the region. These are expected to provide an essential future outlet for federal and private forest health projects. To date, the Hat Creek Bioenergy Facility is near financial close, and will likely order equipment in December of 2020. This site is one of the leading candidates to be the first small-scale (e.g. 3-5 Megawatt) facility built in California that qualified through the BioMAT Program. Two other sites of similar size also continue to make significant progress. They both completed System Impact Studies with PG&E and are seeking financing. Each of these proposed sites intends to utilize cutting-edge technology, combining gasification and traditional boilers, to create heat for electricity generation and biochar. The three facilities, if built, would require a total of nearly 100,000 BDT/year, corresponding to an average treatment acreage of 10,000 acres. Such facilities are essential to accommodate the increased pace and scale for which the agency is striving.

The Fall River RCD continued to lead the effort of the Burney Basin Fire Safe Council (FSC) in 2020. Of the original 21 priority projects identified two years ago, sixteen have either been implemented or have secured funding for doing so in 2021. Regular meetings were held to revise the Community Wildlife Prevention Plan, prioritize projects, and seek grant funds to implement them. The FRRCD also helped establish a green waste program in the Burney Area through their Department of Conservation (DOC) Watershed Coordinator Grant Program. This program funds a variety of tasks, including assisting the two California Climate Investment (CCI) Program funded forest health projects in the region. One notable success was the securing of $300,000 from the McConnell Foundation to develop a 3,000-acre WUI forest health project on the Lassen National Forest Hat Creek Ranger District, near the town of Fall River Mills.

The Burney-Hat Creek Forest Health Project, which CCI funded in 2019, successfully advanced several projects on both private and federal lands. Treatments for a large fuel break (Tamarack Fuel Break) were completed in 2020, and compliance was completed for a 3,000-acre WUI project (Jackrabbit THP) on private lands ($216,620). On federal land, several hundred acres of fuels work were completed on the Manzanita Chutes Project, and over 1,000 acres of trees were planted in the Bald and Eiler Fire Areas. In addition, another forest health and fuels treatment project was developed and is ready to go out for bid (Crossroads).

Shasta College, through the Fall River RCD CCI funds and other grants, continued to train and certify students for the forest and logging workforce. This is done through their innovative training program, which was designed to build capacity within the California forest products industry ($408,978)

Forestry Challenge

The Forestry Challenge is an academic event designed for high school students that is about technical forestry and current forestry topics. Participants spend four days in the forest learning about the ecology and management of the forested landscapes that provide communities with water, recreational opportunities, wood products, and wildlife habitat. Youth benefit by gaining a better understanding of the relationship of the forested environment to their community, by being exposed to natural resource management as a potential career option, and by having undertaken a rigorous critical thinking exercise.

Due to COVID-19, the Forestry Challenge will be completed on-line and was moved to November and December. Thus, no activities were completed in FY20. We look forward to posting the results from the 2020 challenge in next year's report.

Photo 1: Jake Bleazard, a student at Mt. Shasta High School

Forestry Institute for Teachers (FIT)

The Forestry Institute for Teachers (FIT) is a free residential program offered to kindergarten through 12th grade educators in California. It brings them into an immersive, week-long field experience with topic-specific training about California's

forest ecosystems, human use of natural resources, and environmental education curriculum. The knowledge, skills, and tools provided enable educators to effectively teach about forest ecology and forest resource management practices while adopting Next-Generation Science Standards (NGSS) through Project Learning Tree (PLT) and Project WILD. FIT curriculum and sessions are directed by teams from University of California Cooperative Extension (UCCE), natural resources/forestry advisors, and highly qualified K-12 education professionals.

As a result of COVID-19, FIT was cancelled for the year.

Great Basin Institute (GBI)

Great Basin Institute and the U.S. Forest Service worked cooperatively to complete natural resource management projects on the Lassen National Forest. These valuable experiences provided opportunities for GBI personnel, including AmeriCorps members, to gain first-hand knowledge of how a federal land management agency operates. Forest vegetation management projects generally include commercial and non-commercial removal of vegetation, as well as prescribed burning. Treatment units require boundary layout; tree marking; flagging, painting and mapping of unit boundaries; timber cruising, including diameter, height and defect measurements; and stand reconnaissance to identify species composition, structure, and density. The Great Basin Institute hired a four-person timber sale prep crew, consisting of one crew lead and three crew members, to support the North 49 Forest Health Recovery Project. A total of 16 units were marked, resulting in 1,219 acres of timber sale prep being completed, over the course of twelve weeks. This work supports mutual goals of improving fire-resiliency, forest health, and ecological diversity. ($14,135)

Great Shasta Rail Trail Association (GSRTA)

GSRTA spent most of the year working at a distance due to the COVID epidemic. They were awarded a grant for the replacement of the Dry Creek Bridge (tributary of Bear Creek / Fall River). Contracts have been signed for environmental services (CEQA) and engineering surveys, design, construction contract package, and inspection. Field work for both has been completed and paperwork is in process. As part of our challenge cost share agreement, Forest Service road crews replaced culverts at Cayton, while the GSRTA provided the site location, as well as advice and inspection. The final blade and shaping of the trail surface were interrupted by the COVID shutdown and then this summer's fire siege.

The brushing of the trail by the California Conservation Corps was not completed as scheduled because of COVID and the fact that CCC crews spent most of the 2020 field season supporting fire siege activities.

GSRTA provided an access permit via the trail to PG&E in order to allow their contractor to remove Treated Wood Waste (TWW) (i.e. ties and tie fragments from the property) before the land is donated to the USFS under the *Proposed Land Conservation and Conveyance Plan - Lake Britton (PG&E Retained Lands Updated Final Land Conservation and Conveyance Plan – For Land to be donated to the United States Forest Service at Lake Britton.* A staging area and area for placement of roll off / roll on dumpsters was also designated by GSRTA, along with boundary locations, tie concentration locations, and contacts with adjacent landowners.

Public meetings have been (and are planned to continue being) via Zoom for collecting input for grant applications involving; Burney Trailhead construction, brushing and trail surface restoration; culvert repair / replacement from Burney Trailhead to Cayton Trailhead (13 miles); and rehabilitation of the Lake Britton Trestle and Lake Overpass Bridge (SR 89).

Humboldt State University (HSU)

HSU completed pre-treatment sampling in 60 Baker cypress permanent monitoring plots, 20 in each of the three treatment units (thinning only, thinning and mastication, and untreated control). Post-treatment sampling of both fuels and initial cone production will occur in 2021, after treatments are implemented.

Lassen Volcanic National Park (LVNP)

Treatment of 20 acres of weeds ($5,000). This included treatment of cheatgrass (*Bromus tectorum*), bull thistle (*Cirsium vulgare*), Himalayan blackberry (*Rubus armeniacus*), and mullein (*Verbascum thapsus*). Funding was partially provided by the California Exotic Plant Management Team, a regional NPS division.

Continuation of the restoration of the Summit Lake Campground, which is of outsize importance since it is at the head of the Hat Creek Watershed. FY20 saw 10 acres of understory restoration, including over 3,000 shrubs, installed ($9,000).

Prescribed fire on 85 acres in the Northwest Gateway Project ($10,000). Burning was completed in FY20, with excellent consumption of the understory fuels that remained from thinning that had occurred in 2013. Fire effects monitors analyzed data taken immediately post-fire ($3,000), which showed consumption rates of 85% in some areas. This indicates that the fire was well within prescription.

McArthur-Burney Falls State Park

No report

Mule Deer Foundation (MDF)

Multiple Mule Deer Foundation (MDF) projects were planned and/or implemented. They finalized the layout, mark, and cruise of the Manzanita Chutes Project, again utilizing Jefferson Resources as the primary contractor. GTS Forestry and Hat Creek Construction were also hired to masticate over 350 acres of the project. A California Climate Investment (CCI) grant funded all the work ($205,000), as well as project management and quality control ($15,000).

Approximately $70,000 from the Forest Service, through our master stewardship agreement, will be used to complete the following tasks:1) Jefferson Resources is scheduled to complete the Cabin Project in 2021; 2) pre-project implementation for the Crossroads Project, including the cruise, layout, finalization of surveys, and marketing ($51,000). The Fall River RCD and Cascade Resources were contracted for the latter.

Pacific Crest Trail Association (PCTA)

Despite challenges with the COVID-19 virus, Pacific Crest Trail Association volunteers contributed over 97 hours ($2,687) within the Basins Area in FY2020. This included scouting, debris clearing, maintenance of trail tread and adjacent brush, and servicing the 550-gal potable water tank. They completed 8.8 miles of brush/tread work, thereby maintaining all 70 miles of the Pacific Crest Trail to standard. Additionally, representatives from the PCTA met with district staff on several occasions to collaborate on ways to enhance visitor experience, improve the trail's "wilderness character", and further reduce trail maintenance costs.

Pacific Gas and Electric (PG&E)

PG&E continues to remove drought-stricken trees and fuels from their infrastructure in areas where tree mortality continues from the drought (No Cost Estimate).

Sierra Institute for the Community and the Environment

The Sierra Institute continued to facilitate Burney-Hat Creek Forest and Watershed Group meetings. Under the agreement, a neutral party facilitates group meetings and provides unbiased guidance during decision-making processes, which leads to the fulfillment of the group's vision and mission. In this capacity, the responsibilities of the Sierra Institute include: 1) identifying stakeholders to participate in the meetings; 2) working with the Pit River Tribe to increase their involvement with the collaborative; 3) working with a subgroup to plan and develop agendas for meetings; 4) coordinating and facilitating the meetings themselves, which includes interfacing with presenters to maintain flow and timeliness; and 5) additional duties that may arise. They have also worked with the LNF Forest Leadership Team to integrate the work of the group with the Forest's priorities.

Additionally, they work collaboratively with partners to improve the design and environmental compliance of projects, thereby making them more defensible. As drought conditions and climate change worsen, and large, destructive fires become more common, it is increasingly important to accelerate this work. Since the Lassen National Forest is very short staffed, the expertise provided by the collaborative group is essential inmoving projects forward.

The Sierra Institute entered into a second agreement with the LNF in FY19 to complete the socio-economic monitoring report on the 10-year CFLR project ($24,338). Group members consider socioeconomic outcomes to be an integral part of the success of the Burney-Hat Creek Basins Project. Monitoring is used to measure progress toward socioeconomic goals, objectives, and desired conditions, as well as to assess the impact of CFLRP projects on local community sustainability. It is also an essential tool for demonstrating and communicating successes, as well as identifying areas in need of improvement, to stakeholders involved in the collaborative process. The Sierra Institute has presented a draft socioeconomic report to the group twice, and at the time of writing, is wrapping it up.

In the summer of 2020, their P-CREW worked for one week in the Thousand Lakes Wilderness, on the Hat Creek District. This entailed nine students, one leader in training, and two leaders spending a total of 450 hours building 16 rock water bars and maintaining 4,750 ft of trails. Since this was their first backcountry trip of the season, the crew learned how to pack for backcountry adventures. A part of one of the days was spent learning about forest ecology and searching for the largest western hemlock tree, for our large tree database. The tree the crew found was 61 inches in diameter at breast height and 111 feet tall! ($6,448).

Photo 2: Magee Lake, Thousand Lakes Wilderness

Sierra Nevada Conservancy (SNC)

The Hat Creek Ranger District was awarded Sierra Nevada Conservancy Proposition I and Proposition 68 grant funds for the Badger Restoration Project. These will be used to fund an interdisciplinary team leader, a writer/editor, and a record manager. These are being contracted through Forest Service Enterprise, as the forest does not have the staff to fill these important interdisciplinary team positions ($100,000).

The goal of the project is to retain and restore ecological resilience of those National Forest Lands in order to achieve a sustainable ecosystem that provides a broad range of services to humans and other organisms. Ecosystem services are the goods and services that flow from wildlands and forests that are valued and used by the people, and that directly or indirectly support human wellbeing.

Sierra Pacific Industries (SPI)

No Report

Spring Rivers Foundation (SRF)

The Spring Rivers Foundation Outdoor Education Program provides annual fall field trips to Crystal Lake, Baum Lake, and Hat Creek for all the 4th, 5th, and 6th grade students at Burney and Fall River Elementary Schools. While one took place in 2019 ($10,000), additional trips are not currently possible due to COVID-19 restrictions. Consequentially, their education team recently launched their new Field Trip in a Box Program for the 2020-2021 school year ($10,000). It is designed to provide teachers with easy to use outdoor-learning kits, complete with all the supplies needed for a fun and educational teacher-led field trip. Every kindergarten through sixth grade student at Burney and Fall River Elementary Schools, Fall River High School's biology students, and students from several Redding-area schools will be able to participate in this exciting program. They will study important concepts in science, writing, art, math, and local history during their outdoor field experiences.

Photo 3: Spring Rivers Outdoor Education Program

Spring Rivers Foundation, in conjunction with Spring Rivers Ecological Sciences LLC, continued reintroduction activities and project monitoring for the Rock Creek Meadow Restoration Project ($70,000).

Symbiotic Restoration Group (SRG)

Symbiotic Restoration Group regularly participates in meetings as a voice for recreation and outreach strategies, as well as partnering with local agencies, resource conservation districts, and private consultants to drive forest health, watershed, and recreation projects forward. Currently, SRG is mostly engaged with stream and meadow restoration using beaver dam analogs (BDA's). In addition to hands on field work, SRG is taking the lead on monitoring for CCI forest health projects; fulfilling the role of Watershed Coordinator for a Department of Conservation grant to promote fire safety and awareness in Burney; managing the websites of the Fall River Resource Conservation District (FFRCD), Pit Resource Conservation District (PRCD), and Burney Fire Protect District; promoting recreation through the Chamber of Commerce and local bicycle association; as well as facilitating the creation of and agenda for the Intermountain Recreation Collaborative, with the help of Sierra Nevada Conservancy funds ($95,000). SRG is also assisting the FRRCD with NEPA compliance (including recreation and soils specialist reports), developing a master recreation strategy for the region, caretaking 11 miles of the PCT from Baum Lake to Burney Falls, and maintaining a section of highway 299, from Four Corners to Cassel Road.

Photo 4: Garrett Costello, of Symbiotic Restoration

University of California, Davis (UCD)

An agreement is in place with UC Davis to conduct post-treatment effectiveness monitoring within the CFLRP. No activities were completed (or funds expended) in FY20 due to the timing of treatment implementation and hiring challenges resulting from COVID-19. It is anticipated that UC Davis will initiate their monitoring in 2021.

University of Nevada Reno (UNR)

The Lassen National Forest is a core collaborator in the Sierra Nevada Adaptive Management Experiment (AMEX), a statewide, replicated experiment in developing resilience, resistance, and adaptation capacity in California's Sierra Nevada mixed conifer forests. Four sites have been installed at Latour State Demonstration Forest, Mountain Home Demonstration Forest, Berkeley Forest's Grouse Ridge, and the Stanislaus - Tuolumne Experimental Forest. Led by the University of Nevada Reno, this collaboration with UC Cooperative Extension, the Lassen National Forest, the California Department of Forestry and Fire Protection (CAL FIRE), and the USFS's PSW Research Station is designed to monitor and build strategies that mitigate impacts from climate change. Ongoing and predicted impacts to forests include regeneration failures, shifts in species' ranges, drought mortality, and increasing severity of disturbances, such as bark beetle outbreaks and/or fire. This cooperative, interagency plan has deployed a range of silvicultural tools to reduce carbon loss and enhance ecosystem services in stressed mixed conifer forests.

The northern core site encompasses over 400 acres of treatment on Latour State Demonstration Forest with a paired 400-acre control on the North 49 Project of the Lassen National Forest. Treatment monitoring and plot establishment was completed during the summer of 2018 and will be maintained to assess the effectiveness of the three resilience, resistance, and adaptation treatments under a changing climate.

Furthermore, hydrologic monitoring and analyses of three different silvicultural treatments in the former Panner Timber Sale continued ($17,700). The third, and final, graduate student working on it successfully defended his master's thesis (see the media section) and completed his degree. Part of his work has gone to expand the manuscript developed last year (which will be adapted into a PNW General Technical Report), and the rest is currently planned to go into two additional professional journal articles.

USFS Pacific Northwest Research Station (PNW)

PNW researchers worked with UNR and LNF personnel analyzing hydrologic monitoring data for the Panner Timber Sale ($9000). See the final paragraph of the UNR section for additional information.

USFS Pacific Southwest Research Station (PSW)

In 2020, UCD field crews and PSW researchers collected the fourth year of data in the 11 experimental treatment plots that were established within the Eiler Fire. This work is designed to assess the effect of different salvage and reforestation strategies on ground fuels, understory species, and the survival and growth of planted and naturally occurring seedlings. Lassen NF ecologists continue to work closely with UC Davis and PSW to enter and analyze field data and design secondary treatments, which are scheduled for implementation in 2022.

Additionally, the monitoring of southern long-toed salamander population dynamics associated with the Big Lake Restoration and Enhancement Project continued. This monitoring is also in partnership with Washington State University.

US Geological Survey (USGS)

The integrated work to characterize and map the hydrogeology of the Hat Creek Graben and northern margins of the Lassen Volcanic Center has continued this year. As reported last year, this involves the involvement of three different USGS divisions: The Geology, Minerals, Energy, and Geophysics Science Center; The California Volcano Observatory; and the Geosciences and Environmental Change Science Center. A master's student has continued her development of a coupled hydrogeologic and thermal models of the graben system ($70,000). Additionally, water quality monitoring at Big Spring and flow monitoring of Hat Creek near Old Station continued ($37,000).

Washington State University

Washington State University continued to collect information on upland habitat use by long-toed salamanders. To date, they have collected three years of pre-treatment data, as well as one year of post-treatment data in the Big Lake Restoration and Enhancement Project. In 2020, they completed two visual encounter surveys and completed data analysis.

2. Please tell us about the CFLR **project's progress to date in restoring a more fire-adapted ecosystem as described in the project proposal**, and **how it has contributed to the wildland fire goals in the *10-Year Comprehensive Strategy Implementation Plan***.

FY2020 Overview

FY20 Activity Description (Agency performance measures)	**Acres**
Number of acres treated by prescribed fire	232 1191 (KV/BD Funded)
Number of acres treated by mechanical thinning	3347
Number of acres of natural ignitions that are allowed to burn under strategies that result in desired conditions	0
Number of acres treated to restore fire-adapted ecosystems which are maintained in desired condition	4770

FY20 Activity Description (Agency performance measures)	Acres
Number of acres mitigated to reduce fire risk	4770

Please provide a narrative overview of treatments completed in FY20, including data on whether your project has expanded the pace and/or scale of treatments over time, and if so, how you've accomplished that – what were the key enabling factors?

- **How was this area prioritized for treatment?**

  In FY20, the highest priorities were critical need areas for hazardous fuels reduction, projects in the Wildland Urban Interface (WUI), and forest restoration. This included: forest restoration activities within the North 49 Project Area, near Old Station and Lassen Volcanic National Park; improving the Defensible Fuel Profile Zone (DFPZ) in the Butte Creek Area; and treating previously untreated Goshawk PAC's within the Plum Forest Restoration Project. These fuels reduction projects are of a significant importance to future fire suppression efforts.

- **Please tell us whether these treatments were in "high or very high wildfire hazard area** from the "wildfire hazard potential map" (wildfire hazard potential)

  The Basins Area is rated as being in the range of moderate to very high on the wildfire hazard potential map. FY20 projects are in high to very high potential areas, and include WUIs for the Old Station Area, the LVNP Manzanita Lake Visitor Center, and multiple LVNP campgrounds.

- **What did you learn** about the interaction between treatment prioritization, scale, and cost reduction? What didn't work?

  The most important lessons learned on the Hat Creek Ranger District regarding treatments, scale, and cost reduction have occurred on lands adjacent to the Basins Area, but have since been applied to it. The 2014 Bald Fire and the 2008 Peterson Fire have shown an inverse correlation between acres treated and fire intensity, especially under severe weather conditions.

  In June of 2008, the Peterson Fire was started by lightning on private land. It burned under 90th percentile weather conditions, spreading from untreated private land into an area of the Pittville DFPZ (Defendable Forest Protection Zone). The LNF land had been previously thinned, had brush masticated, and was then underburned. Limited fire suppression resources were available, but were nevertheless able to successfully contain the fire within treated areas. Timber stands were able to survive with low to moderate severity effects. Meanwhile, untreated areas experienced high mortality stand-replacing fire effects.

  The 2014 Bald Fire was also ignited by lightning, just west of the Pittville DFPZ. This was during a severe drought and under 97th percentile weather conditions. It made large runs through untreated areas and into the Pittville DFPZ. The fire did burn through some previously treated areas with high-intensity, stand-replacing fire. However, in many other treated areas, it burned at the expected low to moderate-intensity, causing substantially less timber stand mortality. The reason why there were any higher severity burns in the DFPZ was that pockets of untreated fuels created enough heat and energy to cause major runs into treated areas before the fire behavior moderated. Furthermore, areas that experienced fire suppression proved to have considerably less tree mortality. As weather conditions improved, fire behavior effects decreased in the treated area, thereby producing favorable conditions for fire suppression efforts.

  The Pittville DFPZ Project consisted of two large timber sales. Eastside pine stands were thinned to 120 sq. feet of basal area. Prescribed burning under the Pittville DFPZ Project, and now under its successor Eastside Pine Underburn Project, has a desired 5 to 10-year burn interval in the project units. This results in open pine stands with little understory litter.

Fire behavior during the Bald and Petersons Fires, under extreme 90 to 97 percentile weather conditions, demonstrated that managed, open-canopied pine stands can experience significantly less mortality than untreated ones. This showed appropriate thinning to be an important tool to directly help fire suppression become safer and more cost-effective.

Due to it being a 97th percentile event, the Bald Fire provided additional lessons. The planned density of 120 sq. feet of basal area was too high to survive such an event during severe drought conditions. Instead, stands need to be reduced to 70–90 sq. feet. In many areas, untreated forest burned so hot that fire moved across roads into treated stands, causing high mortality in them as well. Thus, a patchwork approach to treatment is not tenable.

These lessons were utilized in the subsequent planning of the Plum Project. On average, stands will be thinned to ~80 sq. feet of basal area. Furthermore, prescriptions were designed to leave variable density within the stands in order to allow heat to escape vertically during a wildfire.

Please provide visuals if available, including maps of the landscape and hazardous fuels treatments completed, before and after photos, and/or graphics from fire regime restoration analysis completed locally.

Photo 5: A treated area within the Pittville DFPZ where the trees survived the 2014 Bald Fire, which had burned under extreme 90th to 97th percentile conditions.

Expenditures

Category	**$**
FY2020 Wildfire Preparedness[1]	$1,773,398
FY2020 Wildfire Suppression[2]	0
The cost of managing fires for resource benefit if appropriate (i.e. full suppression versus managing)	0
FY2020 Hazardous Fuels Treatment Costs (CFLN)	$556,220
FY2020 Hazardous Fuels Treatment Costs (other BLIs)	$888,106 (KV, BD, HF)

How may the treatments that were implemented contribute to reducing fire costs?

There have not been any large fires in the Basins Area since the 2014 Eiler Fire. It burned under extreme drought and fire behavior conditions, with weather observations above the 90th percentile, consuming over 38,000 acres of both private land and national forest. There were several fires burning in the area concurrently, drawing down the availability of firefighting resources. Fuels reduction projects would lower the threat of large wildfires in all conditions but would take on an outsize importance when the weather is above the 90th percentile. The more fuel reduction that takes place, the more local firefighting resources can suppress fires at a small size, thereby reducing the threat of large, costly incidents.

Have there been any assessments or reports conducted within your CFLRP landscape that provide information on cost reduction, cost avoidance, and/or other cost related data as it relates to fuels treatment and fires? No

When a wildfire interacts with a previously treated area within the CFLR boundary:

Each unit is required to complete and submit a standard fuels treatment effectiveness monitoring (FTEM) entry in the FTEM database (see FSM 5140) when a wildfire occurs within or enters a fuel treatment area.
In the Basins Area, there have not been any wildfires that burned in a fuel's treatment area.

When a wildfire occurs within the CFLR landscape on an area planned for treatment but not yet treated:

There have not been any wildfires in areas that were planned for treatment.

Please include acres of fires contained and not contained by initial attack and acres of resource benefits achieved by unplanned ignitions within the landscape, and costs.

There have not been any large fires in areas planned for treatment. In FY20, there were six fires in the Basins Area, which ranged in size from less than 0.1 to 0.25 acres.

3. **What assumptions were used in generating the numbers and/or percentages you plugged into the TREAT tool**?

[1] Include base salaries, training, and resource costs borne by the unit(s) that sponsors the CFLRP project. If costs are directly applicable to the project landscape, describe full costs. If costs are borne at the unit level(s), describe what proportions of the costs apply to the project landscape. This may be as simple as Total Costs X (Landscape Acres/Unit Acres).

[2] Include emergency fire suppression and BAER within the project landscape. Describe acres of fires contained and not contained by initial attack. Describe acres of resource benefits achieved by unplanned ignitions within the landscape. Where existing fuel treatments within the landscape are tested by wildfire, summary and reference the fuel treatment effectiveness report.

All numbers and percentages plugged into the TREAT tool were based on actual dollars and volumes, which were pulled from acquisitions and Timber Information Manager (TIM).

FY 2020 Jobs Supported/Maintained (CFLN and matching funding):

FY 2020 Jobs Supported/Maintained	Jobs [Full and Part-Time) (Direct)	Jobs [Full and Part-Time) (Total)	Labor Income (Direct)	Labor Income (Total)
Timber harvesting component	22	30	1,261,880	1,567,053
Forest and watershed restoration component	5	12	170,656	454,137
Mill processing component	19	63	1,169,152	3,374,227
Implementation and monitoring	10	11	64,734	77,867
Other Project Activities	0	0	0	0
TOTALS:	**57**	**116**	**2,666,423**	**5,473,284**

4. **Describe other community benefits achieved and the methods used to gather information about these benefits**. **How has CFLR and related activities benefitted your community from a social and/or economic standpoint?**

Indicator	Brief Description of Impacts, Successes, and Challenges	Links to reports or other published materials (if available)
Project partnership Composition	The Burney-Hat Creek Community Forest and Watershed Group (BHCCFWG) is a very diverse collaboration of over 35 stakeholders, representing a wide range of interests. Ongoing meetings and communication among partners enable the collective advancement of triple bottom line objectives across the Basins Landscape to achieve sustainable social and ecological outcomes. The collaborative has a vision that involves not just improving the landscape, but also positive outcomes for communities and people on both public and private lands. Momentum continues to increase each year. FY20 began with the signing of the decision memos for the LNF Black Ranch Project and The Fall River RCD Crossroads Project, and continued as several smaller projects were planned. Additionally, the district was awarded a Sierra Nevada Conservancy Grant to provide much needed support for the Badger Project. It was also another big year for new agreements, modifications, and supplemental agreements with partners as these important relationships continue to be built. Collaborative partners are now having great success with projects on the ground, and the	NA

Indicator	Brief Description of Impacts, Successes, and Challenges	Links to reports or other published materials (if available)
	district is excited to add this growing capability as it moves forward, thereby increasing pace and scale. This year also yielded important landscape modeling tools using ArcGIS online, which was spearheaded by Spatial Informatics Group and 34 North. The collaborative is now able to have all the data and modeling tools at their fingertips, and in one central place. Multiparty monitoring continued to provide important results, which will both directly improve adaptive management of the Basins Landscape and allow more effective stewardship of lands throughout the West. Together, BHCCFWG is committed to increasing the pace and scale of treatments on not only National Forest Lands, but the entirety of both basins.	
Relationship building/collaborative work	The Burney-Hat Creek Community Forest and Watershed Group (BHCCFWG) believes that collaboration is the key to success, trusts the process of working together, and is committed to sustaining the Basins Project into the future. Together, it values the uniqueness of working on a landscape that is only 58 percent managed by the Forest Service, a trait not common among other forest collaboratives in California. The group continues to "find its stride" as it identifies new projects with an expansive vision of not only managing on a true landscape-scale but identifying and restoring the essential gaps which hinder the symbiotic functions of the ecosystem. During the life of the Burney-Hat Creek Basins Project, the novel idea of talking to each other and building relationships has led to the blossoming of important synergies. Examples of these include: ▪ Utilizing master stewardship agreements with the Fall River RCD and Mule Deer Foundation (MDF) to plan and implement projects within the Basins Project Area. This was a vision of the collaborative group in previous years and has now come to fruition. In FY20, the MDF began implementing the Manzanita Chutes Project, and the Fall River RCD successfully competed	NA

Indicator	Brief Description of Impacts, Successes, and Challenges	Links to reports or other published materials (if available)
	for dollars from both the Sierra Nevada Conservancy and the California Climate Investment (CCI) Program. ▪ "What if" conversations between collaborating hydrologists gave birth to a new partnership between the LNF, the USGS, and Burney Falls State Park to analyze the properties of the falls and use them as a lens to understand the lower reaches of both basins. This is the very definition of synergy, which the Basins Project has made possible.	
Cross-institutional Agreements.	The Lassen National Forest is completing a new landscape analysis of the Badger Planning Area, which was partially burned in the Reading Fire of 2012. A project was being developed at that time, but approximately one-third of the area burnt. It was determined that additional disturbance would cause adverse cumulative watershed effects, so the project was put on hold for five years. Since it is adjacent to their jurisdiction, when restarting the project was discussed in the collaborative, Lassen Volcanic National Park indicated that they would like to partner with the district on it. As the two units have moved forward together on the project, the State of California became interested in it as a vehicle to extend the Hwy 44 Fuel Reduction Project (one of the State's 35 priority fuel reduction projects). Through the Badger Project, their treatments will continue to the community of Old Station, an additional 20 miles beyond what they had been able to do before.	NA
Economic dependency/sectors impacted/expanding market development	The Fall River RCD's partnership with the Hat Creek Bioenergy facility, which will provide future outlets for federal and private forest health projects, secured financing in 2019. It is the leading candidate to be the first small scale (e.g. 3-5 Megawatt) facility built in California. Furthermore, a 20-year Power Purchase Agreement (PPA) with PG&E was signed. Construction is slated to begin in 2021. The proposed facility will integrate new technology, combining gasification and traditional boilers to create heat and biochar. The Hat Creek facility signed draft feedstock agreements and is anticipating that future USFS	NA

Indicator	Brief Description of Impacts, Successes, and Challenges	Links to reports or other published materials (if available)
	projects can assist with providing the necessary feedstock (ca. 33,000 bone-dry tons/year). In addition, two more small-scale facilities within the Basins CFLR Region completed their system impact studies in 2019, which will allow them to enter the BioMAT bidding process to secure future PPAs. The three facilities, if built, would require a total of nearly 100,000 BDT/year, corresponding to an average treatment acreage of 10,000 acres.	
Job training opportunities	It was identified in collaborative discussions that a major barrier to get work done on the ground was a lack of qualified equipment operators, so funding was applied for through California Climate Investment (CCI) to develop a training program. They recognized its importance and awarded $3,000,000! With funding secured, and in cooperation with Fall River RCD, Shasta College developed a forest and logging workforce training program to build capacity within California's forest products industry. Students may earn the Shasta College Heavy Equipment Logging Operations (HELO) Certificate in as little as two semesters, or choose to add a Stackable Heavy Equipment-Construction Certificate and finish in three semesters. The HELO certificate program has been tremendously successful. Within weeks of receiving award notification, Shasta College procured an entire conventional logging side (skidder, processor, feller-buncher, and log loader), hired instructors and staff, signed several MOUs, and entered into partnerships with private landowner Sierra Pacific Industries (SPI) and logging contractors Creekside Logging and Peterson Timber Inc. Curriculum was approved in time to enroll the first cohort of student operators to begin training in the equipment on active SPI Timber Harvest Plans (THPs). This program immediately begun increasing workforce capacity for forest management and fuels reduction projects. In addition to mechanized logging equipment training, Shasta College designed the curriculum to provide this next generation of forest and logging operators a foundational understanding of how the	NA

Indicator	Brief Description of Impacts, Successes, and Challenges	Links to reports or other published materials (if available)
	operations they conduct on the forest impact the entire landscape. This knowledge results in operators having a fuller understanding of how sustainable forest management provides long term global, societal, and community benefits. The innovation and technology integrated in today's modern logging equipment have led to safer and more ergonomic work environments, with climate-controlled operator cabs, improved visibility, and joystick-controlled machinery that appeals to today's emerging workforce and serves a more diverse student population. Today, more women are exploring careers in heavy equipment fields such as logging. Also, through partnership with community programs, such as local job training centers and organizations serving formerly-incarcerated and justice-involved individuals, forest and logging career pathways are gaining awareness with those men and women finding themselves unemployed, underemployed and/or needing to upskill or retrain to grow their skillsets. Another key component of the Shasta College HELO certificate program is truck driver training. To complete the HELO certificate, students are required to pass the Class A/B truck driving course. Once students complete the class, they are prepared to take their Class A/B licensing test with the California Department of Motor Vehicles. It is incumbent on the student to schedule the actual DMV licensing exam, but the course curriculum provides each individual the training and behind-the-wheel time necessary to qualify for license testing. Additionally, students are able to use Shasta College trucks and trailers for their DMV exam. In the 2019 American Trucking Associations Truck Driver Shortage Analysis, there is a predicted 1.1 million driver deficit in the United States by 2028. When looking at workforce capacity in the forest sector, the entire logistics and supply chain must be considered. A trained and safe truck driving workforce is vital in keeping wood fiber moving from the forest to sawmills, value-added manufacturing, biomass utilization, and beyond.	

Indicator	Brief Description of Impacts, Successes, and Challenges	Links to reports or other published materials (if available)
	One exciting new opportunity for students is the Registered Apprenticeship for Logging and Forest Workers. Beginning no later than Spring 2021, during a student's final semester in the HELO certificate program, he/she may be eligible to participate in this new Registered Apprenticeship. The State of California Department of Industrial Relations Division of Apprenticeship Standards, through the California Apprenticeship Initiative, granted Shasta College $500,000 in October 2019 to establish a Registered Apprenticeship with a goal of placing 25 apprentices over 3 years with logging and forest industry companies. This direct channel into employment complements the instructional work being done and provides students ample opportunities to find work in this field. The Shasta College HELO program is gaining attention throughout the entire Western US. New industry partners such as Miller Timber Services out of Oregon have demonstrated interest in the program, its students and the opportunities to continue growing the scope of the workforce to be developed through strategic partnership and planning on a wider scale.	

5. Based on your project monitoring plan, **describe the multiparty monitoring process.**

Socioeconomic Monitoring

In 2020, the Burney-Hat Creek Basins Multiparty Monitoring Working Group (MMWG) continued to focus on socioeconomic monitoring, led by the Sierra Institute for Community and Environment. Quantitative data analysis and interviews with key informants were completed, resulting in a total of 19 interviews with contractors, business owners, agency personnel, and other community members. Qualitative data were analyzed to identify trends related to employment and infrastructure in the forest industry; characteristics of other major industries in the region; relationships between the collaborative, Forest Service, and surrounding communities; and overall socioeconomic well-being. A survey of forest contractors was conducted to gather information about size, capacity, and characteristics of forest contracting companies and to identify issues related to hiring, infrastructure, and US Forest Service contracting practices. Sierra Institute staff conducted two workshops with local experts and collaborative members, one to evaluate the strengths and weaknesses of communities within the study area and one to discuss and evaluate accomplishments over the past 10 years. All socioeconomic data were analyzed and synthesized in a preliminary report, which identified both fine-grained local trends at the community level and socioeconomic impacts specific to forest restoration and the collaborative. The Sierra Institute is currently working with the MMWG to prepare the final report and recommendations, which will be completed in 2021.

Ecological Monitoring

Although the pandemic significantly impacted ecological monitoring efforts in 2020, key partnerships with universities and researchers allowed us to address a subset of key monitoring questions identified in the Multiparty Monitoring Plan (MMP). Monitoring was conducted by Lassen NF staff, researchers from the USFS Pacific Southwest Research Station (PSW) and Washington State University (WSU), Humboldt State University (HSU), University of Nevada Reno (UNR), and the University of California, Davis (UCD). Their accomplishments, as well as those of other collaborators, are summarized below. The link to the specific monitoring question (MQ) is also provided in parentheses.

Fire and Fuels

In 2020, UCD field crews and PSW researchers collected the fourth year of data in 11 experimental treatment plots, established after the 2014 Eiler Fire, to assess the effect of different salvage and reforestation strategies on ground fuels, understory species, and the survival and growth of planted and naturally occurring seedlings (MQ RF.1.). Lassen NF ecologists continue to work closely with UC Davis and PSW to enter and analyze field data and design secondary treatments, which are scheduled for implementation in 2022.

In the summer of 2020, HSU researchers continued to collaborate with the Lassen NF to examine the impacts of thinning and mastication treatments on potential fire behavior and Baker cypress growth and reproduction (MQ BOT 1.3). Researchers completed pre-treatment sampling in 60 permanent monitoring plots, 20 in each of the three treatment units (thinning only, thinning and mastication, and untreated control). Post-treatment sampling of fuels and initial cone production will occur in 2021 after treatments are implemented.

Meadow Restoration and Aquatic Resources

The Big Lake Meadow Restoration Project provides an excellent opportunity to determine how meadow restoration treatments, such as thinning and pond obliteration, affect wetland-associated plant species, meadow water availability, and important aquatic dependent species like the southern long-toed salamander (*Ambystoma macrodactylum sigillatum*). In 2020, monitoring efforts focused on data collection after hand thinning treatments, which were implemented by the California Conservation Corps in 2019. Hydrologic data were collected in 2020 using 12 soil moisture meters and four piezometers distributed throughout the project area. Post-treatment vegetation data were also collected within 12 permanent monitoring plots, situated near the hydrologic monitoring stations. Preliminary analysis of pre- and post-treatment hydrologic and vegetation data continued in 2020 (MQ EC1.3).

Partners from PSW and WSU continued to collect and analyze data to assess whether nearshore conifer thinning around Big Lake contributed to the maintenance and/or restoration of habitat for pond breeding amphibians. To date, 5,174 long-toed salamanders have been captured, measured, and released along with thousands of juvenile western toads and Pacific chorus frogs. Data analyses, completed in 2020, suggest that southern long-toed salamanders rely on both aquatic and terrestrial habitats and are vulnerable to changes in either habitat type. Habitat surveys indicated that thinning treatments reduced tree density by 68% without altering key amphibian habitat variables such as leaf litter depth, canopy cover and woody debris cover. Monitoring also revealed that annual breeding success was highly variable and appeared dependent on snowpack. No amphibians were observed in or under burn piles the fall after treatment. Future monitoring will continue to provide insight into longer-term effects.

Forest Vegetation

In 2020, the Lassen NF partnered with the Fall River RCD, 34 North, and the Spatial Informatics Group to develop landscape-scale forest metrics from Light Detection and Ranging (LiDAR) data acquired across the Basins Area in 2015. These LiDAR-derived spatial datasets combine information on vertical and horizontal forest structure with estimates of tree canopy cover, basal area, volume, tree density, and other forest metrics. The data cover both treated and untreated areas, and will be used to plan, prioritize, and evaluate CFLRP treatments.

Hydrologic Resources:

Much of the field-based monitoring work planned for the year was not able to occur because of the COVID-19 pandemic, including the deployment of temperature loggers and troubleshooting of soil moisture sensors.

A collaborative group of researchers led by the University of Nevada Reno completed analysis of data collected over a six-year period at a monitoring site situated in the southwestern portion of the Basins CFLR Project Area. Treatments at this site were implemented in 2011 and ranged from no treatment in a spotted owl home range core area (HRCA), to radial thinning with retention islands, to near-complete overstory removal in a group selection. Continuous hydrologic monitoring has occurred at this site since late 2013 and includes wireless-linked hydrologic monitoring stations measuring air temperature, humidity, solar radiation, wind speed, soil moisture and soil temperature as well as tree sap flux measurements. (MQ HYD.1.1 & 1.2)

The third, and final, graduate student working on the project completed his thesis (included in the media section), graduated, and secured a permanent position with the agency. Results are being prepared for publication in academic journals. Individual chapters included:

- The analysis of micrometeorological data – which suggested that winter and spring air temperature are the primary factors limiting tree growth;
- Stable isotope analysis of root water uptake – which suggested that at this site, forest density and structure do not influence mean source depth of root water uptake; and
- Establishing a tree ring chronology for the site – which showed that after thinning, radial tree growth increased by a factor of 1.5-2 in the diversity thin and 2-3 in the group selection.

Other activities that did not require fieldwork were able to continue. These included the USGS hydrothermal modeling of the Hat Creek Area (MQ HYD.2.2) and the development of a formal protocol and proposal for using a set of stationary game cameras to obtain long-term photo series, from which the discharge and dynamics of Burney Falls and associated springs in Burney Falls State Park can be determined (MQ HYD.2.2). Finally, an exciting bonus from the drilling of the two production wells is that cuttings were saved and logged, and will be provided to the USGS.

6. **FY 2020 Agency performance measure accomplishments:**

Please note that, since reporting deadlines were pushed back to January by the Chief, the numbers presented in this table do not represent the entirety of Basins CFLR accomplishments. At the time of writing, some databases of record, such as WIT, have not been populated with FY20 information.

Performance Measure	Unit of measure	Total Units Accomplished	Total Treatment Cost ($) *(Contract Costs)*[3]
Acres of forest vegetation established FOR-VEG-EST	Acres	NA	NA
Acres of forest vegetation improved FOR-VEG-IMP	Acres	795	NA
Manage noxious weeds and invasive plants INVPLT-NXWD-FED-AC	Acre	1.6	NA
Highest priority acres treated for invasive terrestrial and aquatic species on NFS lands INVSPE-TERR-FED-AC	Acres	NA	NA
Acres of water or soil resources protected, maintained or improved to achieve desired watershed conditions. S&W-RSRC-IMP	Acres	NA	NA
Acres of lake habitat restored or enhanced HBT-ENH-LAK	Acres		NA
Miles of stream habitat restored or enhanced HBT-ENH-STRM	Miles	NA	NA

[3] Please include the costs associated with a contract to complete acres reported, if this level of detail is available, including partner funds

Performance Measure	Unit of measure	Total Units Accomplished	Total Treatment Cost ($) *(Contract Costs)*[3]
Acres of terrestrial habitat restored or enhanced HBT-ENH-TERR	Acres	65.2	NA
Acres of rangeland vegetation improved RG-VEG-IMP	Acres	NA	NA
Miles of high clearance system roads receiving maintenance RD-HC-MAIN	Miles	NA	NA
Miles of passenger car system roads receiving maintenance RD-PC-MAINT	Miles	NA	NA
Miles of road decommissioned RD-DECOM	Miles	NA	NA
Miles of passenger car system roads improved RD-PC-IMP	Miles	NA	NA
Miles of high clearance system road improved RD-HC-IMP	Miles	NA	NA
Road Storage *While this isn't tracked in the USFS Agency database, please provide road storage miles completed if this work is in support of your CFLRP restoration strategy for tracking at the program level.*	Miles	NA	NA
Number of stream crossings constructed or reconstructed to provide for aquatic organism passage STRM-CROS-MTG-STD	Number	NA	NA
Miles of system trail maintained to standard TL-MAINT-STD	Miles	NA	NA
Miles of system trail improved to standard TL-IMP-STD	Miles	NA	NA
Miles of property line marked/maintained to standard LND-BL-MRK-MAINT	Miles	NA	NA
Acres of forestlands treated using timber sales TMBR-SALES-TRT-AC	Acres	NA	NA
Volume of Timber Harvested TMBR-VOL-HVST	CCF	NA	NA
Volume of timber sold TMBR-VOL-SLD	CCF	17,198.35	NA
Green tons from small diameter and low value trees removed from NFS lands and made available for bio-energy production BIO-NRG	Green tons	15,131.79	NA
Acres of hazardous fuels treated outside the wildland/urban interface (WUI) to reduce the risk of catastrophic wildland fire FP-FUELS-NON-WUI	Acre	3,377.9	NA
Acres of wildland/urban interface (WUI) high priority hazardous fuels treated to reduce the risk of catastrophic wildland fire FP-FUELS-WUI	Acres	NA	NA
Acres mitigated FP-FUELS-ALL-MIT-NFS	Acres	NA	NA
Please also include the acres of prescribed fire accomplished	Acres	NA	NA
(Optional) Other performance measure not listed above	*Acres*	NA	NA
(Optional) Other performance measure not listed above	*Acres*	NA	NA

Units accomplished should match the accomplishments recorded in the Databases of Record.

7. **FY 2020 accomplishment narrative:**

Planning

Badger Restoration Project

The Hat Creek District was awarded a planning grant for the Badger Project, which is being used to fund an interdisciplinary team leader, a writer/editor, and a record manager. The project area will include the Wildland Urban Interface (WUI) for the community of Old Station and the Manzanita Lake area of the Lassen Volcanic National Park. There will be opportunities for cross-boundary treatments with Lassen Park once the NEPA is completed.

Many of the Badger surveys were put on hold this year as a result of COVID-19 and an active fire season. However. good progress was made on completing silviculture prescriptions, a transportation analysis plan, and producing a draft scoping document and map. The goal of the 40,000-acre Badger Restoration Project is to implement forest health and hazardous fuels reduction activities, as well as improve watershed condition, which together would increase landscape-level resilience to disturbance, including that from fire, insects, disease, and drought. The timeline currently calls for the completion of the NEPA environmental planning document, which is most likely going to be an environmental assessment, in the fall of 2021 or spring of 2022.

Crossroads Project

The decision memo for this HFRA 602 project was completed in January 2020, in partnership with the Mule Deer Foundation and the Fall River RCD. Its goal is to make the landscape healthier and more resilient, in addition to minimizing the threat of natural disturbances, such as fire, around local communities. The Crossroads Project will mitigate insect mortality in forested stands, reduce fuel levels, and increase fire resilience on approximately 2,646 acres within a Wildland Urban Interface (WUI) network close to the communities of Burney, Johnson Park, and Cassel. It is currently ready to be contracted through a stewardship agreement.

Black Ranch Flood Plain Enhancement Project

The decision memo for this project was completed in March 2020. The goal of the Black Ranch Project is to restore the NFS portion of a historic flood plain that had work done on it through the NRCS. Additionally, mortality caused by current and foreseeable periods of inundation and beetle infestation will be treated.

Timber Sales

Three Timber Sales were sold within the project area in FY20, including: Baker (Whittington EA) sold to Franklin Logging; Eskimo Settlement (Eskimo) sold to Caltrans; and Black Ranch (Black Ranch CE) sold to Sierra Pacific Industries.

Preparation activities were completed on the Whittington Timber Sale (Whittington EA) and the 49er Timber Sale (North 49 EIS).

Other activity included:

- Preparation - The Fall River RCD has prepared 1,892 acres on the Crossroads Project (Crossroads HFRA CE) to be contracted as part of their master stewardship agreement in FY21. The Mule Deer Foundation added additional units to the Manzanita Chutes Project (North 49 EIS), which now totals 1512 acres of planned thinning and 350 acres of mastication.

- Implementation - Four timber sales operated in FY20, for a total of 467 CCF of biomass and 12,466 CCF of saw logs. These included: Sluice Box (North 49 EIS), Baker Multiproduct (Whittington EA), Dutch TS (Eiler EA), and Dutch Decks (Eiler EA). All sales that were operated on in FY20 were sold to, and processed locally by, companies in Shasta County, thereby fulfilling an important goal of the CFLRP and the collaborative.

Service Contracts

Service contracts were awarded on 2,984 acres for reforestation, thinning, mastication, burn preparation, and piling of hazardous fuels. This included work within the Plum Project, Eiler Fire Perimeter, and the timber sales associated with the North 49 EIS. Matching CFLR funds for these activities included appropriated, reforestation, and Knutson-Vandenberg trust dollars.

Photo 5: Well Testing, near Proctor Creek

Additionally, a service contract to drill two new wells within the project area was awarded. One well is at Proctor Creek and will be used to service the Plum Project by providing water for road maintenance. The other is adjacent to Greyback Ridge, and will be utilized as an alternative water source, so additional restoration activities planned under the Big Lake Enhancement Project can take place. It will be used to service the remaining activities on the North 49 Project. Both wells will also be used for fire suppression, range stock water, and wildlife. Water tender travel time and expense will be reduced once the tanks and pumps are installed.
Cone collection occurred in the Basins Project Area. It was a good year for Incense Cedar and Douglas fir, but a marginal one for ponderosa and Jeffrey pine. The district was also able to collect cones from rust resistant sugar pines.

Finally, plantation stocking surveys were completed on 5,067 acres.

Agreements

The Hat Creek Ranger District continues to use partnerships and stewardship agreements to increase the pace and scale of treatments in the project area. This was particularly important during the time this year in which agency personnel were not able to be on the ground. These partnerships have allowed vegetation management work to be done in WUI and high wildland fire potential areas, including: Manzanita Chutes (North 49 EIS), Crossroads (Crossroads CE), Cabin II (Cabin EA), and Road Runner and Plum PCT (Plum EA). Additionally, a stewardship agreement with the Fall River RCD was used for planting. Most of this occurred outside of the Basins Area (110 0 acres of the Bald Fire), however, 100 acres was planted in the Eiler Fire Scar. This agreement has been a huge success, allowing over 300,000 trees to be planted in this challenging year.

Photo 6: Site Preparation for Planting – Before

Photo7: Site Preparation for Planting - After

The district entered into several new agreements to work with different groups on a wide variety of projects and monitoring efforts. These included:

- Fall River RCD SPA
- Mule Deer SPA Mod 3
- Agricultural Conservation Experienced Services (ACES) Participating Agreement
- California Conservation Corps SPA
- Sierra Institute PCREW SPA
- Great Basin Institute SPA

Work orders with Forest Service Enterprise were used to provide marking on the 49er Project (North 49 EIS), and Grants and Agreement support for the ACES agreement (which will provide timber sale appraisal support).

Fire and Fuels

Due to a mild summer and fall rains, the district was able to accomplish 1745 acres of underburning, of which 232 acres was within the project area. Additional underburning was not attempted in the fall because the fire danger in Southern California was so high. Since personnel were under a COVID-19 stay-at-home order in the spring, no burning occurred then either.

Photo 6: Underburning North Coble

- Contract layout was completed on 806 acres of North 49 EIS timber sales in which harvesting had previously been completed.
- Precommercial thinning layout on 196 acres took place within the Bear Wallow Butte Plantation.
- Contract hand piling layout was accomplished on 449 acres within the Plum Project's goshawk PAC's.
- Thinning and burn prep layout was completed in 176 acres of the South Station EA Butte Creek DFPZ.

Fire crews were able to support CFLR objectives by:

- Cutting out trails in the Thousand Lakes Wilderness Area. The above average winter snowpack and the presence of standing dead from the Eiler Fire had caused the number of dead trees across the trail to be much higher than normal.;
- Hand thinning and piling within small plantations (2-3 acres each) in the North 49 Project Area.
- Hazard tree removal in campgrounds; Routine maintenance on Burney Spring water tank and the two lookouts within the Basins Area;
- Precommercial thinning and piling 28 acres in Bear Wallow (North 49 EIS); and
- Thinning, meadow restoration, and burn preparation on 58 acres at Summit Lake.

Additionally, district fuels employees supported contracting efforts for burn preparation, machine piling, and mastication.

Forest Transportation System

LNF engineering crews completed surface maintenance and ditch cleaning on approximately 159 miles of roads within the Basins Project Area, and heavy maintenance of the road system within Plum (Plum EA) to allow for thinning and mastication activities. They also completed culvert replacement and repaired drainage systems along the Great Shasta Rail Trail.

2020 Hat Creek Burney Basin CFLR Projects/ Accomplishments

Project Proponent	Project Type	Project	Purchaser/Collaborator	Acres/Volume
Forest Service	Timber Sale - Sold	Baker MP Thin	Franklin	13,067 CCF
Forest Service/ Cal Trans	Settlement Agreement	Eskimo Hill Settlement	Cal Trans	290 CCF
Forest Service	Timber Sale - Sold	Black Ranch		808 CCF
Forest Service	Timber Sale - Harvested	Dutch Decks	Tubit	357 CCF
Forest Service	Timber Sale - Harvested	Dutch	Tubit	110 CCF
Forest Service	Timber Sale - Harvested	Sluice Box	Franklin	7,681 CCF
Forest Service	Timber Sale - Harvested	Baker	Franklin	4,785 CCF
Mule Deer Foundation/ Fall River RCD	Stewardship Agreement	Manzanita Chutes		9,519 CCF
Fall River RCD	Stewardship Agreement	Cross Roads		5,687 CCF
Mule Deer Foundation	Stewardship Agreement	Plum Road Runner		In Progress
Fall River RCD	Stewardship Agreement	Plum PCT		In Progress
Forest Service	Timber Sale	Whittington		*In Progress*
Forest Service	Timber Sale	49er		In Progress
Fall River RCD	NEPA	Backbone		In Progress
Forest Service	NEPA	Hat Creek Wells		Complete
Sierra Nevada Conservancy	NEPA Grant	Badger		In Progress
Humboldt State University	Challenge Cost Share	Monitoring of Baker Cypress		
California Conservation Corps	Challenge Cost Share	Plum Meadow Restoration		
University of Nevada	Challenge Cost Share	Snow Monitoring		
Great Shasta Rail Trail	Challenge Cost Share	Trail Maintenance	CCC	
Sierra Institute	Challenge Cost Share	Thousand LakesTrail Maintenance	PCREW	
California Conservation Corps	Challenge Cost Share	Big lake Thinning	CCC	
Forest Service		Big lake Thinning		
Forest Service		Summit Lake Burn Prep		
Fall River RCD	Stewardship Agreement	FY 20 Eiler Planting	Great Tree Tenders	100ac
Forest Service	Contract	FY 20 Group Planting	Imperial	33 ac
Forest Service	Contract	FY 20 Cone Collection	Sierra Cone LLC	
Forest Service	Contract	FY 20 Plum Vernal Pool	Summit	296 ac
Forest Service	Contract	Eiler Mastication	Whinningham	155 ac
Forest Service	Contract	FY 20 Butte Burn Prep	Imperial	296 ac
Forest Service	Contract	FY 20 Plum Goshawk Resiliency	Captian Forestry	230 ac
Forest Service	Contract	FY 20 Plum Vernal Pool	Summit Forestry	296 ac
Forest Service	Cortract	FY 20 Panner Burn Prep.	Gonzalez Forestry	33 ac
Forest Service	KV Contract	FY 20 Panner 2 Machine Pile	Premier	439 ac
Forest Service	KV Contract	FY20 North 49 Machine Pile	Premier	466 ac
Forest Service	KV Contract	FY 20 Claim Jumper Machine Pile	Diversified	160 ac
Forest Service	KV Contract	FY 2 Claim Jumper Machine Pile 2	Diversified	480 ac
Forest Service		FY 20 Pile Burning		1261 ac
Forest Service		FY 20 Underburn		1745 ac
Forest Service		Survival Exam 1st. Year		722 ac
Forest Service		Survival Exam 3rd. Year		3461 ac
Forest Service		Survival Exam 5th. Year		884 ac

8. The WO (EDW) will use spatial data provided in the databases of record to **estimate a treatment footprint** for your review and verification.

- If the estimate is consistent and accurate, please confirm that below and skip this question.
- **If the gPAS spatial information does NOT appear accurate**, describe the total acres treated in the course of the CFLR project below (cumulative footprint acres; not a cumulative total of performance accomplishments). What was the total number of acres treated?

Fiscal Year	Footprint of Acres Treated (without counting an acre of treatment on the land in more than one treatment category)
FY 2020	4,240 acres
Estimated Cumulative Footprint of Acres (2010 or 2012 through 2020)	41,769 acres

If you did not use the EDW estimate, please briefly describe how you arrived at the total number of footprint acres: what approach did you use to calculate the footprint?

See question 9, below.

9. Describe any reasons that the FY 2020 annual report does not reflect your project proposal, previously reported planned accomplishments, or work plan.

The district had planned on contracting more projects in 2020, however, as a result of COVID-19, many employees were either told to shelter in place or telework for portions of the field season. Additionally, and for the same reason, only a portion of the project's accomplishments were entered into the databases of record. Efforts are currently underway remedy the situation.

9b. **(OPTIONAL) FOR INTERNAL USE:** The following responses are directed towards feedback on *internal* bottlenecks or issues that may impact your project. Please use this space to raise awareness on key internal issues, or opportunities to improve processes moving forward. Responses will be included in an internal document. What are the limiting factors to success or more success of the CFLR? How can the National Forest and its collaborators operate in a more integrated and synergized way?

If the Forest Service is to stay relevant in the collaborative management of the Basins Area, the district needs to be able to continue providing personnel, expertise, and financial resources for the effort. Not only have new and novel approaches to a host of problems been developed, momentum continues to build in the collaborative as partners are growing into their roles. Who would have thought that a CFLR would lead to a new approach to training the next generation of forestry workers?

No one in the collaborative is willing for this to be a plateau; everyone involved knows that this group is still capable of much more. Tantalizing new ideas and their attendant synergies are on the horizon. The trust, the excitement, that has been built ensures that the work will go on now that the original CFLR project is drawing to a close. Too much has been accomplished for it to be otherwise. However, the stark reality is that just how much is possible, how high the group can aim, is likely contingent on whether the project is extended.

10. Planned FY 2021 Accomplishments

Performance Measure Code	**Unit of measure**	**Planned Accomplishment for 2021** (National Forest System)	***Planned Accomplishment on non-NFS lands within the CFLRP landscape[4]***
Acres of forest vegetation established FOR-VEG-EST	Acres	100	NA
Manage noxious weeds and invasive plants INVPLT-NXWD-FED-AC	Acre	1230	NA
Miles of stream habitat restored or enhanced HBT-ENH-STRM	Miles		NA
Acres of terrestrial habitat restored or enhanced HBT-ENH-TERR	Acres	289	NA
Miles of road decommissioned RD-DECOM	Miles		NA
Miles of passenger car system roads improved RD-PC-IMP	Miles	4.5	NA
Miles of high clearance system road improved RD-HC-IMP	Miles		NA
Volume of timber sold TMBR-VOL-SLD	CCF	20	NA
Green tons from small diameter and low value trees removed from NFS lands and made available for bio-energy production BIO-NRG	Green tons	11,500	NA
Acres of hazardous fuels treated outside the wildland/urban interface (WUI) to reduce the risk of catastrophic wildland fire FP-FUELS-NON-WUI	Acre	2700	NA
Acres of wildland/urban interface (WUI) high priority hazardous fuels treated to reduce the risk of catastrophic wildland fire FP-FUELS-WUI	Acres	200	NA

Please include all relevant planned accomplishments, assuming that funding specified in the CFLRP project proposal for FY 2020 is available.

11. **Planned accomplishment narrative and justification if planned FY 2021 accomplishments and/or funding differs from CFLRP project work plan**:

Planning

LNF and the collaborative are currently planning several projects, which are in different stages of development. These include:

Badger Restoration Project

The public scoping document is slated to be completed by January 2021, and surveys (which were delayed because of the intense fire season and COVID-19) are progressing. The goal of the 40,000-acre project is to implement forest health and hazardous fuels reduction activities, as well as to improve watershed condition, which together would increase landscape-

[4] As we shift to more emphasis on sharing results across all lands within the CFLRP projects – if relevant for your project area – please provide estimates for planned work on non-NFS lands within the CFLRP areas for work that generally corresponds with the Agency performance measure to the left and supports the CFLRP landscape strategy. Give your best estimate at this point; if it's unknown how much work will occur off NFS lands, simply state unknown.

level resilience to disturbance, including that from fire, insects, disease, and drought. The timeline currently calls for NEPA to be complete, between the fall of 2021 and spring of 2022.

Backbone Project

Surveys are progressing and the public scoping document is being prepared. The Backbone Project is being developed in partnership with the Fall River RCD. Its goal is to implement forest health and hazardous fuels reduction activities, as well as improve watershed condition in the landscape between the Latour State Forest and the Thousand Lake Wilderness Area. These activities would increase landscape-level resilience to disturbance, including that from fire, insects, disease, and drought.

2014 Hat Creek Fire Restoration Project

The public comment period has passed, and the EA will be complete in early 2021. As a result of the decreasing survival rates of reforestation activities in the Bald and Eiler Fires, it was decided that a new approach was necessary. Thus, the district partnered with the Fall River RCD to both plant and replant stands. Under this project, additional site preparation activities would take place, including the use of herbicides.

Timber

Sales

Three timber projects are planned for FY21: Whittington Multiproduct Thin (Whittington EA), Manzanita Chutes Multi-Product (under the MSA with the Mule Deer Foundation – North 49 EIS), Crossroads Multi-Product (under MSA with the Fall River RCD – Crossroads).

Additionally, timber sale operations will continue in FY21 within the North 49, Whittington, and Table Mountain Project Areas. Most of the products harvested will continue to be processed locally in Shasta County, as both saw logs and bioenergy.

Service Contacts

In FY21, contracts will be awarded in the South Station, Plum, and North 49 Projects for a variety of work, including tree planting, mastication, burn preparation, pre-commercial thinning, grapple piling, and meadow restoration.

Fire/Fuels

The Hat Creek Ranger District plans on accomplishing the following prescribed fire projects within the Basins Area. Please note that all accomplishments are dependent upon both weather and air quality.

Underburning

Old Station WUI Project: Continue burning in around the various sub-divisions in Old Station. This project has a narrow burn window because the wind direction is usually such that it will blow smoke on to Highway 44 and the community of Old Station, thereby causing unacceptable air quality degradation. If windows are present, 200-300 acres are slated for burning.

Eastside Underburn Project: Many of the stands in this area have already had an entry with prescribed fire. Due to losing the fall burn window and grass green up in the spring, burn windows are limited. Nevertheless, the current plan is to underburn 500 acres.

Machine Piles

There are currently over 1,000 acres of machine piles in the North 49 and Panner Project Areas (North 49 EIS). They were created by a combination of site preparation activities in group selections and several fuels reduction projects.

Hand Piles

Within the Basins Area, 200-300 acres of hand piles exist, having been built as a part of various projects.

Forest Transportation System

Roads within the Basins Area will continue to be improved by removing encroaching vegetation to allow for contract operations, and blading/surfacing where needed to resolve any drainage issues that arise which may impact watershed function.

12. **Please include an up to date list of the members of your collaborative if it has changed from previous years**. If the information is available online, you can simply include the hyperlink here.

No changes.

13. **Media recap**. Please share with us any hyperlinks to videos, newspaper articles, press releases, scholarly works, and photos of your project in the media that you have available. You are welcome to include links or to copy/paste.

Partner Media:

- Shasta College Heavy Equipment Program on Page 13 -Timber Harvesting image
- Shasta College Heavy Equipment Program - Shasta Community college logging-you tube
- CalTrout, Hat Creek Restoration - Hat Creek Restoration
- CalTrout Spring Source Waters Basin Assessment - Spring Source Water Basin Assessment

Master's Theses:

- Impacts of Forest Thinning on Ecohydrological Processes in the Soil-Plant-Atmosphere Continuum – A Plot Scale Analysis, by Benjamin Serpa, Master's Thesis, University of Nevada Reno. August 2020, Scholar works University of Nevada
- The Effects of Nearshore Forest Thinning on Upland Habitat Use by Pond-breeding Amphibians in a Montane Coniferous Forest, by Andrew Holt McIntyre, Master's Thesis, Washington State University. May 2020, PDF FOREST THINNING ON UPLAND HABITAT
- Basins Project Monitoring Briefs:

Hosted by the Fall River RCD at Fall River Resource Conservation District

- Does Fire Maintain a Mosaic of Bunchgrass and Bitterbrush in a Mesic Meadow System?
- Does Fire Promote Lodgepole Establishment in a Mesic Meadow System?
- Impacts of Forest Thinning on Radial Tree Growth in Large Ponderosa Pine
- Impacts of Forest Thinning on Understory Microclimate
- Investigating the Effects of Post-fire Salvage Logging on Soils in the Southern Cascades
- Monitoring Hydrologic Responses to Forest Management Treatments: Preliminary Results from the Panner Timber Sale.
- Monitoring Vanilla Grass Response to Overstory Removal

- Monitoring Wildfire Effect, Phenology and Longevity of Baker's Globe-mallow
- The Effect of Forest Thinning on Pond Breeding Amphibians
- Seasonal Changes in Ponderosa Pine Water Source Depth and the Impacts of Forest Thinning
- Wildfire Risk Within the Burney Hat-Creek Basins CFLRP

Signatures:

Recommended by (Project Coordinator): _/s/ Greg Mayer_____

Approved by (Forest Supervisor(s)): *Provided via cover letter*_____

Draft reviewed by (collaborative chair or representative): _____