Missouri Pine-Oak Woodland Restoration Project (CFLR020)

Mark Twain National Forest

1. CFLRP Expenditures, Match, and Leveraged Funds:

a. FY21 CFLN and Matching Funds Documentation

Fund Source – (CFLN Funds Expended)	Total Funds Expended in Fiscal Year 2021
CFLN20	$691,375

This amount should match the amount of CFLN dollars spent 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 – (Forest Service Salary and Expense Match Expended)	Total Funds Expended in Fiscal Year 2021
CFSE21	$700,000*

*This amount reflects the amount matched for CFLRP NFSE salary not captured in the database due to an administrative tracking error. The tracking error was that it was not coded for tracking purposed prior to the FMMI database year end closure.

Fund Source – (Forest Service Discretionary Matching Funds)	Total Funds Expended in Fiscal Year 2021
CWK2	$523,000*

* This $523,000 includes $519,927 that was expended in CWK2 that was not tracked as Forest Service Discretionary Matching Funds because of an administrative oversite, but that was still appropriately spent on the CFLRP.

Fund Source – (Partner Match)	In-Kind Contribution or Funding Provided?	Total Estimated Funds/Value for FY21	Description of CFLRP implementation or monitoring activity	Where activity/item is located or impacted area
Oak Woodlands and Forests Fire Consortium	☒ **In-kind contribution** ☐ **Funding**	3,018	Cane Ridge Interpretive Signs and BHNH virtual workshop	☒ **National Forest System Lands** ☐ **Other lands within CFLRP landscape:**
Missouri Department of Conservation	☐ **In-kind contribution** ☒ **Funding** Budget Line Item, if relevant: [1]	44,993.97	Restoration of brown-headed nuthatches in Missouri pine woodlands.	☒ **National Forest System Lands** ☐ **Other lands within CFLRP landscape:**
Missouri Department of Conservation	☒ **In-kind contribution** ☐ **Funding**	41,994.02	Restoration of brown-headed nuthatches in Missouri pine woodlands.	☒ **National Forest System Lands** ☐ **Other lands within CFLRP landscape:**

Fund Source – (Partner Match)	In-Kind Contribution or Funding Provided?	Total Estimated Funds/Value for FY21	Description of CFLRP implementation or monitoring activity	Where activity/item is located or impacted area
TOTALS	**Total In-Kind Contributions: $45,012** **Total Funding: $90,005.99**			

Total partner in-kind contributions for implementation and monitoring of a CFLR project across **all lands** within the CFLRP landscape. For CFLRP projects under the CFLRP Common Monitoring Strategy, note that this table addresses the core CFLRP common monitoring strategy question, "If and to what extent has CFLRP investments attracted partner investments across the landscapes?"

Service work accomplishment through goods-for services funding within a stewardship contract (for contracts awarded in FY21)	Totals
Total revised non-monetary credit limit for contracts awarded in FY21	$21,920.00
Revenue generated through Good Neighbor Agreements	**Totals**
	$0

Revised non-monetary credit limits should be the amount in contract's "Progress Report for Stewardship Credits, Integrated Resources Contracts or Agreements," the "Revised Non-Monetary Credit Limit," as of September 30. Additional information on the Progress Reports is available in CFLR Annual Report Instructions document.
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

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 wildfire risk reduction goals**.

FY2021 Overview

FY21 Activity Description (Agency performance measures)	Acres
Number of acres treated by prescribed fire	12,744
Number of acres treated by mechanical thinning	2,129
Number of acres of natural ignitions that are allowed to burn under strategies that result in desired conditions	0
Number of acres mitigated to reduce fire risk	14,873

Please provide a narrative overview of treatments completed in FY21, 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?** What kinds of information, input, and/or analyses were used to prioritize? Please provide a summary or links to any quantitative analyses completed.

  The area is prioritized in our Land Management Plan as Priority landscape per Forest Plan 1.1and 1.2 Ecosystem Restoration Areas and designated State Conservation Opportunity Area for Forest/Woodlands and Glades. The area is currently identified on the Forest Wildfire Risk Map found in the Appendix of the Land Management Plan.

- **Please tell us whether these treatments were in "high or very high wildfire hazard area** from the "wildfire hazard potential map" (https://www.firelab.org/project/wildfire-hazard-potential)
  - Were the treatments in **proximity to a highly valued resource** like a community, a WUI area, communications site, campground, etc.?

  Yes, in proximity to numerous identified WUI's and infrastructure.

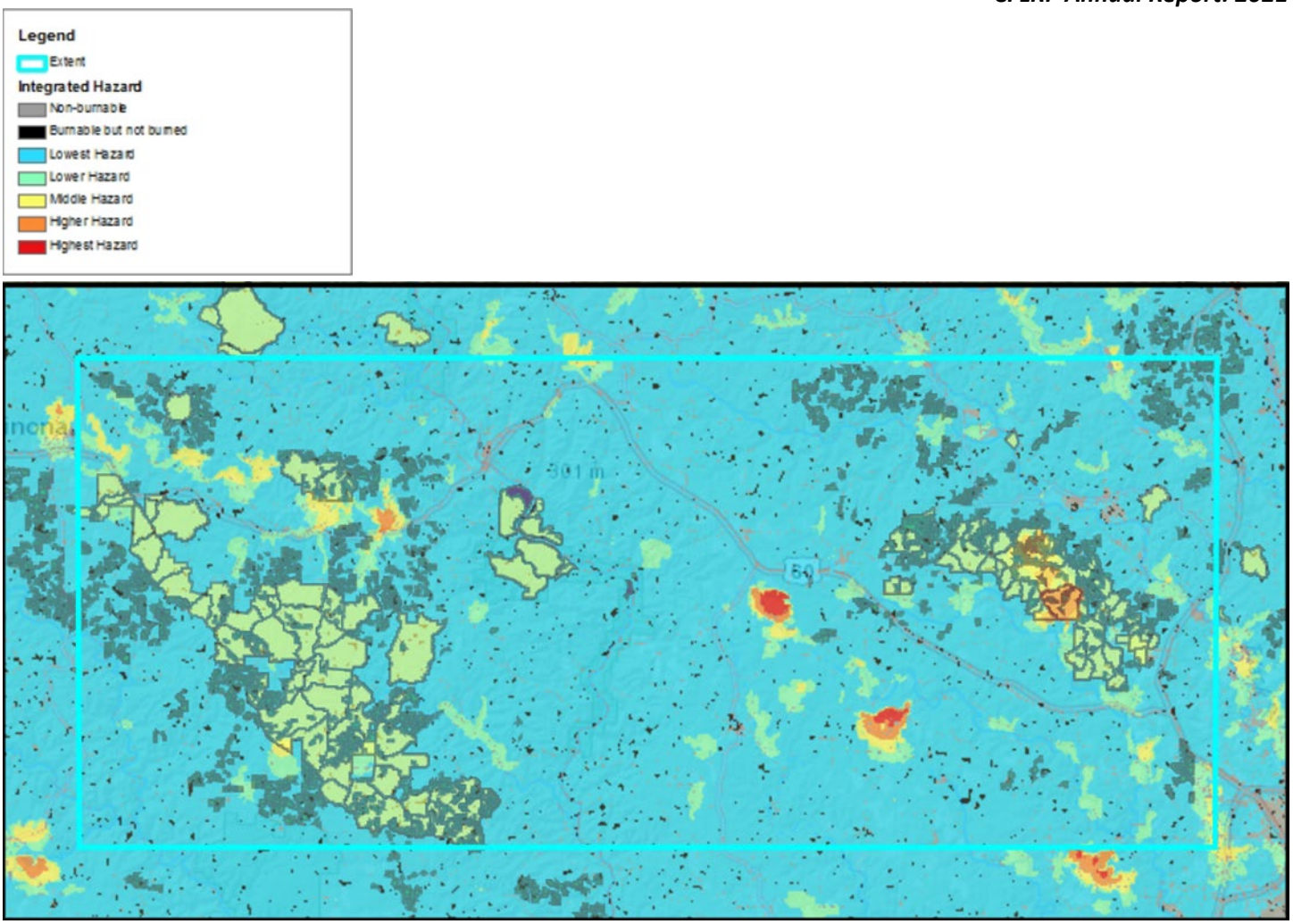
  There are four fire sheds that overlap the CFLRP boundary. Two of which is identified Top 10 in Region 9. The fire sheds are ranked on wildfire transmission and the potential to mitigate exposure and risk to the community. There are also other lower ranked fire sheds in the project area as well.

- **What did you learn** about the interaction between treatment prioritization, scale, and cost reduction? What didn't work? Please provide data and further context here.

  No data currently.

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. You may copy and paste or provide a link.

This map represents the integrated hazard (burn probability of fuels near infrastructures) on the landscape of the project area in conjunction with treatment unit layer. For more detail information, see exposure analysis.



Expenditures

Category	**$**
FY21 Wildfire Preparedness[1]	130,000
FY21 Wildfire Suppression[2]	38,365
The cost of managing fires for resource benefit if appropriate (i.e. full suppression versus managing)	N/A
FY21 Hazardous Fuels Treatment Costs (CFLN)	22,200
FY21 Hazardous Fuels Treatment Costs (other BLIs)	276,336

How may the treatments that were implemented contribute to reducing fire costs? If you have seen a reduction in fire suppression costs over time, please include that here. *No Data*

[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.

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? If so, please summarize or provide links here:

No Data. Our fires mostly are contained in the initial attack phase, so there is usually no additional cost for large fire support. We have found that existing or new fuel treatment units help improve accessibility and containment strategy.

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.

The forest suppressed 383 acres of wildfires in the CFLRP area. Fourteen wildfires burned into previous treated treatment units. The impacts of those units on the fire behavior where slowed spread and arrested fire spread. Additional information can be found in the FTEM attached report.

If a wildfire interacted 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. **For fuel treatment areas within the CFLR boundary, please copy/paste that entry here and respond to the following supplemental questions. Note that the intent of these questions is to understand progress as well as identify challenges and what didn't work as expected to promote learning and adaptation.**
In this project area, we have had good response from the public to help with treating the landscape across boundary lines (public/private). Using Wyden agreements, we have now treated over 3,000 acres of this landscape on private property. Cross boundary treatments will help the control of wildfires and overall improvement of the ecosystem on this landscape. Overall improvement would be treating continuous parcels of land with the same treatments or prescription to help enhance the ecological functions on that landscape. There are also similar treatments being completed on federal, state, and private lands located within the project watershed. The forest has full suppression responsibility over the lands in the project area, so we have used fuel treatment units to help develop plans for wildfire response. The significant findings are that the treatment either slowed or arrested the spread of the wildfire. For more information, see the attach FTEM report.

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

No fires met these criteria

3. What assumptions were used in generating the numbers and/or percentages you plugged into the TREAT tool? Information about Treatment for Restoration Economic Analysis Tool (TREAT) inputs and assumptions available here.[3]

The inputs used in generating the number and/or percentages for CFLN and all matching funds are derived from WorkPlan and expenditure reports (transaction register). Product distributions were generated from TIMs cut and sold report.

Looking at your CFLRP project's TREAT Data Entry "Full Project Details" Tab, what percent of funding was used for contracts within the local impact area? (see cell D13)[4] If you have data on what percent of funding was used for **agreements** within the local impact area, please note.

[3] *For CFLRP projects under the CFLRP Common Monitoring Strategy this and the responses below address the core CFLRP common monitoring strategy questions, "*How have CFLRP activities supported local jobs and labor income?" and "How do sales, contracts, and agreements associated with the CFLRP affect local communities?

[4] If you would prefer to use other data collected locally, you may include that here. Do not include dollars that were contracted to firms outside of the local area.

Contract Funding Distributions ("Full Project Details" Tab):

Description	Project Percent
Equipment intensive work	30%
Labor-intensive work	50%
Material-intensive work	5%
Technical services	10%
Professional services	5%
Contracted Monitoring	0%
TOTALS:	**100%**

Please provide a brief description of the local businesses that benefited from CFLRP related contracts and agreements, if known. Consider characteristics such as tribally-owned firms, veteran-owned firms, women-owned firms, minority-owned firms, and business size.[5]

All timber sale contracts were award to locally owned businesses. All timber products went to locally owned mills companies.

FY 2021 Modelled Jobs Supported/Maintained (CFLN and matching funding):

FY 2021 Jobs Supported/Maintained	Jobs (Full and Part-Time) (Direct)	Jobs (Full and Part-Time) (Total)	Labor Income (Direct)	Labor Income (Total)
Timber harvesting component	36	60	1,600,762	1,835,331
Forest and watershed restoration component	3	4	108,598	165,623
Mill processing component	80	133	3,302,179	5,386,291
Implementation and monitoring	5	6	138,945	151,865
Other Project Activities	0	0	0	0
TOTALS:	125	203	5,150,484	7,539,110

4. Briefly describe community benefits that align with the CFLRP proposal and strategies socioeconomic goals. **How has CFLR and related activities benefitted your community(ies) from a social and/or economic standpoint?** Please link to monitoring reports or other relevant information if available.

The Missouri Pine-Oak Restoration Project is slated for implementation across 126 thousand acres within the Mark Twain National Forest (MTNF). This area corresponds to about 8% of MTNF. About $20 million will be invested to implement the project with one half funded through the CFLRP national fund and the other half through the Knutson-Vandenberg Fund and nongovernmental sources. The $20 million invested on MTNF-CFLRP implementation over the 2012-2019 period are expected to support an average of 141 jobs, generate $33.7 million in labor income and contribute $44.2 million in added value to the regional 9-county economy. Merchantable tree volume at the end of this period is expected to exceed the initial amount by 14% although growth in timber volume will be lower than if the MTNF-CFLRP had not been implemented. Given the size and scope of the MTNF-CFLRP there were no sizeable or discernable negative effects to the local wood products industry although impacts on industry segments will need further evaluation.

[5] This information is publicly available through usaspending.gov, there are other firm characteristics that may be more relevant for your CFLRP project or important for tracking over time.

Highlights

- Lands managed under the Mark Twain National Forest Collaborative Forest Land Restoration Project (MTNF-CFLRP) represent about 0.8% of all Missouri forests and 8% of lands in the Mark Twain National Forest.
- Results from economic and vegetation models show that total MTNF-CFLRP investments and subsequent implementation activities from 2012 to 2019 will likely result in:
    - annual average of 141 jobs supported, $33.7 million in labor income, and $44.2 million in added economic value to the local economy (nine-county region where the project is expected to have its largest impact)
    - $2.2 dollars added to the local economy for every dollar invested
    - 9.2 million in tax revenues
- Merchantable tree volume by the end of 2019 is estimated to be 14% greater with the implementation of the MTNF-CFLRP as compared to initial conditions.

Indicator	**Brief Description of Impacts, Successes, and Challenges**
# Cross-institutional agreements/policies	The Forest has a Challenge Cost Share Agreement with Missouri State University and has financial arrangements with the Northern Research Station for assistance in monitoring.
% Locally retained contracts	All timber sales, timber marking contracts, invasive species treatment contracts have been to local contractors within the State.
Ease of doing business	CFLN and the required matching has allowed for more personal, flexibility in contracting and agreements.
Relationship building/collaborative work	The Forest has had over 20 executed Wyden Amendments Participating Agreements to conduct prescribed fire on private lands adjacent to Forest Service lands.

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

The Forest has a variety of collaborators assisting with multi-party monitoring with Central Hardwood Joint Ventures, Missouri Department of Conservation, The Nature Conservancy, Missouri State University Ozarks Environmental and Water Resources Institute, University of Missouri, NatureCite and Northern Research Station.

CFLRP Woodland Songbird Monitoring

From 3 June 2020 to 3 July 2020, research assistants from the University of Missouri conducted 246 point count surveys for 18 species of grassland, shrubland, and forest songbirds across Collaborative Forest Restoration Program (CFLRP) land in Mark Twain National Forest. These surveys were also conducted in 2013-2015. Monitored species included

Acadian Flycatcher, Bachman's Sparrow, Black and White Warbler, Blue-winged Warbler, Eastern Towhee, Eastern Wood Pewee, Indigo Bunting, Kentucky Warbler, Northern Bobwhite, Ovenbird, Pine Warbler, Prairie Warbler, Red-headed Woodpecker, Summer Tanager, White-breasted Nuthatch, White-eyed Vireo, Worm-eating Warbler, and Yellow-breasted Chat. After surveys were completed we measured vegetation characteristics at each point. We processed these survey data in fall 2020 and spring 2021 and began preliminary analysis in June 2021. This included fitting hierarchical abundance models using a Bayesian framework. We are currently adjusting the abundance model to ideally accommodate all monitored species. Further models will incorporate site covariates including vegetation survey data, Lidar imagery, NLCD landcover data, and Forest Service land management data. We will report how abundance has changed over time and is related to restoration efforts. A summary of abundances over the four survey years appears below.

BHNU Reintroduction

In August/ September 2020 and August 2021, we relocated 102 Brown-headed Nuthatches from Ouachita National Forest in Arkansas to Mark Twain National Forest in Missouri. We tracked 49 radio-tagged individuals (23 in 2020 and 26 in 2021) for ≤ 45 days post-release using VHF radio telemetry. We documented movements up to 3-5km from the release site by radio-tagged nuthatches. We used the relocations of radio-tagged individuals to create a 250 m survey grid of 60 points in 2020 and increased this to 84 points in August 2021. We conducted monthly time-removal occupancy surveys at these grid points using playback to monitor habitat use. We also recorded the unique color bands of individuals observed during surveys to analyze survival. As of November 2021, we have recorded 832 resights of 87 tagged individuals. We are currently incorporating these data into spatial Cormack Jolly Seber survival models to estimate 25-day survival immediately post-release as well as monthly and annual survival. In March through May 2021 we searched for nests and found six active nests, four of which fledged young.

6. FY 2021 Agency performance measure accomplishments:

Performance Measure	Unit of measure	Total Units Accomplished	Total Treatment Cost ($) *(Contract Costs)*
Acres of forest vegetation established FOR-VEG-EST	Acres	1,637	$68,068 for trees. Tree planting contracts, EP $76,000, PB $18,480. $80/ac.
Acres of forest vegetation improved FOR-VEG-IMP	Acres	1,173	$217,202.00 on Eleven Point $211,987.00 on Popular Bluff. $140/acre
Manage noxious weeds and invasive plants INVPLT-NXWD-FED-AC	Acre	1,541	Fremont, $7,338.32, $40/ac; Pineknot, $17,489.50, $35/ac; Handy, Van Buren (VB), Bartlett, NE Corner, $13,536.00, $47/ac.
Highest priority acres treated for invasive terrestrial and aquatic species on NFS lands INVSPE-TERR-FED-AC	Acres	19,000	
Acres of terrestrial habitat restored or enhanced HBT-ENH-TERR	Acres	16,619	
Acres of forestlands treated using timber sales TMBR-SALES-TRT-AC	Acres	1,378	Marking Contract, $10,424.84; Tree Marking paint, $9,882.63
Volume of timber sold TMBR-VOL-SLD*	CCF	20,125	
Green tons from small diameter and low value trees removed from NFS lands and made available for bio-energy production BIO-NRG*	Green tons	143	
Acres of hazardous fuels treated outside the wildland/urban interface (WUI) to reduce the risk of catastrophic wildland fire FP-FUELS-NON-WUI	Acre	11,961	$15/ac
Acres of wildland/urban interface (WUI) high priority hazardous fuels treated to reduce the risk of catastrophic wildland fire FP-FUELS-WUI	Acres	1,195	$15/ac
Acres mitigated FP-FUELS-ALL-MIT-NFS	Acres	14,873	
Please also include the acres of prescribed fire accomplished	Acres	12,744	

Units accomplished should match the accomplishments recorded in the Databases of Record. For CFLRP projects under the CFLRP Common Monitoring Strategy, items marked with a * help to address the core CFLRP common monitoring strategy question, "Did CFLRP increase economic utilization of restoration byproducts?"

7. The Washington Office (Enterprise Data Warehouse) will use spatial data provided in the databases of record to estimate a treatment footprint for each CFLRP project's review and verification. This information will be posted here on the internal SharePoint site for verification *after the databases of record close October 31*.

- **If the estimate is consistent and accurate**, please confirm that below and skip this question.
- **If the gPAS spatial information does NOT appear accurate**, note the total acres treated below.

Fiscal Year	**Footprint of Acres Treated** (without counting an acre of treatment on the land in more than one treatment category)
FY 2021	54,209
Estimated Cumulative Footprint of Acres (CFLRP start year through 2021)	192,433

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?

8. Describe any reasons that the FY 2021 annual report does not reflect your project proposal, previously reported planned accomplishments, or work plan. Did you face any unexpected challenges this year that caused you to change what was outlined in your proposal?

Treatment objectives as outlined in the proposal have been met regarding the restored woodland communities across the landscape that have been thinned and has received multiple prescribed burns. A wind event was an unexpected challenge.

9. **Planned FY 2022 Accomplishments** (for CFLRP projects with **known** ongoing funding in FY22)[6]

Performance Measure Code	**Unit of measure**	**Planned Accomplishment for 2021** (National Forest System)	***Planned Accomplishment on non-NFS lands within the CFLRP landscape***[7]
Acres of forest vegetation established FOR-VEG-EST	Acres		
Manage noxious weeds and invasive plants INVPLT-NXWD-FED-AC	Acre		
Miles of stream habitat restored or enhanced HBT-ENH-STRM	Miles		
Acres of terrestrial habitat restored or enhanced HBT-ENH-TERR	Acres		
Miles of road decommissioned RD-DECOM	Miles		
Miles of passenger car system roads improved RD-PC-IMP	Miles		

[6] Projects funded beginning in FY21, or extensions of 5 years or more, will be following the new Common Monitoring Strategy and will be asked to provide information on invasives, wildlife habitat, and reduction in fuels that go beyond acre tallies. Please work with your Regional CFLRP Coordinator as these are implemented.

[7] 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

Performance Measure Code	Unit of measure	Planned Accomplishment for 2021 (National Forest System)	*Planned Accomplishment on non-NFS lands within the CFLRP landscape*[7]
Miles of high clearance system road improved RD-HC-IMP	Miles		
Volume of timber sold TMBR-VOL-SLD	CCF		
Green tons from small diameter and low value trees removed from NFS lands and made available for bio-energy production BIO-NRG	Green tons		
Acres of hazardous fuels treated outside the wildland/urban interface (WUI) to reduce the risk of catastrophic wildland fire FP-FUELS-NON-WUI	Acre		
Acres of wildland/urban interface (WUI) high priority hazardous fuels treated to reduce the risk of catastrophic wildland fire FP-FUELS-WUI	Acres		

Please include all relevant planned accomplishments, assuming that funding specified in the CFLRP project proposal for FY 2021 is available.

10. Planned accomplishment narrative and justification if planned FY 2022 accomplishments and/or funding differs from CFLRP project work plan (for CFLRP projects with **known** ongoing funding in FY22):

11. 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. If you have engaged new collaborative members this year, please provide a brief description of their engagement.[8]

Collaborative Member/Partner Name	Organizational Affiliation
Jane Fitzgerald	Central Hardwoods Joint Ventures
Dan Dey, Research Forester	US Forest Service, Northern Research Station
Frank Thompson, Wildlife Ecologist	US Forest Service, Northern Research Station
Mike Stambaugh, Associate Research Professor, Consortium Lead	Oak Woodland and Forest Fire Consortium
Megan Buchanan, Resource Science Field Station Supervisor	Missouri Department of Conservation
Nathan Muenks, Natural Resources Planning Section Chief	Missouri Department of Conservation
Neal Humke, Land Stewardship Coordinator	L.A.D. Foundation
John Burk, NWTF State Biologist	National Wild Turkey Federation
Joe Alley, State Forester	Natural Resource Conservation Service

***(OPTIONAL)* Media recap**. Please share with us any hyperlinks to videos, newspaper articles, press releases, scholarly works, and photos of your project that you have available. You are welcome to include links or to copy/paste.
https://www.ksmu.org/post/dozens-more-brown-headed-nuthatches-reintroduced-missouri#stream/0
https://www.allaboutbirds.org/news/brown-headed-nuthatches-return-to-missouris-ozark-mountains-after-100-years/
https://mdc.mo.gov/magazines/conmag/2021-04/squeak-back
U.S. Forest Service - Mark Twain National Forest | Facebook
U.S. Forest Service - Mark Twain National Forest | Facebook
Mark Twain National Forest - News & Events (usda.gov)

[8] For CFLRP projects under the CFLRP Common Monitoring Strategy, this table addresses the core CFLRP common monitoring strategy question, "Who is involved in the collaborative and if/how does that change over time?"

(OPTIONAL) **For CFLRP Projects in the final year of their initial 10 year funding plans**. Please use this space to provide any key reflections on lessons learned and opportunities for improvement for CFLRP moving forward – this could be bullets, a few brief paragraphs, or links to reports you would like to share on this topic.

The CFLRP program has proved invaluable to the Mark Twain National Forest and the shortleaf pine communities of the Current River Pinery of the Missouri Ozarks. Without this funding the Forest would not have been able to restore the structure and functionality of enough pine and pine-oak communities to be able to have enough habitat to re-introduce Brown-headed Nuthatch to the State. The thinning and prescribed fire that has been completed to date has resulted in over 100,000 acres of restored habitat in one of Missouri most ecologically diverse and in-tact landscapes.

Signatures:

Recommended by (Project Coordinator(s)):_____

Approved by (Forest Supervisor(s)): _____

Draft reviewed by (collaborative chair or representative): _____