2019 CFLRP Ecological Indicator Progress Report

OVERVIEW

Introduction

In 2011, the National Forest Foundation convened CFLRP participants to develop a set of national indicators. The resulting five indicators are economic impacts, fire risk and costs, collaboration, leveraged funds, and ecological condition. Data to support these five indicators comes from a number of sources, including the Treatment for Restoration Economic Analysis Toolkit, collaboration surveys conducted by NFF, and the Annual Reports.

Projects first reported on ecological indicators in 2014. Since then, the CFLRP staff in the US Forest Service Washington Office have worked with colleagues and partners to review and update to template to make improvements while maintaining a consistent protocol to 2014. The intent of the 2019 CFLRP Ecological Indicator Progress Report is to better understand your progress in advancing ecological outcomes. It is not intended to capture everything about your monitoring activities.

To aid you in filling out this report, we recommend that you read the new 2019 Guidance Document. We also recommend that you reference your past Annual Reports and your 2014 Ecological Indicator Progress Reports. For additional help, please email CFLRP@fs.fed.us.

We appreciate the time and energy you dedicate to completing this progress report. This information is critical for understanding the ecological outcomes of your work, telling the national story, supporting communication and transparency, and sharing successful approaches and practices across the nation.

Thank you!

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2019 CFLRP Ecological Indicator Progress Report

Project Name: Burney-Hat Creek Basins Project | State: California

FIRE REGIME

Narrative - *Note: All boxes in this template will scroll, so you have as much space as you need.*

1. Did you make any changes to your desired condition(s) for fire regime as compared to the 2014 Ecological Indicator Report?
Please briefly describe:

Yes ☑ **No** ☐

The desired condition (DC) statements were updated to include longer time frames and to reflect the adjusted treatment goals that were described in the 2017 CFLRP Project Lifetime Goal Review and Response document. We also added two landscape-scale desired conditions, which were adapted from the Burney Hat Creek CFLRP Multiparty Monitoring Plan for Ecological Resources (monitoring questions FIRE.1.1. and FIRE.1.2.). The landscape thresholds were updated to reflect the proportion of the larger CFLRP landscape (200,003 acres) that we had anticipated management actions to have had an impact on fire regime indicators over the 8-years of project implementation.

2. Did you make any changes to your monitoring methodologies for fire regime as compared to the 2014 Ecological Indicator Report? Please briefly describe:

Yes ☑ **No** ☐

In addition to using FACTs, we used outputs from the stochastic wildfire simulation program FSim to estimate predicted fire behavior in treatment units. We also used the California Fire Return Interval Departure (FRID) database to evaluate changes in fire regime departure throughout the assessment period (2011-2018).

3. Did you use any new or updated baseline data for evaluating your fire regime progress for the purposes of this report?
Please briefly describe:

Yes ☐ **No** ☑

4. Did your projects experience any unanticipated developments that positively or negatively affected expected progress towards your desired conditions for fire regime? (e.g. wildfire in the project area, litigation outcome, change in collaborative participation, etc.)

The Burney-Hat Creek Basins Project has experienced several unanticipated developments, including two large wildfires (the 2012 Reading Fire and 2014 Eiler Fire) and a large windthrow event in 2015. These events negatively impacted progress toward our fire regime desired conditions by directly impacting ecological conditions across the CFLRP landscape. They also reduced our ability to implement restoration projects by redirecting agency efforts toward post-fire rehabilitation and recovery.

5. What were the most difficult barriers or challenges you experienced in progressing towards your desired conditions for fire regime? If you adapted to address these challenges please provide a brief description of how.

The ability to implement prescribed fire treatments has been significantly impacted by unprecedented drought conditions, increasingly narrow prescribed fire implementation windows, and air quality concerns.

6. Did you include the effects of treatments on areas adjacent to the active treatment area? Yes ☐ No ☑

If yes, please briefly describe your methodology for including these adjacent acres, and describe any work conducted across land ownership in support of desired conditions for fire regime.

Desired Conditions

*In this report, the term "**desired conditions**" refers to landscape and resource conditions (as defined collaboratively by stakeholders and land managers) that you are seeking to achieve and maintain for your CFLRP landscape over the next 10+ years. Desired conditions are outcome-driven not output-driven, and should link to your project's CFLRP proposal while being measurable. (Note: The term "desired condition" is used somewhat differently in the Forest Service's Land Management Planning Process. In that context, it is not time bound, and often represents long-term social, economic and ecological goals, while the term "objective" is used to represent specific, measurable and time-bound benchmarks to be achieved while working toward desired conditions in a forest plan area.) In this report, the term "**landscape**" refers to the landscape identified in your CFRLP project proposal or in subsequently-approved proposal edits. See cover page for links to guidance.*

7. Project-scale Desired Conditions Target for Fire Regime:

80 % change (relative to the desired condition) occurs across 80 % of the project areas by 09/30/2019

100 % change (relative to the desired condition) occurs across 80 % of the project areas by 09/30/2019

Please include 1-5 *quantifiable* desired condition statements upon which the above target is based:

DC1. Thinning and surface fuel treatments result in average predicted flame lengths of < 4 feet.
DC2. Thinning and surface fuel treatments are followed up by prescribed fire and/or ecologically beneficial wildfire in rotations that are based on presettlement return intervals (4-37 years).

Example: Treatments in the project area result in a 23% reduction in potential flame length.
Example: 75% of all prescribed burn projects meet prescription objectives as quantified in burn plan.

8. Landscape-scale Desired Conditions Target for Fire Regime:

100 % change (relative to the desired condition) occurs across 6 % of the landscape area by 09/30/2019

100 % change (relative to the desired condition) occurs across 9 % of the landscape area by 09/30/2019

Please include 1-5 *quantifiable* desired condition statements upon which the above target is based:

DC1. Prescribed fire treatments and/or ecologically beneficial wildfires result in a decrease in Fire Return Interval Departure Condition Class (FRID CC) to a FRID CC 2 (moderate departure) or FRID CC 1/CC-1 (low departure).
DC2. In vegetation types that were historically characterized by frequent, low to moderate severity fire (Fire Regime Group 1), treatments result

Examples: Modeled ecological departure indicates that forest vegetation is restored to Vegetation Condition Class 1 with low fire hazard across 51% (105,183 acres) of the CFLR landscape; Fuel models indicate reduced likelihood of supporting a stand replacing fire across 8.5% of the CFLR landscape (73,000 acres); Fire-adapted landscapes transition from shrub-dominant understory fuel model to a grass/forb dominant understory fuel model across 50% of the CFLR landscape.

9. Please select the broader goals that are central to your desired condition(s) for fire regime for the Project-scale (P) and Landscape-scale (L) :

P	L	
☑	☑	Reduced risk/likelihood of uncharacteristic wildfires (high severity, widespread, high mortality, active crown fire/crown fire initiation)
☑	☑	Re-establish natural fire regimes and move landscape to historical range of variability and/or natural range of variability
☐	☐	Restore/maintain fire dependent and tolerant species
☐	☐	Restore/maintain native species
☐	☐	Restore/maintain heterogeneity (species, size classes)
☑	☑	Increase use of prescribed fires
☐	☐	Other. Please describe:

10. Please select the key outcomes you are hoping to achieve on the landscape through attainment of the broader goals you selected above:

- ☑ Increase options/opportunities for managers to control/manage wildfires
- ☑ Protect communities and high valued resources/reduce risk of loss
- ☑ Protection of water quality/supply
- ☑ Public and firefighter safety
- ☑ Reduced fire supression costs and avoided costs
- ☐ Other. Please describe:

11. Given these goals, please state the evaluation metric(s) you are using to monitor progress towards your desired conditions for fire regime for this report. Note: This evaluation metric is something you are measuring or counting to monitor fire regime change. It has a unit of measurement attached to it.

Conditional flame length (FSim model outputs); Fire Return Interval Departure (difference between pre-settlement fire return interval [FRI] and current FRI); acres treated with prescribed fire; acres burned by low severity wildfire

Examples of fire regime evaluation metrics: basal area in square feet per acre (for tree density), quadratic mean diameter in inches (for tree sizes), litter and duff depths in centimeters (for fire hazard), percent canopy cover (for openness), fuels treatment effectiveness, tons of fuel loads removed (for fire hazard), avoided costs

Data and Methodology

12. Select the type(s) of monitoring you used to assess Project-scale (P) and Landscape-scale (L) progress towards fire regime desired conditions for this report. Select all that apply:

P	L	
☐	☑	**Baseline Data Collection** (i.e. was data collected prior to treatment to be used for later comparison?)
☑	☑	**Accomplishment Reporting** (i.e. was progress tracked using acres and miles reported?)
☐	☐	**Implementation Monitoring** (i.e. were the treatments implemented as prescribed?)
☑	☑	**Effectiveness Monitoring** (i.e. were treatments effective at meeting the stated objectives?)
☐	☐	**Effectiveness Monitoring Pilot Study** (i.e. was a trial run conducted to assess considerations of crafting an effectiveness monitoring plan?)
☐	☐	**Ecological Impacts Monitoring** (i.e. were there any unforeseen ecological consequences that could compromise treatment success?
☐	☐	**Other.** Please describe:

13. Select the methodologies used to assess Project-scale (P) and Landscape-scale (L) progress towards fire regime desired conditions for this report. Select all that apply and provide a brief description for each:

P	L		
☐	☐	Field-based sampling/plots:	
☐	☐	Remote sensing:	
		☐ LiDAR ☐ Aerial photography ☐ NAIP ☐ Landsat ☐ Other:	
☑	☑	Treatments implemented (e.g. acres or miles accomplished):	acres of fuel treatments (fire and mechanical thinning) accomplished
☑	☑	Modeling (include type and indicators used):	FSim fire models were used to predict conditional flame length
☐	☐	Measuring a reduction in the fire risk index:	
☐	☐	Observation/expert opinion:	
☑	☑	Fuels treatment effectiveness:	analyzed predicted flame length within fuel treatments
☑	☑	GIS analysis:	The data used in this analyses were spatial; therefore all analyses were conducted in GIS
☐	☑	Other:	Compared changes in Fire Return Interval Departure (FRID) data between 2011 (start of project) and 2018 (most recent dataset)

14. Where is the data that is being used for monitoring Project-scale (P) and Landscape-scale (L) progress toward fire regime desired conditions being stored? Select the databases categories that apply and provide a description of the specific datasets being used. Include links if available:

P	L		
☐	☐	FSVeg:	
☐	☐	Forest Inventory and Analysis (FIA):	
☐	☐	Fuels Treatment Effectiveness Report Database:	
☐	☐	GNN:	
☐	☐	VMap:	
☐	☐	Feat-Firemon Integrated Database:	
☑	☑	FACTS (please select performance measure):	
		☑ FP-FUELS-NON-WUI ☑ FP-FUELS-WUI ☐ FOR-VEG-EST ☑ FOR-VEG-IMP ☐ OTHER:	
☑	☑	Local database:	FSim outputs are on the T-drive (USFS); Outputs are also accessible to partners through collaborative web-based platforr
☐	☐	Inspection reports/contract record:	
☐	☑	Other:	FRID data are available at https://www.fs.usda.gov/main/r5/landmanagement/gis

Project-scale scoring

From the beginning, CFLRP intended to shift towards desired conditions at the landscape-scale. As the disturbances and processes of interest occur at a landscape-scale, we need a landscape-scale assessment. It's a challenge to look at the impacts at that scale, given the scale itself as well as time delays (e.g. it takes more time to shift outcomes at landscape-scale than project-scale). While landscape-scale is the focus, project-scale assessments allow projects to bring in their monitoring data and look at treatment outcomes.

Each management action funded through CFLRP will have its own project-level objectives that are designed to contribute to achieving desired conditions at larger scales. Project-scale scoring should reflect how well the results of an individual management activity met the objectives for that project. Individual projects may not meet every desired condition of the CFLRP project. Project-scale scoring is conducted by the multi-party monitoring group following completed management activities.

An individual activity might not need to lead to a fully restored acre, but if it sets the landscape up for the next treatment it may still get a good rating. For example if a successful thinning doesn't restore a fire regime, but it sets up landscape for subsequent burns that might, it could still receive a "Green" rating. There may be many reasons for not scoring a "Green," including ecological and sociological considerations beyond the scope of the CFLRP project as well as recognition of unanticipated barriers or challenges. Note that scoring a "Yellow" or "Red" does not necessarily mean that work was not accomplished.

If you need to summarize scores across different desired condition targets, please refer to Guidance Document for additional instruction.

- **Green** = Expected progress is being made towards desired conditions across 75% or more of our CFLRP project areas.
- **Yellow** = Expected progress is being made towards desired conditions across 26% - 74% of our CFLRP project areas.
- **Red** = Expected progress is being made towards desired conditions across 25% or less of our CFLRP project areas.

Ecological Indicator	Green, Yellow, or Red score and % of the CFLRP project areas resulting in measurable progress as defined above	Are you achieving your CFLRP objectives? Yes or No? If "no", briefly describe why in the box below and use the narrative section as needed.
Fire Regime	Green (83%)	Yes

Please briefly describe how you calculated your score.

DC1: Modeled fire behavior indicates that the average predicted flame length within completed thinning and surface fuel treatments is between 4-6 feet. This represents 80% change toward our desired condition (average < 4 feet). Treatments were implemented across 90% of the total FY19 target treatment acres. Total progress toward our desired condition was 90% (100 x 0.9 = 90).

Scoring for National Reporting

Landscape-scale scoring

Few (if any) CFLRP-funded Landscapes propose to meet every proposed desired condition on every acre or achieve landscape-scale objectives through the mechanical treatment of every acre within their landscape boundary. Rather, multiple projects with multiple objectives (fire risk reduction, wildlife habitat improvement, stream restoration, etc.) should facilitate meeting these broader objectives. Scoring at the landscape-scale reflects the degree to which individual Landscapes are moving towards Desired Conditions at broader spatial extent. Landscape-scale scoring is conducted by the multi -party monitoring group at each Landscape.

"Expected progress" will be defined using 10-year benchmarks for FY 2010 projects and 8-year benchmarks for FY 2012 projects for each desired condition based on a percentage of the lifetime outcome specified for the landscape in each proposal. There may be many reasons for not scoring a "Green," including ecological and sociological considerations beyond the scope of the CFLRP project as well as recognition of unanticipated barriers or challenges. Note that scoring a "Yellow" or "Red" does not necessarily mean that work was not accomplished.

If you need to summarize scores across different desired condition targets, please refer to Guidance Document for additional instruction.

- **Green** = Expected progress is being made towards desired conditions across [> 8] % of our CFLRP landscape area.
- **Yellow** = Expected progress is being made towards desired conditions across [4-7] % of our CFLRP landscape area.
- **Red** = Expected progress is being made towards desired conditions across [1-3] % of our CFLRP landscape area.

Ecological Indicator	Green, Yellow, or Red score and % of the landscape across which progress is being made towards desired conditions	Are you achieving your CFLRP objectives? Yes or No? If "no", briefly describe why in the box below and use the narrative section as needed.
Fire Regime	Green (9%)	Yes

Please briefly describe how you decided on the percentage thresholds used above for the scoring categories and how you calculated your score.

Percentage thresholds were modified from the FY14 Ecological Indicator Report to reflect the proportion of the larger CFLRP landscape (200,003 acres) where we expect treatments to have had an impact on fire regime conditions by 2019 (10%). This was used as the upper threshold value, with good progress defined as ranging between 8-10%.
Score calculation: DC1: The total acres in FRID Condition Class 3 decreased (100% change) by 12,072 acres between 2011 and 2018. This decrease occurred across 6% of the CFLRP landscape (12,072 acres/200,003 acres). This represents 100% progress toward our desired condition.

2019 CFLRP Ecological Indicator Progress Report

Project Name: Burney-Hat Creek Basins | State: California

WATERSHED CONDITION

Narrative - *Note: All boxes in this template will scroll, so you have as much space as you need.*

☐ If watershed condition is not part of your CFLRP proposal and landscape restoration strategy, please let us know by checking this box.

1. Did you make any changes to your desired condition(s) for watershed condition as compared to the 2014 Ecological Indicator Report? Please briefly describe: **Yes** ☑ **No** ☐

We added quantifiable project-level desired condition statements to reflect the questions identified in the ecological monitoring plan (related to hydrology); updated the target date and revised estimates of project completion to reflect the 2017 CFLRP Project Lifetime Goal Review and Response document; added desired condition (DC) measures informed by the Watershed Restoration Action Plans (WRAPs) that were developed for the priority watersheds; and changed the usage of the term "good" to the more accurate "Properly Functioning".

2. Did you make any changes to your monitoring methodologies for watershed condition as compared to the 2014 Ecological Indicator Report? Please briefly describe: **Yes** ☑ **No** ☐

The 2014 report only used ratings from the Watershed Condition Framework, as recorded in WCATT. In this report, we used local data collected as part of our monitoring effort to assess progress toward our desired conditions. This includes perennial stream temperature, water quality measurements, turbidity, and channel morphological data from Streamscape surveys (a simplified subset of the Stream Condition Inventory Protocol).

3. Did you use any new or updated baseline data for evaluating your watershed condition progress for the purposes of this report? Please briefly describe: **Yes** ☑ **No** ☐

This CFLRP project was chosen to largely correspond to the Burney and Hat Creek Basins (HUC5 watersheds at the time). However, since that time, the USGS updated the watershed boundaries and as a result, many HUC12 watersheds (the level at which they were rated under the Watershed Condition Framework) are now only partially within the CFLRP area. Therefore, for the purpose of this scoring, only HUC12 watersheds that are entirely within the CFLRP area will be considered. The baseline data used for evaluating progress toward our desired conditions were derived from field data currently being collected and compiled as part of our monitoring program.

4. Did your projects experience any unanticipated developments that positively or negatively affected expected progress towards your desired conditions for watershed condition? (e.g. wildfire in the project area, litigation outcome, change in collaborative participation, etc.)

The Reading Fire (2012) directly impacted our ability to complete the essential projects listed in our three priority watershed WRAPs. This was not only the result of redirected agency priorities, but also the result of direct fire impacts to large portions of those watersheds. After the fire and implementation of fire salvage activities, it was determined that the three priority watersheds should be allowed to rest for five years to decrease the probability of additional adverse watershed effects. Thus, the proposed Badger and Potato Butte Projects could not proceed. The Eiler Fire (2014) also caused additional, significant damage to watersheds in the CFLRP area (but not the priority ones).

5. What were the most difficult barriers or challenges you experienced in progressing towards your desired conditions for watershed condition? If you adapted to address these challenges please provide a brief description of how.

The occurrence of wildfire and associated cumulative watershed effects represented a major hurdle. Other projects were identified and implemented, but for the most part, they did not address specific watershed restoration needs. Nevertheless, 13,197 acres of watershed improvements on NFS lands have taken place thus far over the lifetime of the CFLRP project. Furthermore, three hydrological restoration projects, have taken place on private lands within the Burney-Hat Creek Basins CFRLP project area, resulting in an additional 3,045 acres of treatments.

6. Are you using the Priority Watershed(s) identified through the Watershed Condition Framework to focus CFLRP watershed restoration work and monitoring for this report? Yes ☑ **No** ☐ **Our CFLRP does not have Priority Watersheds** ☐

If no, please briefly describe why you are not using the Priority Watersheds:

If yes, is there a Watershed Restoration Action Plan (WRAP) developed for the Priority Watershed(s)? Yes ☑ No ☐

7. Our Priority Watershed(s)of focus for this report cover 14 % of the CFLRP landscape

8. Please select up to three conditions in each category for why it was chosen as a Priority (these are available in the WCATT entry):

Category 1: Resource Values
- ☐ Wilderness
- ☐ Wild and Scenic River
- ☐ Experimental Watershed
- ☐ Municipal Watershed
- ☐ Outstanding Resource Water
- ☐ Species protection area
- ☐ Class 1 Air Shed
- ☑ Other: Major Recreation Are

Category 2: Concerns and Threats
- ☑ Water Quality
- ☐ Water Quantity
- ☑ Riparian Structure and Function
- ☑ Species Habitat
- ☐ Wildfire Risk
- ☐ Invasive Species
- ☐ Other:

Category 3: Opportunities
- ☐ Improve Condition
- ☐ Maintain Condition
- ☐ Potential Partnership
- ☑ Non-NFS Land Collaboration
- ☑ Larger Scale Restoration
- ☐ Leverage FS funds
- ☑ Socio-economic
- ☐ Other:

Desired Conditions

*In this report, the term "**desired conditions**" refers to landscape and resource conditions (as defined collaboratively by stakeholders and land managers) that you are seeking to achieve and maintain for your CFLRP landscape over the next 10+ years. Desired conditions are outcome-driven not output-driven, and should link to your project's CFLRP proposal while being measurable. (Note: The term "desired condition" is used somewhat differently in the Forest Service's Land Management Planning Process. In that context, it is not time bound, and often represents long-term social, economic and ecological goals, while the term "objective" is used to represent specific, measurable and time-bound benchmarks to be achieved while working toward desired conditions in a forest plan area.) In this report, the term "**landscape**" refers to the landscape identified in your CFRLP project proposal or in subsequently-approved proposal edits. See cover page for links to guidance.*

9. Project-scale Desired Conditions Target for Watershed Condition:

0	% change (relative to the desired condition) occurs across	100	% of the project areas by	09/30/2021
0	% change (relative to the desired condition) occurs across	100	% of the project areas by	09/30/2021

Please include 1-5 *quantifiable* desired condition statements upon which the above target is based:

DC1. Water quality decreases by no more than 10% within the principal perennial streams downstream of project areas.
DC2. Water temperature increases by no more than 5% within the principal perennial streams downstream of projects areas.

Examples: Over 50% of roads that will be used for activities in project areas have received or are planned for BMPs; Over 170 acres of riparian area are improved and floodplain reconnected, 2 miles of stream are restored, and dam removal results in 13 miles of fish passage.

10. Landscape-scale Desired Conditions Target for Watershed Condition:

50	% change (relative to the desired condition) occurs across	14	% of the landscape area by	09/30/2021
0	% change (relative to the desired condition) occurs across	100	% of the landscape area by	09/30/2021

Please include 1-5 *quantifiable* desired condition statements upon which the above target is based:

DC1. 50% of the essential projects identified in the three watershed WRAPs are implemented.
DC2. In the absence of large-scale natural disturbance, watersheds are maintained in their current condition class.

Examples: 50% of the essential projects identified in the watershed WRAP are implemented; Watershed Condition Classification indicates that 14 of the 17 subwatersheds (82% of the CFLRP Landscape Area) are in Condition Class 1 (Properly Functioning); The Watershed Condition Classification for the fire regime and wildfire indicators are improved for 17% of the landscape (30% of the expected treatment area).

11. Please select the indicator(s) below related to watershed condition that you are trying to affect to achieve your quantifiable desired condition(s):

- ☑ Water quality
- ☑ Water quantity
- ☑ Aquatic habitat (fragmentation, woody debris, channel shape and function)
- ☐ Aquatic biota (life-form presence, native species, exotic/invasive species)
- ☑ Improve riparian/wetland vegetation condition
- ☑ Roads and trails (road density, road maintenance, proximity to water, mass wasting)
- ☑ Soils (erosion, productivity, contamination)
- ☑ Fire regime and wildfire (fire condition class, wildfire effects)
- ☐ Forest cover
- ☐ Rangeland vegetation
- ☐ Terrestrial invasive species (extent and rate of spread)
- ☑ Forest health (insects and disease, ozone)
- ☐ Other. Please describe:

12. **Please select the actions you are implementing to work towards your desired condition(s):**

- ☑ Road decommissioning
- ☑ Road maintenance and/or improvement
- ☑ Trail maintenance and/or improvement
- ☑ Mechanical thinning
- ☑ Prescribed fire/controlled burn
- ☐ Culvert replacement
- ☑ Reintroduction of native species
- ☐ Removal of exotic/invasive species
- ☑ Other. Please describe:
  Recreation management in riparian areas

13. Please state the evaluation metric(s) you are using to monitor progress towards your desired conditions for watershed condition.
Note: This evaluation metric is something you are measuring or counting to monitor watershed condition. It has a unit of measurement attached to it.

Water quality is assessed by measuring: pH, total dissolved solids (ppm), salinity (ppm), conductivity (mS/cm) and dissolved oxygen (mg/l). Before the Badger Project is implemented, turbidity measurements will be added (in NTU). Water temperature is being acquired via temperature loggers. Stream condition is being measured via the Streamscape Protocol, which is a subset of the Stream Condition Inventory

Examples of evaluation metrics: Fine sediment volume (mL), fine sediment weight (g), basal area in square feet per acre (for tree density), number of woody debris pieces in a specific size class per stream mile (for fish habitat), stream flow rate (liters/sec), miles of road decommissioned (miles), fish population (number of fish per sweep).

Data and Methodology

14. Select the methodologies used to assess Project-scale (P) and Landscape-scale (L) progress towards watershed condition desired conditions in this report. Select all that apply and provide a brief description for each:

P	L	
☐	☐	National BMP monitoring (protect water quality):
☐	☐	Streambed coring:
☐	☐	Float method (water flow):
☐	☐	Current meter (water flow):
☐	☐	Fish occupancy/use surveys:
☐	☐	Ground-based photo points or photo plots:
☐	☐	Aerial surveys, aerial photography, or remote sensing:
☐	☐	GIS analysis:
☐	☑	Treatments implemented (e.g. acres or miles accomplished) used as proxy for monitoring outcomes: WRAPs implemented
☐	☐	Modelling used as proxy for monitoring outcomes:
☑	☐	Other: Water quality sampling, water temperature logging

15. Where is the the data that is being used for monitoring Project-scale (P) and Landscape-scale (L) progress toward watershed condition being stored? Select the database categories that apply and provide a description of the specific datasets being used. Include links if available:

P	L	
☐	☐	GIS database:
☐	☐	County database:
☐	☐	State database:
☐	☐	Tribal database:
☐	☐	Citizen Science database:
☐	☑	Watershed Classification and Assessment Tracking Tool (WCATT): Official documentation of WCF ratings.
☐	☑	USFS database of record (e.g. FACTS, WIT, WorkPlan, etc.): *please select performance measure from the table below*
☑	☑	Other: Local data stored on Pinyon

Performance Measure Shorthand	Description	Database	P	L
BIO-NRG	Green tons from small diameter and low value trees removed from NFS lands and made available for bio-energy production	TIM	☐	☐
FOR-VEG-EST	Acres of forest vegetation established	FACTS	☐	☐
FOR-VEG-IMP	Acres of forestland vegetation improved	FACTS	☐	☐
FP-FUELS-NON-WUI	Acres of hazardous fuels treated outside the wildland/urban interface (WUI) to reduce the risk of catastrophic wildand fire	FACTS	☐	☐
FP-FUELS-WUI	Acres wildland/urban interface (WUI) high-priority hazardous fuels treated to reduce the risk of catastrophic wildland fire	FACTS	☐	☐
HBT-ENH-LAK	Acres of lake habitat restored or enhanced	WIT	☐	☐
HBT-ENH-STRM	Miles of stream habitat restored or enhanced	WIT	☐	☐
HBT-ENH-TERR	Acres of terrestrial habitat restored or enhanced	WIT	☐	☐
INVPLT-NXWD-FED-AC	Highest priority acres treated annually for noxious weeds and invasive plants on NFS lands	FACTS	☐	☐
INVSPE-TERR-FED-AC	Highest priority acres treated for invasive terrestrial & aquatic species on NFS lands	FACTS	☐	☐
RD-DECOM-NON-SYS	Miles of road decommissioned (non-system)	WIT	☐	☐
RD-DECOM-SYS	Miles of road decommissioned (system)	ROADS	☐	☐
RD-HC-IMP	Miles of high clearance system roads improved	ROADS	☐	☐

Performance Measure Shorthand	Description	Database	P	L
RD-HC-MAIN	Miles of high clearance system roads receiving maintenance	ROADS	☐	☐
RD-PC-IMP	Miles of road reconstruction and capital improvement	ROADS	☐	☐
RD-PC-MAIN	Miles of system roads receiving maintenance	ROADS	☐	☐
RG-VEG-IMP	Acres of rangeland vegetation improved	FACTS	☐	☐
S&W-RSRC-IMP	Acres of water or soil resources protected, maintained or improved to achieve desired watershed conditions	WIT	☐	☑
SP-NATIVE-FED-AC	Number of priority acres treated annually for native pests on Federal lands	FAD	☐	☐
STRM-CROS-MITG-STD	Number of stream crossings constructed or reconstructed to provide for aquatic organism passage	WIT	☐	☐
TL-IMP-STD	Miles of system trail improved	TRAILS	☐	☐
TL-MAINT-STD	Miles of system trail maintained	TRAILS	☐	☐
TMBR-SALES-TRT-AC	Acres of forestlands treated using timber sales	FACTS	☐	☐
TMBR-TRT	Acres of forestlands treated to achieve healthier conditions	FACTS	☐	☐
WTRSHD-CLS-IMP-NUM	# of watersheds moved to an improved condition class or sustained in properly functioning condition (Class 1)	WCATT	☐	☑

16. Please describe why the datasets or performance measures you selected in Question 15 above are <u>appropriate for assessing progress</u> towards your watershed desired conditions.

Acres of Soil and Watershed Resources Protected is required in order to address overall numerical goals, which are reported elsewhere. WCATT is essential since it contains the WRAPS and current watershed ratings.

Project-scale scoring

From the beginning, CFLRP intended to shift towards desired conditions at the landscape-scale. As the disturbances and processes of interest occur at a landscape-scale, we need a landscape-scale assessment. It's a challenge to look at the impacts at that scale, given the scale itself as well as time delays (e.g. it takes more time to shift outcomes at landscape-scale than project-scale). While landscape-scale is the focus, project-scale assessments allow projects to bring in their monitoring data and look at treatment outcomes.

Each management action funded through CFLRP will have its own project-level objectives that are designed to contribute to achieving desired conditions at larger scales. Project-scale scoring should reflect how well the results of an individual management activity met the objectives for that project. Individual projects may not meet every desired condition of the CFLRP project. Project-scale scoring is conducted by the multi-party monitoring group following completed management activities.

An individual activity might not need to lead to a fully restored acre, but if it sets the landscape up for the next treatment it may still get a good rating. For example if a successful thinning doesn't restore a fire regime, but it sets up landscape for subsequent burns that might, it could still receive a "Green" rating. There may be many reasons for not scoring a "Green," including ecological and sociological considerations beyond the scope of the CFLRP project as well as recognition of unanticipated barriers or challenges. Note that scoring a "Yellow" or "Red" does not necessarily mean that work was not accomplished.

If you need to summarize scores across different desired condition targets, please refer to Guidance Document for additional instruction.

- **Green** = Expected progress is being made towards desired conditions across 75% or more of our CFLRP project areas.
- **Yellow** = Expected progress is being made towards desired conditions across 26% - 74% of our CFLRP project areas.
- **Red** = Expected progress is being made towards desired conditions across 25% or less of our CFLRP project areas.

Ecological Indicator	Green, Yellow, or Red score and % of the CFLRP project areas resulting in measurable progress as defined above	Are you achieving your CFLRP objectives? Yes or No? If "no", briefly describe why in the box below and use the narrative section as needed.
Watershed Condition	Green (100%)	Yes

Please briefly describe how you calculated your score.

DC1: Available data indicate that water quality has not decreased since the start of the CFLRP. This represents 0% change across 100% of our project area (100% progress toward desired condition).
DC2: Available data indicate that temperature has not increased by more than 5%. This represents 0% change across 100% of our project area (100% progress

Scoring for National Reporting

Landscape-scale scoring

Few (if any) CFLRP-funded Landscapes propose to meet every proposed desired condition on every acre or achieve landscape-scale objectives through the mechanical treatment of every acre within their landscape boundary. Rather, multiple projects with multiple objectives (fire risk reduction, wildlife habitat improvement, stream restoration, etc.) should facilitate meeting these broader objectives. Scoring at the landscape-scale reflects the degree to which individual Landscapes are moving towards Desired Conditions at broader spatial extent. Landscape-scale scoring is conducted by the multi - party monitoring group at each Landscape.

"Expected progress" will be defined using 10-year benchmarks for FY 2010 projects and 8-year benchmarks for FY 2012 projects for each desired condition based on a percentage of the lifetime outcome specified for the landscape in each proposal. There may be many reasons for not scoring a "Green," including ecological and sociological considerations beyond the scope of the CFLRP project as well as recognition of unanticipated barriers or challenges. Note that scoring a "Yellow" or "Red" does not necessarily mean that work was not accomplished.

If you need to summarize scores across different desired condition targets, please refer to Guidance Document for additional instruction.

- **Green** = Expected progress is being made towards desired conditions across [77] % of our CFLRP landscape area.
- **Yellow** = Expected progress is being made towards desired conditions across [67] % of our CFLRP landscape area.
- **Red** = Expected progress is being made towards desired conditions across [<67] % of our CFLRP landscape area.

Ecological Indicator	Green, Yellow, or Red score and % of the landscape across which progress is being made towards desired conditions	Are you achieving your CFLRP objectives? Yes or No? If "no", briefly describe why in the box below and use the narrative section as needed.
Watershed Condition	Yellow (72%)	Yes

Please briefly describe how you decided on the percentage thresholds used above for the scoring categories and how you calculated your score.

Landscape-scale thresholds were lowered (from the FY14 Ecological Indicator thresholds) to reflect the two watersheds (representing 13% of the total CFLRP landscape) that were impacted by the 2012 Reading Fire and the 2014 Eiler Fire and therefore not considered in the calculation of our score. We reduced each threshold by 13%.
DC1: Stream bank protections have been implemented under the Logan Lake Watershed WRAP. This represents 5% of the essential projects identified in the three watershed WRAPs. Progress toward our desired condition = 5%.

2019 CFLRP Ecological Indicator Progress Report

Project Name: Burney-Hat Creek Basins Project State: California

FISH & WILDLIFE HABITAT

Narrative - *Note: All boxes in this template will scroll, so you have as much space as you need.*

☐ If wildlife habitat is not part of your CFLRP proposal and landscape restoration strategy, please let us know by checking this box.
☐ If fish habitat is not part of your CFLRP proposal and landscape restoration strategy, please let us know by checking this box.

1. Did you make any changes to your desired condition(s) for fish & wildlife habitat as compared to the 2014 Ecological Indicator Report? Please briefly describe: **Yes** ☑ **No** ☐

The desired condition (DC) statements were updated to include longer time frames and to reflect the adjusted treatment goals that were described in the 2017 CFLRP Project Lifetime Goal Review and Response document. We also added two additional desired conditions, which were adapted from the Burney Hat Creek CFLRP Multiparty Monitoring Plan for Ecological Resources (monitoring question WL.1.1.). The landscape thresholds were updated to reflect the proportion of the larger CFLRP landscape (200,003 acres) that we anticipate management actions to have an impact on wildlife habitat.

2. Did you make any changes to your monitoring methodologies for fish & wildlife habitat as compared to the 2014 Ecological Indicator Report? Please briefly describe: **Yes** ☑ **No** ☐

We used two new methods for assessing habitat condition in treated and untreated wildlife use areas within the CFLRP landscape. First, we used a new dataset (F3), which was developed by Huang and others (2018) using an algorithm that combines ground-based and remote sensing data to create maps of ecosystem metrics. This dataset combines USFS Forest Inventory and Analysis plot data with Landsat imagery to create 2016 estimates of canopy cover, snag density, and California Wildlife Habitat Relationship (CWHR). Second, we used outputs from the stochastic wildfire simulation program FSim to estimate predicted fire behavior within wildlife use areas that have been treated.

3. Did you use any new or updated baseline data for evaluating your fish & wildlife habitat progress for the purposes of this report? Please briefly describe: **Yes** ☐ **No** ☑

4. Did your projects experience any unanticipated developments that positively or negatively affected expected progress towards your desired conditions for fish and wildlife habitat? (e.g. wildfire in the project area, litigation outcome, change in collaborative participation, etc.)

The Burney-Hat Creek Basins Project has experienced several unanticipated developments, including two large wildfires. The 2012 Reading Fire burned three northern goshawk protected activity centers (PACs) and one California spotted owl PAC and reduced the amount of mid-seral and late-seral habitat by approximately 63%. The 2014 Eiler Fire burned two northern goshawk PACs and one California spotted owl PAC and reduced the amount of mid-seral and late-seral habitat by approximately 93%. In addition to the direct effects of these large wildfires, these events also reduced our ability to implement proactive restoration projects focused on improvement of existing wildlife habitat by redirecting agency efforts toward post-fire rehabilitation and recovery. In 2019, the Forest Service completed a Conservation Strategy for the California spotted owl. This document provides updated guidance for spotted owl habitat conservation, while broadening opportunities for restoring and maintaining habitat for this sensitive species in the future.

5. What were the most difficult barriers or challenges you experienced in progressing towards your desired conditions for fish and wildlife habitat? If you adapted to address these challenges please provide a brief description of how.

One of the most common barriers that we encounter when working toward our desired conditions for wildlife species associated with late-successional forest types (e.g. spotted owl and goshawk) is the lack of key forest structure attributes prior to treatment. The metrics that are most often used to represent high quality habitat, (e.g. high canopy cover, dominance of large trees, presence of large snags, etc.) are often not present in sufficient quantities prior to treatments due to past logging and/or large wildfires.

6. Did you include the effects of treatments on areas adjacent to the active treatment area? Yes ☐ No ☑

If yes, please briefly describe your methodology for including these adjacent acres, and describe any work conducted across land ownership in support of fish & wildlife habitat.

Desired Conditions

*In this report, the term "**desired conditions**" refers to landscape and resource conditions (as defined collaboratively by stakeholders and land managers) that you are seeking to achieve and maintain for your CFLRP landscape over the next 10+ years. Desired conditions are outcome-driven not output-driven, and should link to your project's CFLRP proposal while being measurable. (Note: The term "desired condition" is used somewhat differently in the Forest Service's Land Management Planning Process. In that context, it is not time bound, and often represents long-term social, economic and ecological goals, while the term "objective" is used to represent specific, measurable and time-bound benchmarks to be achieved while working toward desired conditions in a forest plan area.) In this report, the term "**landscape**" refers to the landscape identified in your CFRLP project proposal or in subsequently-approved proposal edits. See cover page for links to guidance.*

7. Project-scale Desired Conditions Target for Fish & Wildlife Habitat:

100 % change (relative to the desired condition) occurs across 80 % of the project areas by 09/30/2019

100 % change (relative to the desired condition) occurs across 80 % of the project areas by 09/30/2019 *(OPTIONAL. Use if separate, additional target is needed for aquatic habitat)*

Please include 1-5 *quantifiable* desired condition statements upon which the above target is based:

DC1. 960 acres of meadow, aspen, and shrub-dominated vegetation types are restored to improve wildlife habitat condition.
DC2. Thinning and surface fuel treatments in spotted owl and goshawk use areas (PACS or HRCAs) result in average predicted flame lengths of < 4 feet.

Example: 50 miles of inaccessible salmon spawning habitat is made accessible by removing one dam.
Example: Stands have a basal area of 50-80 square feet/acre, which is ideal for red-cockaded woodpecker.
Example: Stands between 5,000-8,000 ft elevation are dominated by ponderosa pine, with 5-10 trees per group, and openings 0.25- 1 acre.

8. Landscape-scale Desired Conditions Target for Fish & Wildlife Habitat:

100 % change (relative to the desired condition) occurs across 0.3 % of the landscape area by 09/30/2019

100 % change (relative to the desired condition) occurs across 0.3 % of the landscape area by 09/30/2019 *(OPTIONAL. Use if separate, additional target is needed for aquatic habitat)*

Please include 1-5 *quantifiable* desired condition statements upon which the above target is based:

DC1.Treatments within spotted owl, goshawk, and furbearer habitat result in the restoration or maintenance of CWHR classes 4M, 4D, 5M, or 5D in proportions equal to or above those found in equivalent habitats outside of treatment units.
DC2. Thinning and prescribed fire treatments within west-side spotted owl protected activity centers (PACs) and home range core areas (HRCAs)

Example: Slash pine is replaced by longleaf pine ecosystem across 5,000 acres of our CFLRP landscape.
Example: Coniferous forests across the CFLRP landscape have an average canopy cover at or above 50%.
Example: All identified inventoried aquatic organism passages at road/stream crossings that were found to be a barrier (10) are accessible for identified aquatic species at all life stages.

Habitat

9. Please select the categories of the broader goals related to fish & wildlife habitat that you are trying to achieve through your quantifiable desired condition(s):

- ☐ Open forest habitat (e.g. wider tree spacing, less mid-story vegetation)
- ☑ Grass/forb/shrub abundance and/or diversity (e.g. native or desired)
- ☑ Wildlife security (e.g. reduced disturbance and/or mortality to fish or wildlife)
- ☑ Rare or sensitive ecosystem protection and/or restoration (e.g. longleaf, bluestem, riparian, meadow, aspen or wetland habitat)
- ☐ Horizontal Complexity (e.g. "mosaic"/diversity of habitat types, patch sizes, and/or patterns)
- ☑ Vertical complexity (e.g. number of canopy layers)
- ☑ Forest structures (e.g. snags, downed wood, den trees)
- ☐ Mast-producing plant abundance and/or diversity (e.g. acorns, nuts, fruits, or berries eaten by wildlife)
- ☑ Sustainable flow of habitat age-classes through time (e.g. planning the proportion of early-, mid-, and late-seral stands)
- ☑ Habitat connectivity/availability (e.g. increased access to or availability of desired habitat)
- ☐ Aquatic habitat connectivity (e.g. culverts are passable to all aquatic organisms, no dams, stream diversions)
- ☐ Aquatic habitat complexity (e.g. downed wood, pools, riffles, etc)
- ☐ Aquatic sedimentation levels (e.g. suspended sediment or fine sediment in spawning gravels)
- ☐ Other. Please describe:

10. Please state the evaluation metric(s) you are using to monitor progress towards your desired conditions for fish & wildlife habitat for this report. Note: This evaluation metric is something you are measuring or counting to monitor habitat change. It has a unit of measurement attached to it.

Acres treated that have a wildlife benefit (WIT database); acres (and proportion) in California Wildlife Habitat Relationship (CWHR) 4M, 4D, 5M, and 5D; percent overstory canopy cover; predicted flame length (FSim); density of large snags and down logs (post-treatment field data not currently available for this assessment); average DBH of dominant and co-dominant trees (post-treatment field data not currently available for this assessment); number of canopy layers in stand (post-treatment field data not currently available for this assessment)

Examples of habitat evaluation metrcs: basal area in square feet per acre (for tree density), number of trees per acre (for tree density), quadratic mean diameter in inches (for tree sizes), litter and duff depths in centimeters (for fire hazard), percent canopy cover (for openness), percent ground cover (for forage), seedling survival per acre per year (for reforestation), number of woody debris pieces in a specific size class per stream mile (for fish habitat), grass dry weight clippings used to calculate grass pounds per acre (for forage abundance)

Populations

11. Please select the categories of broader goals related to fish & wildlife populations that you are trying to achieve through your quantifiable desired condition(s). Then list the specific species of interest related to each category you select.

- ☑ Maintain abundance/density: California spotted owl, Northern goshawk, American marten
- ☑ Increase abundance/density: California spotted owl, Northern goshawk, American marten
- ☐ Decrease abundance/density:
- ☑ Maintain native species diversity: long-toed salamanders
- ☐ Increase native species diversity:
- ☐ Translocation/reintroduction:
- ☐ Optimal sustained yield of game species:
- ☐ Ecosystem function/food webs:
- ☐ Spatial extent of population:
- ☐ Other. Please describe:

12. If relevant for your CFLRP project, please state the evaluation metric(s) you are using to monitor progress towards your desired conditions for fish & wildlife populations. Note: This evaluation metric is something you are measuring or counting to monitor population change. It has a unit of measurement attached to it.

We are not currently evaluating wildlife populations as part of our efforts to monitor progress toward the specific desired conditions presented in this report. However, we are conducting population-level monitoring as part of our broader CFLRP monitoring effort. We are monitoring nest site occupancy of spotted owl and goshawks in Protected Activity Centers (PACs) before and after thinning and prescribed fire treatments (monitoring question WL.2.1.). We are also monitoring marten presence and absence in restoration treatments designed to maintain habitat features for marten (monitoring question WL.2.2.2). In meadow habitats, we are monitoring the distribution and abundance of long-toed salamanders and other aquatic-dependent species, before and after restoration treatments (monitoring question AQ.1.1.).

Examples of population evaluation metrics: number of wildlife encounter events per unit area via point counts or remote cameras (for wildlife usage), number of pellet groups along transects used to calculate animal density per unit area (for mammal usage), presence/absence of a plant community-associated wildlife species in the project area, presence of aquatic species as indicated by eDNA

☑ Please check this box if you are not evaluating fish & wildlife populations.

Data and Methodology

13. Select the type(s) of monitoring you used to assess Project-scale (P) and Landscape-scale (L) progress towards fish & wildlife habitat desired conditions for this report. Select all that apply.

P	L	
☐	☐	**Baseline Data Collection** (i.e. was data collected prior to treatment to be used for later comparison?)
☑	☑	**Accomplishment Reporting** (i.e. was progress tracked using acres and miles reported?)
☐	☐	**Implementation Monitoring** (i.e. were the treatments implemented as prescribed?)
☐	☐	**Effectiveness Monitoring Pilot Study** (i.e. was a trial run conducted to assess considerations of crafting an effectiveness monitoring plan?)
☑	☑	**Effectiveness Monitoring** (i.e. were treatments effective at meeting the stated objectives?)
☐	☐	**Ecological Impacts Monitoring** (i.e. were there any unforeseen ecological consequences that could compromise treatment success?)
☐	☐	**Other.** Please describe:

14. Select the methodologies used to assess Project-scale (P) and Landscape-scale (L) progress towards fish & wildlife habitat desired conditions for this report. Select all that apply and provide a brief description for each:

P	L	
☑	☑	Common Stand Exams (USFS procedures): pre and post-treatment field data were collected in CSEs; however post-treatment data were n
☐	☐	Understory vegetation plots or transects:
☐	☐	Fish or Wildlife occupancy/use surveys:
☐	☐	Stream surveys:
☐	☐	Remote motion-capture cameras:
☐	☐	Ground-based photo points or photo plots:
☑	☑	Aerial surveys, aerial photography, or remote sensing: Used F3 dataset (Huang et al. 2018) to analyze CWHR and canopy cover
☑	☑	Treatments implemented (e.g. acres or miles accomplished): Acres of treatment accomplished in wildlife use areas
☑	☑	Modeling (include type and whether ground-truthed): FSim fire models were used to predict conditional flame length
☑	☑	GIS analysis: The data used in these analyses were spatial; therefore all analyses were conducted in GIS
☐	☐	Other:

15. Where is the the data that is being used for monitoring Project-scale (P) and Landscape-scale (L) progress toward fish & wildlife habitat desired conditions being stored? Select the database categories that apply and provide a description of the specific datasets being used. Include links if available:

P	L	
☑	☑	GIS database: Data used for these analyses is stored on the T-drive
☐	☐	County database:
☐	☐	State database:
☐	☐	Tribal database:
☐	☐	Citizen Science database:
☐	☐	FSVeg:
☑	☑	NRIS: wildlife PACs, HRCAs, and other management areas
☑	☑	Other USFS database of record: *please select performance measure from the table below*
☐	☐	Other:

Performance Measure Shorthand	Description	Database	P	L
BIO-NRG	Green tons from small diameter and low value trees removed from NFS lands and made available for bio-energy production	TIM	☐	☐
FOR-VEG-EST	Acres of forest vegetation established	FACTS	☐	☐
FOR-VEG-IMP	Acres of forestland vegetation improved	FACTS	☐	☐
FP-FUELS-NON-WUI	Acres of hazardous fuels treated outside the wildland/urban interface (WUI) to reduce the risk of catastrophic wildand fire	FACTS	✔	✔
FP-FUELS-WUI	Acres wildland/urban interface (WUI) high-priority hazardous fuels treated to reduce the risk of catastrophic wildland fire	FACTS	✔	✔
HBT-ENH-LAK	Acres of lake habitat restored or enhanced	WIT	☐	☐
HBT-ENH-STRM	Miles of stream habitat restored or enhanced	WIT	☐	☐
HBT-ENH-TERR	Acres of terrestrial habitat restored or enhanced	WIT	✔	☐
INVPLT-NXWD-FED-AC	Highest priority acres treated annually for noxious weeds and invasive plants on NFS lands	FACTS	☐	☐
INVSPE-TERR-FED-AC	Highest priority acres treated for invasive terrestrial & aquatic species on NFS lands	FACTS	☐	☐
RD-DECOM-NON-SYS	Miles of road decommissioned (non-system)	WIT	☐	☐
RD-DECOM-SYS	Miles of road decommissioned (system)	ROADS	☐	☐
RD-HC-IMP	Miles of high clearance system roads improved	ROADS	☐	☐

Performance Measure Shorthand	Description	Database	P	L
RD-HC-MAIN	Miles of high clearance system roads receiving maintenance	ROADS	☐	☐
RD-PC-IMP	Miles of road reconstruction and capital improvement	ROADS	☐	☐
RD-PC-MAIN	Miles of system roads receiving maintenance	ROADS	☐	☐
RG-VEG-IMP	Acres of rangeland vegetation improved	FACTS	☐	☐
S&W-RSRC-IMP	Acres of water or soil resources protected, maintained or improved to achieve desired watershed conditions	WIT	☐	☐
SP-NATIVE-FED-AC	Number of priority acres treated annually for native pests on Federal lands	FAD	☐	☐
STRM-CROS-MITG-STD	Number of stream crossings constructed or reconstructed to provide for aquatic organism passage	WIT	☐	☐
TL-IMP-STD	Miles of system trail improved	TRAILS	☐	☐
TL-MAINT-STD	Miles of system trail maintained	TRAILS	☐	☐
TMBR-SALES-TRT-AC	Acres of forestlands treated using timber sales	FACTS	☐	☐
TMBR-TRT	Acres of forestlands treated to achieve healthier conditions	FACTS	☐	☐
Other:			☐	☐
Other:			☐	☐

16. Please describe why the datasets or performance measures you selected in Question 15 above are <u>appropriate for assessing progress</u> towards your fish & wildlife habitat desired condition(s).

We used FACTs to determine where thinning and prescribed fire treatments have occurred in spotted owl, goshawk, and marten use areas (i.e. individual territories and management areas). We used the WIT database to determine where meadow, aspen, and shrub treatments have occurred that have a demonstrated benefit to wildlife.

Project-scale scoring

From the beginning, CFLRP intended to shift towards desired conditions at the landscape-scale. As the disturbances and processes of interest occur at a landscape-scale, we need a landscape-scale assessment. It's a challenge to look at the impacts at that scale, given the scale itself as well as time delays (e.g. it takes more time to shift outcomes at landscape-scale than project-scale). While landscape-scale is the focus, project-scale assessments allow projects to bring in their monitoring data and look at treatment outcomes.

Each management action funded through CFLRP will have its own project-level objectives that are designed to contribute to achieving desired conditions at larger scales. Project-scale scoring should reflect how well the results of an individual management activity met the objectives for that project. Individual projects may not meet every desired condition of the CFLRP project. Project-scale scoring is conducted by the multi-party monitoring group following completed management activities.

An individual activity might not need to lead to a fully restored acre, but if it sets the landscape up for the next treatment it may still get a good rating. For example if a successful thinning doesn't restore a fire regime, but it sets up landscape for subsequent burns that might, it could still receive a "Green" rating. There may be many reasons for not scoring a "Green," including ecological and sociological considerations beyond the scope of the CFLRP project as well as recognition of unanticipated barriers or challenges. Note that scoring a "Yellow" or "Red" does not necessarily mean that work was not accomplished.

If you need to summarize scores across different desired condition targets, please refer to Guidance Document for additional instruction.

- **Green** = Expected progress is being made towards desired conditions across 75% or more of our CFLRP project areas.
- **Yellow** = Expected progress is being made towards desired conditions across 26% - 74% of our CFLRP project areas.
- **Red** = Expected progress is being made towards desired conditions across 25% or less of our CFLRP project areas.

Ecological Indicator	Green, Yellow, or Red score and % of the CFLRP project areas resulting in measurable progress as defined above	Are you achieving your CFLRP objectives? Yes or No? If "no", briefly describe why in the box below and use the narrative section as needed.
Fish and Wildlife Habitat	Green (90%)	Yes

Please briefly describe how you calculated your score.

DC1: Between 2012-2019, an estimated 423 acres of meadow and aspen stands and 1,366 acres of shrub-dominated vegetation were treated. All of these treatments were identified as improving wildlife habitat condition (WIT database). This acreage (1,789 acres) and associated target represents more than 100% of our FY21 target acreage of 960 acres. We consider this 100% progress toward our goal across 100% of the project areas.

Scoring for National Reporting

Landscape-scale scoring

Few (if any) CFLRP-funded Landscapes propose to meet every proposed desired condition on every acre or achieve landscape-scale objectives through the mechanical treatment of every acre within their landscape boundary. Rather, multiple projects with multiple objectives (fire risk reduction, wildlife habitat improvement, stream restoration, etc.) should facilitate meeting these broader objectives. Scoring at the landscape-scale reflects the degree to which individual Landscapes are moving towards Desired Conditions at broader spatial extent. Landscape-scale scoring is conducted by the multi -party monitoring group at each Landscape.

"Expected progress" will be defined using 10-year benchmarks for FY 2010 projects and 8-year benchmarks for FY 2012 projects for each desired condition based on a percentage of the lifetime outcome specified for the landscape in each proposal. There may be many reasons for not scoring a "Green," including ecological and sociological considerations beyond the scope of the CFLRP project as well as recognition of unanticipated barriers or challenges. Note that scoring a "Yellow" or "Red" does not necessarily mean that work was not accomplished.

If you need to summarize scores across different desired condition targets, please refer to Guidance Document for additional instruction.

- **Green** = Expected progress is being made towards desired conditions across 0.3 % of our CFLRP landscape area.
- **Yellow** = Expected progress is being made towards desired conditions across 0.2 % of our CFLRP landscape area.
- **Red** = Expected progress is being made towards desired conditions across <0.1 % of our CFLRP landscape area.

Ecological Indicator	Green, Yellow, or Red score and % of the landscape across which progress is being made towards desired conditions	Are you achieving your CFLRP objectives? Yes or No? If "no", briefly describe why in the box below and use the narrative section as needed.
Fish and Wildlife Habitat	Yellow (0.2%)	Yes

Please briefly describe how you decided on the percentage thresholds used above for the scoring categories and how you calculated your score.

Percentage thresholds were carried over from the FY14 Ecological Indicator Report and reflect the proportion of the larger CFLRP landscape (200,003 acres) where we expect management actions to an impact on the specific wildlife habitat indicators that were selected for this report.
Score calculation: DC1: In areas identified as habitat (e.g. individual territories or designated management areas) for California spotted owl, Northern goshawk, and American Marten, the proportion of CWHR 4M, 4D, 5M, and 5D outside of treatment areas and large wildfires was estimated to be 96%. In habitat areas that were treated between 2012-2016, the proportion of CWHR 4M, 4D, 5M, and 5D was estimated to be 89% (in 2016). This represents 93% progress toward

2019 CFLRP Ecological Indicator Progress Report

Project Name: Burney-Hat Creek Basins Project | State: California

INVASIVE SPECIES

Narrative - *Note: All boxes in this template will scroll, so you have as much space as you need*

☐ If invasive species is not part of your CFLRP proposal and landscape restoration strategy, please let us know by checking this box.

1. Did you make any changes to your desired condition(s) for invasive species as compared to the 2014 Ecological Indicator Report? Please briefly describe: **Yes** ☑ **No** ☐

The landscape-scale desired condition (DC) statement was updated to include the target treatment acres provided in the 2017 CFLRP Project Lifetime Goal Review and Response document.

2. Did you make any changes to your monitoring methodologies for invasive species as compared to the 2014 Ecological Indicator Report? Please briefly describe: **Yes** ☐ **No** ☑

3. Did you use any new or updated baseline data for evaluating your invasive species progress for the purposes of this report? Please briefly describe: **Yes** ☐ **No** ☑

4. Did your projects experience any unanticipated developments that positively or negatively affected expected progress towards your desired conditions for invasive species? (e.g. wildfire in the project area, litigation outcome, change in collaborative participation, etc.)

The Burney-Hat Creek Basins Project experienced two large wildfires between 2012 and 2014. These events significantly increased the number of acres occupied by invasive annual grasses and reduced our ability to effectively contain and control infestations within the CFLRP project area. In 2019, the Burney-Hat Creek Basins collaborative group received grant funding to implement herbicide treatments within the 2014 Eiler Fire, which will include invasive plant treatments. This will greatly increase our ability to control and eradicate high priority invasive species within this landscape.

5. What were the most difficult barriers or challenges you experienced in progressing towards your desired conditions for invasive species? If you adapted to address these challenges please provide a brief description of how.

The largest barrier to effective control of invasive species has been the reliance on hand treatments as the primary method of control. While many of the smaller occurrences have been effectively controlled with this method, it has not been feasible to treat many of the larger infestations by hand. As a result, large infestations continue to act as a source population for spread into new project areas. Large wildfires have also been a significant challenge in terms of weed introduction and spread, particularly invasive annual grasses. Another barrier to progressing toward our desired conditions has been a lack of internal capacity (i.e. low staffing and funds) to complete treatments.

Desired Conditions

*In this report, the term "**desired conditions**" refers to landscape and resource conditions (as defined collaboratively by stakeholders and land managers) that you are seeking to achieve and maintain for your CFLRP landscape over the next 10+ years. Desired conditions are outcome-driven not output-driven, and should link to your project's CFLRP proposal while being measurable. (Note: The term "desired condition" is used somewhat differently in the Forest Service's Land Management Planning Process. In that context, it is not time bound, and often represents long-term social, economic and ecological goals, while the term "objective" is used to represent specific, measurable and time-bound benchmarks to be achieved while working toward desired conditions in a forest plan area.) In this report, the term "**landscape**" refers to the landscape identified in your CFRLP project proposal or in subsequently-approved proposal edits. See cover page for links to guidance.*

6. Project-scale Desired Conditions Target for Invasive Species

100	% change (relative to the desired condition) occurs across	100	% of the project areas by	09/30/2019	
100	% change (relative to the desired condition) occurs across	100	% of the project areas by	09/30/2019	

Please include 1-5 *quantifiable* desired condition statements upon which the above target is based:

DC1. 100% of new projects include implementation of standard Integrated Design Features (IDF) in project-specific NEPA documents.
DC2. Surveys are completed after eradication or treatment of noxious weeds to determine the need for follow-up treatment.

Example: Cogongrass is reduced to less than 25% cover.
Example: Using the prevention protocols on all projects, no new invasive species infestations are established.

7. Landscape-scale Desired Conditions Target for Invasive Species:

100	% change (relative to the desired condition) occurs across	<1	% of the landscape area by	09/30/2021	
	% change (relative to the desired condition) occurs across		% of the landscape area by		

Please include 1-5 *quantifiable* desired condition statements upon which the above target is based:

DC1. 50 acres of treatments are completed to prevent, control, or eradicate high priority noxious weeds.

Example: The increase in coverage of Leafy Spurge and Rush Skeletonweed is prevented on 500 acres of sensitive botanical habitat within our CFLRP landscape.
Example: All known populations of Yellow Star Thistle are contained along 100 miles of FS roads and trails within our CFLRP landscape.
Example: The presence of feral swine is surveyed and mapped on 500 acres within our CFLRP landscape.

8. Please select the categories of the broader goals related to invasive species that you are trying to achieve through your quantifiable desired condition(s):

- ☑ Inventory and Mapping
- ☑ Risk Assessment
- ☑ Prevention
- ☑ Maintenance at current levels
- ☐ Containment below thresholds
- ☑ Reduction
- ☑ Eradication
- ☐ Increased resilience. Recognizing *invasive species are not constrained to disturbed areas*, please describe your definition of resilience in an invasive species context:
- ☐ Other. Please describe:

9. For each invasive species you have addressed within your CFRLP landscape, please list the action(s)[1] you have taken to work towards your invasive species desired conditions, the acres and/or miles you have accomplished, and the efficacy of each action*:*
(All of the following data is reported in FACTS.)

Target Invasive Species	Action Taken	Land Ownership	Acres	Efficacy (%)
Cadaria sp. (CAPU)	mechanical/physical removal	USFS	1	10%
Centaurea maculosa (CEMA)	mechanical/physical removal	USFS	1	95%
Centaurea solstitialis (CESO)	mechanical/physical removal	USFS	1	10%
Centaurea squarrosa (CESQ)	mechanical/physical removal	USFS	16.9	75%
Hypericum perforatum (HYPE)	mechanical/physical removal	USFS/PVT	9.6	20%
Lepidium latifolium (LELA)	mechanical/physical removal	USFS	0.7	50%
Leucanthemum vulgare (LEVU)	mechanical/physical removal	USFS	0.1	75%
Onopordum acanthium (ONAC)	mechanical/physical removal	USFS	25	25%

[1] Actions taken to address an invasive species might include inventory & mapping, hand removal, mechanical removal, release of a biological control agent (an organism that kills the target species), ground-based herbicide application, aerial herbicide application, tarping, grazing, preventative weed wash stations, trapping invasive animals, etc.

10. Please briefly describe the specific negative impacts each of your target invasive species causes that you are trying to avoid.
These impacts can be environmental, economic, cultural, or human/animal health-related.

We identified eight noxious weed species to target for prevention, control, and eradication. Although these species differ in their individual impacts, all contribute to degraded habitat quality for native plants and animals, reduced quality and availability of forage, and alteration of fuel conditions.

Data and Methodology

11. Select the methodologies used to assess Project-scale (P) and Landscape-scale (L) progress towards invasive species desired conditions for this report. Select all that apply and provide a brief description of each:

P	L	
☐	☐	Aerial surveys/inventories/mapping:
☑	☑	Ground surveys/inventories/mapping: Surveys are conducted during project planning and at the time of treatment, all sites are mapped
☐	☐	Environmental sampling (wood, soil, water, infected tissue, etc.):
☑	☑	Observations of individuals: The number of individuals are recorded at all small sites that are monitored or treated, large sites are GPS'd
☐	☐	Observations of damage:
☐	☐	Observation of tracks, scat, nests, etc.:
☐	☐	Trap samples:
☐	☐	eDNA:
☑	☐	Other: Review of NEPA planning documents to determine whether integrated design features (IDFs) were included for noxious weeds

12. Where is the the data that is being used for monitoring Project-scale (P) and Landscape-scale (L) progress toward invasive species desired conditions being stored? Select the databases categories that apply and provide a description of the specific datasets being used. Include links if available:

P	L	
☐	☐	GIS database:
☐	☐	County database:
☐	☐	State database:
☐	☐	Tribal database:
☐	☐	Citizen Science database:
☐	☐	Forest Inventory and Analysis (FIA) database:
☑	☑	USFS database of record (FACTS - *select performance measures*):

☑ INVPLT-NXWD-FED-AC Highest priority acres treated for noxious weeds and invasive pests ☐ INVSPE-TERR-FED-AC Highest priority acres treated for invasive terrestrial & aquatic species

☐	☐	Other:

Project-scale scoring

From the beginning, CFLRP intended to shift towards desired conditions at the landscape-scale. As the disturbances and processes of interest occur at a landscape-scale, we need a landscape-scale assessment. It's a challenge to look at the impacts at that scale, given the scale itself as well as time delays (e.g. it takes more time to shift outcomes at landscape-scale than project-scale). While landscape-scale is the focus, project-scale assessments allow projects to bring in their monitoring data and look at treatment outcomes.

Each management action funded through CFLRP will have its own project-level objectives that are designed to contribute to achieving desired conditions at larger scales. Project-scale scoring should reflect how well the results of an individual management activity met the objectives for that project. Individual projects may not meet every desired condition of the CFLRP project. Project-scale scoring is conducted by the multi-party monitoring group following completed management activities.

An individual activity might not need to lead to a fully restored acre, but if it sets the landscape up for the next treatment it may still get a good rating. For example if a successful thinning doesn't restore a fire regime, but it sets up landscape for subsequent burns that might, it could still receive a "Green" rating. There may be many reasons for not scoring a "Green," including ecological and sociological considerations beyond the scope of the CFLRP project as well as recognition of unanticipated barriers or challenges. Note that scoring a "Yellow" or "Red" does not necessarily mean that work was not accomplished.

If you need to summarize scores across different desired condition targets, please refer to Guidance Document for additional instruction.

- **Green** = Expected progress is being made towards desired conditions across 75% or more of our CFLRP project areas.
- **Yellow** = Expected progress is being made towards desired conditions across 26% - 74% of our CFLRP project areas.
- **Red** = Expected progress is being made towards desired conditions across 25% or less of our CFLRP project areas.

Ecological Indicator	Green, Yellow, or Red score and % of the CFLRP project areas resulting in measurable progress as defined above	Are you achieving your CFLRP objectives? Yes or No? If "no", briefly describe why in the box below and use the narrative section as needed.
Invasive Species	Green (80%)	Yes

Please briefly describe how you calculated your score.

DC1. A review of NEPA documents completed for CFLRP projects between 2012-2019, confirmed the inclusion of standard Integrated Design Features (IDF). IDFs include treatment of small noxious weed infestations and avoidance of larger sites during project implementation (progress made toward the desired condition = 100%).

Scoring for National Reporting

Landscape-scale scoring

Few (if any) CFLRP-funded Landscapes propose to meet every proposed desired condition on every acre or achieve landscape-scale objectives through the mechanical treatment of every acre within their landscape boundary. Rather, multiple projects with multiple objectives (fire risk reduction, wildlife habitat improvement, stream restoration, etc.) should facilitate meeting these broader objectives. Scoring at the landscape-scale reflects the degree to which individual Landscapes are moving towards Desired Conditions at broader spatial extent. Landscape-scale scoring is conducted by the multi -party monitoring group at each Landscape.

"Expected progress" will be defined using 10-year benchmarks for FY 2010 projects and 8-year benchmarks for FY 2012 projects for each desired condition based on a percentage of the lifetime outcome specified for the landscape in each proposal. There may be many reasons for not scoring a "Green," including ecological and sociological considerations beyond the scope of the CFLRP project as well as recognition of unanticipated barriers or challenges. Note that scoring a "Yellow" or "Red" does not necessarily mean that work was not accomplished.

If you need to summarize scores across different desired condition targets, please refer to Guidance Document for additional instruction.

- **Green** = Expected progress is being made towards desired conditions across [0.02] % of our CFLRP landscape area.
- **Yellow** = Expected progress is being made towards desired conditions across [0.01] % of our CFLRP landscape area.
- **Red** = Expected progress is being made towards desired conditions across [0] % of our CFLRP landscape area.

Ecological Indicator	Green, Yellow, or Red score and % of the landscape across which progress is being made towards desired conditions	Are you achieving your CFLRP objectives? Yes or No? If "no", briefly describe why in the box below and use the narrative section as needed.
Invasive Species	Yellow (0.01%)	Yes

Please briefly describe how you decided on the percentage thresholds used above for the scoring categories and how you calculated your score.

The updated target for noxious weed treatments across the CFLRP is completion of 49.1 acres of treatment by 2019 (taken from the 2017 CFLRP Project Lifetime Goal Review and Response). This represents a very small proportion (0.02%) of the USFS lands within the larger CFLRP landscape (200,003 acres). Between 2012-2019, a total of 55.3 acres were treated manually to control and/or eradicate high priority noxious weed species. This exceeds our target acres. However, average treatment efficacy (weighted by acres treated) is only 41%. Therefore the total score = 41% progress x 0.03% landscape = 0.01%.

Monitoring References and Resources

1. Briefly describe any key lessons learned about integration across these 4 ecological sub-indicators.
For example, if you planned fuels reduction treatments (Fire Regime) strategically around a Priority Watershed (Watershed Condition).

There was a lot of overlap, particularly in our desired condition statements, between the ecological indicators.

2. Briefly describe the roles of the parties involved in setting the desired conditions, and collecting, assessing, and sharing the data used in this report:

The Burney-Hat Creek multiparty monitoring working group (MMWG) developed the Multiparty Monitoring Plan for Ecological Resources, which provided the foundation for the updated desired condition statements in this report. The data used in this report were collected and/or developed by a wide range of internal and external partners, including the USFS Remote Sensing Laboratory, USFS Region 5 fire staff, USFS field

3. Please acknowledge the people who assisted with completing this 2019 CFLRP Ecological Indicator Report:

Michelle Coppoletta (Sierra Cascade Province Associate Ecologist), Shawn Wheelock (Hat Creek RD Hydrologist), Greg Mayer (Hat Creek RD Timber Management Officer), Allison Sanger (Lassen NF Botanist), Karen Harville (Hat Creek RD Wildlife Biologist).

4. Please provide links to your past CFLRP monitoring reports developed by the USFS, partners, etc.:

To improve communication and increase our ability to utilize monitoring results more effectively, the MMWG developed a series of monitoring briefs, which have been presented to the collaborative. These two-page documents provide a concise overview of the project purpose, key

Examples: Uncompahgre CFLRP Monitoring of Forest Spatial Patterns; Four Forest Restoration Initiative Bird Survey Report 2015

5. Please provide links to your CFLRP monitoring plans and any approved revisions (or include as an attachment):

The Burney Hat Creek CFLRP Multiparty Monitoring Plan for Ecological Resources is available on Pinyon (https://usfs.box.com/s/ctuoequx2nt5e03c13xlhved0ychi6rt) and on the Sierra Institutes web page

Examples: Colorado Front Range Multi-Party Monitoring Plan; Dinkey Landscape Ecological Monitoring Plan

6. Please provide links to technical reports or other literature utilized in determining and assessing the desired conditions used in this report:

Citation for F3 dataset: Huang, S, C Ramirez, M McElhaney, K Evans. 2018. F3: Simulating spatiotemporal forest change from field inventory, remote sensing, growth modeling, and management actions. Forest Ecology and Management 415-416: 26-37.

Examples: Historical Forest Attributes of the Western Blue Mountains of Oregon; Restoring Ponderosa Pine Forests of the Colorado Front Range