**Attachment A Guidance**

The [Landscape Restoration Map](https://usfs.maps.arcgis.com/apps/webappviewer/index.html?id=79923c635b354eb2a07396224ab33cc2) is intended to provide applicants and reviewers with the opportunity to contextualize their CFLRP strategy using spatial data. It’s important to note that the spatial layers provided are *national* in scope and most are focused on National Forest System lands.

***With this in mind, applicants are requested to review the following three items***:

1. **Ensure your CFLRP landscape boundary is correct on the Webmap**. If not, see instructions on the Map to make change.

1. **Please review the list of available spatial layers available through the Webmap** (see description below). The intent of providing these layers is to provide applicants with a menu of options you can use to help communicate the need and opportunities described in your CFLRP strategy.
* Select those that best help you communicate the need for the work you’ve outlined in your CFLRP proposal and the opportunities it presents. *You are \*not\* expected to select or discuss every layer listed – select the few that are most relevant.*
* *Please provide additional description as needed for non-National Forest System lands.*
1. **Finally, include in your final proposal submission package a map (color preferred) that depicts:**
* General areas of core planned treatments that are central to carrying out your CFLRP strategy
* Land ownership boundaries
* Any key forest products infrastructure you would like to highlight
* Any communities within or adjacent to the proposed area that are important to highlight
	+ 1. [Example of maps with land ownership](https://www.fs.fed.us/restoration/documents/cflrp/2011Proposals/Region5/EldoradoStanislaus/AttachGMap2cornerstone.pdf)
		2. [Example of map with treatment areas](https://www.fs.fed.us/restoration/documents/cflrp/2011Proposals/Region5/EldoradoStanislaus/AttachGMap3cornerstone.pdf)
		3. [Example of map with ownerships and treatment areas](https://www.fs.fed.us/restoration/documents/cflrp/2011Proposals/Region8/OzarkStFrancis/FY2011OZFCFLRPNEPAProjects.pdf)

***How do I upload attachments to the Webmap?*** *(also see online CFLRP FAQ* [*here*](https://www.fs.fed.us/restoration/CFLRP/questions/answers/qa014_submission.shtml)*)*

The best way to attach your file will be as a zip file attached to an existing polygon.

* In ArcGIS, place your shapefile (or other file) into a newly created folder.
* In windows explorer, zip up the folder using an existing compression utility (7-zip, winzip, etc.).
* In the Webmap, select the appropriate proposal polygon template (CFLRP or Joint Chiefs).
* Draw a polygon that approximates your project, or you can just create a simple shape of your choosing.
* When you complete your shape, a dialog box will appear that allows you to enter in key proposal and contact information.
* Towards the bottom of that dialog box, you will see a button saying “Choose File.”
* Click on that link and navigate to the folder you zipped up. You can add additional files if you like.

**References and FAQ**:

***What are these spatial layers?***

* The [Landscape Restoration Web](https://usfs.maps.arcgis.com/apps/webappviewer/index.html?id=79923c635b354eb2a07396224ab33cc2)map links to indicators and metrics from a number of data sources.
	+ Several of the indicators and metrics are available through the Terrestrial Condition Assessment (or TCA). The TCA is described in a 2017 publication ([Cleland et al. 2017](https://www.fs.usda.gov/treesearch/pubs/55800)), including a description of the 11 key indicators. All the spatial layers associated with TCA are labeled accordingly in the table below. The table also provides a brief description of each layer.
	+ The Landscape Restoration Map also includes several additional spatial layers not associated with TCA. Descriptions of each of these layers is provided in the table below.
* More background on TCA:
	+ Version 2 of TCA will be available for your use. Updates between TCA v1 as described in the publication and TCA v2 include:
		- Added a Non-forest indicator. This indicator focuses specifically on grassland systems and is composed of 2 metrics. First is a change in biomass productivity that compares recent biomass productivity (2017-2013) to the long-term average (2012-1984). Second is a metric that documents grasslands experiencing encroachment from woody vegetation.
		- Added a Drought metric to the Climate indicator
		- Added two Ozone metrics to the Air Quality indicator
		- Added a metric to the Tree Mortality indicator for mortality that occurred 6-10 years prior in addition to the recent past (1-5 years)
	+ **TCA uses Landtype Associations** (LTAs) for analysis and reporting within the Assessment. LTAs are part of the National Hierarchy of Ecological Units ([Winthers et al. 2005](https://www.fs.fed.us/soils/documents/gtr_wo-68.pdf)). They are a landscape scale unit (on the order of 10,000 acres) that depicts broad patterns of soils and potential natural vegetation (PNV). Geomorphic process, landforms, surficial and near-surface geologic formations, and local climatic effects are also used to delineate LTAs.
	+ **TCA provides an overall assessment score for each LTA in addition to scores and information on each of the 11 indicators**. Scores range from +1 (very good) to -1 (very poor) and are an assessment of terrestrial ecological condition, ***not*** a prioritization. They identify areas that may be in need of restoration due to poor condition in one or more indicators. Scores may inform prioritization along with additional considerations such as feasibility, use, needs of the public, etc.
	+ You may wish to view your proposed boundary with various spatial data layers available to highlight key features of the ecological context. **The TCA includes indicators for**:
		- Tree Mortality (mortality due to insects and pathogens)
		- Terrestrial Invasive Species (local occurrence data NOT included yet; data consistency and quality currently lacking)
		- Road Density (for highway, paved, light duty, and unimproved)
		- Climate Exposure (mean seasonal temperature and precipitation; drought)[[1]](#footnote-1)
		- Air Pollution (terrestrial acidification and eutrophication; ozone)
		- Catastrophic Disturbance (uncharacteristic fire severity and frequency)
		- Wildfire Potential (uncharacteristic fuel buildup)
		- Insect and Pathogen Risk (potential uncharacteristic mortality)
		- Vegetation Departure (vegetation departure index)
		- Ecological Process Departure (missed fire cycle)
		- Non-forest (production; encroachment)

***Description of Spatial Layers and Resources:***

| **Name** | **Description** | **Link**  |
| --- | --- | --- |
| (TCA) Tree Mortality | Mortality due to Insects and Pathogens. Data unit: Binary of presence or absence (Ordinal). Learn more at: https://foresthealth.fs.usda.gov/portal  | USFS Forest Health Assessment & Applied Sciences Team (FHAAST) National Forest Pest Conditions Database (<https://www.fs.fed.us/foresthealth/applied-sciences/>)Raster data at the resolution of 240 m  |
| (TCA) Road Density | Paved Road Density Light Duty Road Density Unimproved Road Density Other Road DensityData unit: mi/sq. mi. (Numeric) Learn more at: http://data.fs.usda.gov/geodata/vector/index.php  | USFS INFRA database ‘II\_Road\_Core\_ATM’ table and vector features via the EDW and on 03/07/2019. INFRA is the official corporate transportation dataset for the USFS. Not all roads in the ‘II\_Road\_Core\_ATM’ INFRA table have an associated vector feature and therefore are not used in the TCA analysis. The data were reattributed to represent four new classes: (1) Unimproved, (2) Paved, (3) Light Duty, (4) Other, and Decommissioned roads Vector line features  |
| (TCA) Climate Exposure | Mean seasonal temperature Spring, summer, fall, winter Data unit: Degrees Fahrenheit (Numeric) **Precipitation**: Total seasonal precipitation Spring, summer, fall, winter % precipitation Spring, summer, fall, winter Data unit: Inches (Numeric) DroughtData unit: mean difference in z-score (MDZ score)Learn more at: http://prism.oregonstate.edu/  | PRISM Climatological Data produced by PRISM Climate Group of Oregon State University with **P**arameter elevation **R**egression on **I**ndependent **S**lopes **M**odel http://prism.oregonstate.edu/ Raster data mostly at the resolution of 4 km Drought indicator based on methods from USFS Office of Sustainability and Climate found here: <https://www.treesearch.fs.fed.us/pubs/43361>Raster data are at the resolution of 4km |
| (TCA) Air Pollution | **Terrestrial Acidification** (Exceedance, CAL); Data unit: Average percent exceedance (as an integer)Learn more at: McNulty et al. 2007 <https://www.srs.fs.usda.gov/pubs/ja/ja_mcnulty011.pdf> **Terrestrial Eutrophication** (N) Data unit: kg/ha/yr (Numeric) Learn more at: *Total Deposition Maps 2018,* https://nadp.slh.wisc.edu/committees/tdep/tdepmaps/**Ozone exposure** acute (N100) and chronic (W126)Data unit: Acute ozone is hours and Chronic ozone is parts per million ozone-hours or ppm-hoursLearn more about index calculations (N100 & W126): <https://www.epa.gov/sites/production/files/2015-09/documents/w126_steps_to_calculate_revised_feb19.pdf>  | Terrestrial Acidification Database produced by USFS Southern Global Change Program, using the simple mass balance equation (SMBE) developed in McNulty et al. 2007Raster data are at the resolution of 1 km2 Terrestrial Eutrophication Database generated by NADP’s Total Deposition (TDEP) modeling system <https://nadp.slh.wisc.edu/committees/tdep/tdepmaps/>Raster data are at the resolution of 120 m (resampled from 4 km) Hourly ozone data is from the EPA through the Federal Land Manager Environmental Database: <https://views.cira.colostate.edu/fed/QueryWizard/>  |
| (TCA) Catastrophic Disturbance | Uncharacteristic Fire Severity and Frequency Data unit: Binary of uncharacteristic and other (Ordinal) Database of Uncharacteristically Severe Wildfires derived from (1) Monitoring Trends in Burn Severity (MTBS) data by USGS and USFS and (2) LANDFIRE data of Percent Low Severity Fire and Percent Mixed-severity Fire. Database of Uncharacteristically Frequent Fire derived from a combination of (1) MTBS as the current condition and (2) Mean Fire Return Interval (MFRI) of LANDFIRE as the reference condition. Learn more at:http://mtbs.gov https://landfire.gov/fireregime.php  | Database of Uncharacteristically Severe Wildfires derived from (1) Monitoring Trends in Burn Severity (MTBS) data by USGS and USFS and (2) LANDFIRE data of Percent Low Severity Fire and Percent Mixed-severity Fire http://mtbs.gov https://landfire.gov/fireregime.php Raster data at the resolution of 30 m Database of Uncharacteristically Frequent Fire derived from a combination of (1) MTBS as the current condition and (2) Mean Fire Return Interval (MFRI) of LANDFIRE as the reference condition.  |
| (TCA) Wildfire Potential | Uncharacteristic Fuel Buildup Data unit: Binary of high risk or other (Ordinal)  | Wildfire Hazard Potential (WHP) Database produced by USFS Fire Modeling Institute http://www.firelab.org/project/wildfire-hazard-potential Raster data at the resolution of 270 m  |
| (TCA) Insect and Pathogen Risk | Potential Uncharacteristic Mortality Data unit: Binary of presence or absence (Ordinal) Learn more at: http://www.fs.fed.us/foresthealth/technology/nidrm.shtml  | National Insect and Disease Risk and Hazard Map (NIDRM) produced by USFS Forest Health Protection (FHP) http://www.fs.fed.us/foresthealth/technology/nidrm.shtml Raster data at the resolution of 240 m  |
| (TCA) Vegetation Departure | The Vegetation Departure Index (VDEP) indicates how different current vegetation on a landscape is from estimated historical conditions. VDEP is based on changes to species composition, structural stage, and canopy closureData unit: 0-100% (Numeric)  | Vegetation Departure Index (VDEP) produced by LANDFIRE <https://landfire.gov/vdep.php> Raster data at the resolution of 30 m  |
| (TCA) Ecological Process Departure | Missed Fire Cycle identifies areas where fire return intervals have been missed due to human factors (fire exclusion). Data unit: years departed (Numeric)  | Mean Fire Return Interval (MFRI) produced by LANDFIRE <https://www.landfire.gov/mfri.php>  |
| (TCA) Non-forest | Grassland productivity measures biomass production departure (C) as the relative difference of the mean inter-annual variability of vegetation production between a reference time period and the current time period. This is calculated at each pixel.Data unit: mean relative different of reference production (1984-2012) and current period (2013-2017). Encroachment identifies grasslands using LANDFIRE’s Biophysical Settings (BPS) where the National Landcover Database 2011 identifies conifers (42-Evergreen Forest) to determined areas likely encroachedData unit: Raster data are binary: (1) likely encroached or (0) not encroached | For more information on Grassland Productivity: <https://www.fs.fed.us/rmrs/projects/development-rangeland-production-monitoring-service-could-improve-rangeland-management>For more information on LANDFIRE’s BPS: <https://www.landfire.gov/bps.php>Areas identified as grasslands are done so based on Reeves MC, Mitchell JE (2011) Extent of coterminous US rangelands: quantifying implications of differing agency perspectives. Rangel Ecol Manage 64:1–12. More information on NLCD is available: https://www.mrlc.gov/data |
| CFLRP Accomplish-ments  | Captures previous CFLRP accomplishments. It is important to note that this layer does not contain all of the approved project activities. Instead, these are the accomplishments that project groups uploaded to the Forest Service corporate data holdings in FACTS. | <https://apps.fs.usda.gov/arcx/rest/services/EDW/EDW_CFLRProjectAccomplishments_01/MapServer> |
| U.S. Forest Service Priority Watersheds  | The Watershed Condition Classification feature class represents data on Watershed Condition on Forest Service lands in HUC12 (from the Watershed Boundary Dataset) watersheds that contain more than 5% USFS ownership. The feature class also includes data on high priority watersheds identified in the Watershed Condition Framework (WCF) process. The WCF data identifies priority watersheds, rationale for their designation as such, and information on Watershed Restoration Action Plans. The data are compiled from the Watershed Condition Assessment and Tracking Tool (WCATT) application. | <https://apps.fs.usda.gov/arcx/rest/services/EDW/EDW_PriorityWatersheds_01/MapServer> |
| Wildfire Hazard Potential | The wildfire hazard potential (WHP) map is a raster geospatial product produced by the USDA Forest Service, Fire Modeling Institute that can help to inform evaluations of wildfire risk or prioritization of fuels management needs across very large landscapes. Learn more here: <https://www.firelab.org/project/wildfire-hazard-potential>  | <https://www.firelab.org/project/wildfire-hazard-potential>  |
| LANDFIRE Fire Regime Groups | The Fire Regime Groups (FRG) were intended to characterize the presumed historical fire regimes within landscapes based on interactions between vegetation dynamics, fire spread, fire effects, and spatial context. Learn more here: <https://www.landfire.gov/frg.php>  | [https://www.landfire.gov/frg.php](https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.landfire.gov%2Ffrg.php&data=02%7C01%7C%7C56f160a8eb0d48588c9c08d720bb0229%7Ced5b36e701ee4ebc867ee03cfa0d4697%7C0%7C0%7C637013859875445250&sdata=ql6kbZwNjcb50PDYxUweK71ePP0HRygkPW3qVBF7FBU%3D&reserved=0)  |
| US Census Data | Nationwide coverage of Census Tracts The primary purpose of census tracts is to provide a stable set of geographic units for the presentation of census data. Tracts generally have a population size between 1,200 and 8,000 people.  | <https://usdagcc.sharepoint.com/sites/fs-cio-edwts/SitePages/DataStatus.aspx> (BdyPol\_Tract\_CENSUS)  |
| Critical Habitat | US Fish and Wildlife Service Critical Habitat layers are a key element to identification of critical habitat areas considered essential for the conservation of a listed species.  | <https://usdagcc.sharepoint.com/sites/fs-cio-edwts/SitePages/DataStatus.aspx> (CRITHAB\_LINE & CRITHAB\_POLY) |
| Forests to Faucets | This dataset provides a watershed index of surface drinking water importance, a watershed index of forest importance to surface drinking water, and a watershed index to highlight the extent to which development, fire, and insects and disease threaten forests important for surface drinking water.  | <https://usdagcc.sharepoint.com/sites/fs-cio-edwts/SitePages/DataStatus.aspx> (ForestsToFaucets) |
| Tribal Connection Map | [Tribal Connections](http://usfs.maps.arcgis.com/apps/webappviewer/index.html?id=fe311f69cb1d43558227d73bc34f3a32) is an interactive map that shows the connection between national forests and grasslands, tribal trust lands and tribal lands ceded as part of a treaty. The map is used by the Forest Service as one tool of many to better inform land management decisions. | <https://usfs.maps.arcgis.com/apps/webappviewer/index.html?id=fe311f69cb1d43558227d73bc34f3a32>  |
| National Forest Climate Change Map | The National Forest Climate Change Maps project was developed to meet the need of National Forest managers for information on projected climate changes at a scale relevant to decision making processes, including Forest Plans. The maps are available for every National Forest in the contiguous United States with relevant data coverage. Currently, the map sets include variables related to precipitation, air temperature, snow (including April 1 snow water equivalent (SWE), and snow residence time), and stream flow. | <https://apps.fs.usda.gov/arcx/rest/services/RDW_Climate/NationalForestClimateChangeMaps/MapServer> |

1. For climate, seasonal differences between a baseline of 1900-2012 and current conditions 2013-2017, for both precipitation (in) and temperature (F). For precipitation, we also have the percent difference between the time periods. There are 12 data layers in total for climate, and 1 additional for drought (1900-2017 compared to 2015-2017| MDZ3-2017 product) which comes from the office of Sustainability and Climate. [↑](#footnote-ref-1)