Appendix I:
Map Guidance for
Final TAP Report

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Appendix I - Map Guidance for Final TAP Report

These recommendations pertain to the maps that accompany the final reports published by forests upon completion of the Travel Analysis Process. They are designed to maximize efficiency, consistency, and user-friendliness. There is lots of room for customization if needed to meet the needs of each forest.

Distribution of Maps – Digital vs. Printed

Simple black and white maps may be present in the hardcopy report document. However, due to the prohibitive cost of full color large-format or poster-sized printing, there should be no large-scale distribution of hardcopy color maps. Printing costs vary according to a variety of factors, but in all cases, the most economical approach is to distribute the maps on CD and the internet, while having plotted (printed by forest GIS staff) maps available for review at each office and visitor center, or for use at public meetings.

Format and Presentation – File Type and User Interface

PDF files have become the de-facto standard for digital map sharing. The Adobe software needed to view these files is free and easy to download and install. Upon export from ArcMap to PDF format, a 'layered PDF' file gets created by default. This presents a new opportunity for us to communicate information because a single map file can contain multiple layers that can be clicked on and off. The forest can explore the use of layered files to convey information more effectively if desired.

With a CD, you can have an index map with clickable hotspots, to allow the user to look at the forest as a whole, and then click to see a map of a certain area.

Any maps that are part of the document itself should be black and white graphics, page-sized or smaller, and inserted into the document text where appropriate; include a URL that can be entered into an internet browser that links to a digital version.

PDF maps will be posted on the www, along with the document. If CD's are made to distribute the document, the pdf files will be on the disc as well.

Extent/scale – Entire Forest vs Tiles

With a digital map, the user will be able to zoom in and out on the map. This makes it possible to show the entire forest on one map. Depending on the size, shape, and usage patterns of your forest, in consideration of any plotting needs, and in case there is a desire to match extents from MVUM or another project, a team may prefer to use tiled extents.

Each forest team will likely produce a series of maps (for risks; for benefits; for opportunities) so having one forest-wide extent, or as few tiles as possible, decreases total number of maps. Using the series listed above, if a forest decides to split their unit into three tiles instead of one forest-wide extent, they triple the total number of maps needed. Do what works best on your unit. The team may decide to make a map series for each risk or benefit category, or each type of opportunity, rather than simply displaying the suggested yes/no approach. That is great; just be aware of an increased number of maps.

The user's ability to zoom-in is crucial because it allows them to discern roads in dense clusters and read their labels. Adobe Reader also allows users to print off a selected area of a large pdf using their own computer and printer.

Use of Color

For digital media, use color. There is no need to pursue black and white maps. Color enables much more information to be communicated.

Grids or other Geographic Crosswalk

The edges of the map should display some sort of grid. The purpose of the grid is not so much for user orientation, but more for geographic reference between the map and the document. For example, a route that is discussed in the document could be noted as existing at location 38.8226 N, -120.9375 W, or in quadrant B2. The user could then find that route on the map. The two grid examples given here are lat/long and improvised alphanumeric Cartesian. PLSS (township and range) in another option for a grid, but it can be difficult to show sections without visually detracting from or cluttering up the map. Another, more advanced alternative to this "grid reference system" would be some sort of hyperlink system that allows the user to access information about a route simply by clicking on it.

In the absence of any grid, the user who reads about a road in the document, and who wants to then find it on the maps, will just have to search and search, with virtually no clue as to its location. This can be frustrating for the user.

Collar Information

Refer to the graphic on the next page that shows a standard Region 5 look. This is congruent with what is referred to as "the Region 5 Corporate Look and Feel." Each forest can mimic the layout and language shown in the graphic. Due to variables and the desire for each forest to customize, there is no "template" mxd project. Note: in the example graphic, the title is "Forest System Roads with Resource Risk." This is just an example. Use an appropriate title for your maps.

Scale bar and north arrow should be placed in the map frame, and, if necessary, in a white box to increase legibility. Vicinity maps can be designed by the forest or provided by the Regional Office upon request. A disclaimer statement should be included on the map, but there is no absolute standard language; usually forests have their own disclaimers that they prefer. One example of a concise and complete disclaimer statement is shown in the following paragraph:

Disclaimer: "The USDA Forest Service uses the most current and complete data available. GIS data and accuracy may vary. Using GIS products for purposes other than those for which they were originally intended may yield inaccurate or misleading results. The USDA Forest Service reserves the right to correct, update, modify, or replace GIS products without notification."

USDA
United States Department of Agriculture
Forest Service
XXX National Forest
Forest System Roads with Resource Risk
Travel Analysis Process
Vicinity Map
Eureka
Reno
Nevada City
Sacramento
San Francisco
Fresno
Los Angeles
San Diego
XXX National Forest
Legend
Existing System Roads
Not Flagged for Risk
Flagged for Risk
Other System Transportation Features
System Trails
Travel Management Areas
Background Layers
Other Public Roads
Lakes
Streams and Rivers
Wilderness Areas
Land outside Forest Boundary or in Private Inholdings
Forest Service Offices
National Forest Administrative Boundary

Contents of Map

The purpose of these maps is to answer two questions: The first question is "Which Roads were flagged for risks and benefits?" and the second question is "Which Roads were assigned opportunities?" All other information is ancillary. As mentioned before, a simple approach is yes/no (for example: a road was flagged for risk or not) and a more thorough approach is to make separate maps for each risk category, benefit category, and opportunity type (for example: here are the roads flagged for Recreation Risk). The user must be able to find the information, but whether they can see it all in the maps, or have to look up the road in question inside the document – is up to the forest team.

All of these options would be the same for benefits and opportunities. Remember that roads are often flagged with multiple risks, benefits, and opportunities. For example, a road might have three different opportunities assigned to it. This complexity makes a very simple road classification impossible.

Because the core issue behind Travel Analysis is sustainable access, a forest may choose to display their roads in context of where maintenance is focused. A forest may also choose to display areas that are subject to damage from natural events, or that have potential for damage and watershed impacts from past events (severe fire → future mudslides). In other words, show where the routine maintenance dollars typically go, and where deferred maintenance is greatest. Or display roads by surface type.

An example of the yes/no option is to display a single layer called "Roads flagged for Risk to Resources" or similar. Roads that were flagged are assigned one color, and roads that were not flagged are assigned another color. To determine which risk category or categories triggered this flagging, the user would refer to the tables in the document. This is the approach shown in the sample legend.

An example of a different option would be to create a layer of flagged roads for each risk category, and allow the user to click them on and off in a layered pdf, or create a separate map for each risk category. Or, it could be: roads with zero risks, roads with 1 risk, roads with 2 risks, etc.

To display opportunities, there could be one layer (roads with opportunities), or multiple layers, one for each possible value of 'opportunity,' that are shown in one map (layered pdf) or separate maps.

Background Layers

- Other public roads and highways – If a forest's corporate data is insufficient for this layer, the Regional Office can provide supplemental layers for this purpose. Symbols for these roads should not be confused with forest road and trail symbols. Suggested symbol: gray line. Label: name of road, or appropriate highway shield.
- FS Offices, cities, towns, important peaks, campgrounds – These can be added as desired but care should be taken to ensure they do not obscure any routes or overpower the maps visually.
- Water features – Only major features should be included. Suggested symbol: light blue with no outline. Label: italic font, dark blue.
- Special areas – Mandatory would be Wilderness Areas and Pacific Crest Trail. Others, such as National Recreation Areas or Inventoried Roadless Areas should be added if necessary. Use an appropriate color.
- Land ownership/scope of project – Anything outside the forest boundary and private inholdings should all be filled with a light gray. This leaves a clean white background on forest land, so that route information is more legible. Wilderness areas should be labeled, but not overly emphasized.

- Raster background – Rasters, such as topo maps or forest visitor maps, are almost always unsuitable for inclusion on this type of map as a background layer, primarily due to resolution issues and the appearance of unwanted roads. However, a forest may have a raster file that looks good and only shows desired features like contour lines and streams.

Remember that every background layer has the potential to detract from the pertinent map information. Care should be taken to ensure the main information is never overpowered by other layers.

Labels

All routes that are shown should be labeled by route number. In addition, label major water bodies, adjacent forests, County boundaries and names, other public roads and highways (where possible) and any Travel Management Areas (often also referred to as OHV Open Areas), if they occur. At the very minimum, all flagged or opportunity routes must be labeled so that they are clearly identifiable.

Symbology

An ArcMap style file is not included in this package. The sample legend in the graphic provides a common starting point for all Region 5 forests. Customization by the forests is necessary due to individual unit needs.

For assistance or more information, please contact:

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