



# Attributing POD Networks Using ArcGIS Field Maps

## Insights from the Ashley National Forest

### Introduction to PODs

The Potential Operational Delineations (PODs) spatial fire planning framework combines firefighters' local knowledge with specialized analytical products to empower pre-planning for future fires. PODs document the best potential control lines (PCLs) across a landscape; these are then networked together to form explicit polygons (i.e., PODs) that can be used during incident response. PODs were initially developed to support wildfire response, but now national forests across the United States are utilizing them for fuels treatment prioritization and integrating them with environmental analyses.

To recognize the full utility of PODs, detailed information about the type and condition of identified PCLs needs to be incorporated into the spatial data of a POD network. POD boundary PCLs do not represent guaranteed control lines, rather they represent the best *potential* control lines across a landscape. Therefore, a validated set of POD boundary attributes can provide users with crucial information about the quality of control features, and can help facilitate decision making on incidents, within fuels planning, and during environmental analysis.

"Attributing" POD boundaries will often require documenting the condition of hundreds of linear miles. To attribute efficiently, data collection of PCL condition needs to be easy, accurate, and suitably flexible. Data should also be organized so it is useable by line officers and other land management personnel. Here, we provide an overview of how one national forest's staff attributed its POD network,



some recommendations for taking a similar approach, and critical lessons from the process.

### Case Study of the Ashley National Forest (Utah)

Ashley National Forest (ANF) fuels planners developed a method for verifying and cataloging PCL (or POD boundary) conditions after creating a POD network in 2021. With an expansive network that traversed high mountain peaks, forested slopes, and vast plains, ANF personnel recognized that to attribute their network efficiently, they would need everyone (permanent and seasonal) on their district fire staff to collect the data. Fuels planners built an ArcGIS Online (AGOL) Web Map along with a Field Maps tool where users could add information such as slope, fuel type, and PCL improvement needs to a line layer created while traveling along PCL segments (see Figure 1). They instructed permanent and seasonal fire staff to use this uncomplicated tool to collect data while patrolling and traversing POD boundaries. Our contacts emphasized that this was a simple and effective method for attributing POD boundaries, and that it also provided learning opportunities for less experienced staff who were unfamiliar with the terrain or with the expected fire behavior for various fuel types. ANF fire staff believed incorporating seasonal staff in conjunction with this tool allowed them to collect essential information faster than if they had relied exclusively on permanent fuels personnel to attribute their network. ANF fire staff were optimistic they would finish attributing their POD network over the course of one year (Spring-Winter 2022).

As responses were collected, they were synced to into a National Interagency Fire Center (NIFC) AGOL Web Map. USFS employees with NIFC AGOL accounts could access the

### What is ArcGIS Field Maps?

ArcGIS Field Maps is a form-centric mobile app that allows users to collect georeferenced quantitative and qualitative data. This data can then be synced over a cellular or Wi-Fi connection to an existing ArcGIS Online (AGOL) Web Map. Users can prepare Field Map forms that allow those in the field to create point, line, and polygon data and attribute that data with single and multi-line text responses, multiple choice options, drop-down selections, and photo upload opportunities. This tool is free to those with National Interagency Fire Center (NIFC) AGOL accounts. Land managers can work with their GIS specialist to develop a Web Map and associated Field Maps form that can be easily used by any agency employee with a smartphone to overlay field collected data on top of a Forest's POD network.

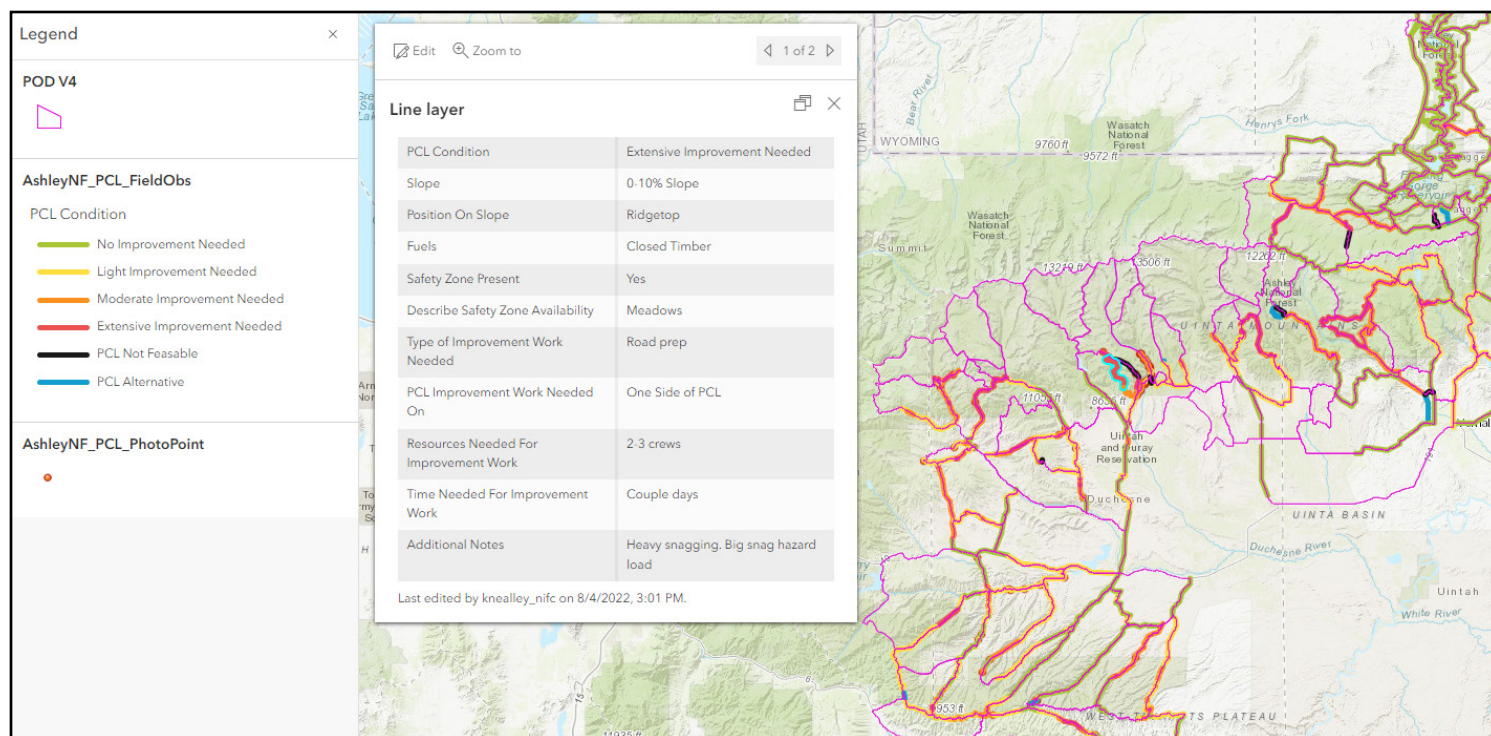


Figure 1. An image of the ANF's attributed POD Network as it appeared on the NIFC AGOL Web Map in November 2022. An attributed PCL segment has been selected (outlined in neon blue on the map).

georeferenced line attributes overlaid on POD boundaries. This format provided an easily accessible location to catalog POD line conditions for fire staff, fuels planners, and other resource specialists at the District, Forest, and Regional levels. Figure 1 provides an example of what is now available to ANF personnel on the NIFC AGOL Web Map.

## Key Lessons Learned

- 1. Photo points can collect information critical for incident response.** Cataloging bridges, water sources, and other strategically significant features with photo points gives firefighters the most information possible at their fingertips when engaging a fire and can increase the effectiveness and utility of a POD network.
- 2. Avoid overly technical or experience-dependent survey questions to ensure POD attribution is both standardized and accurate.** While it is critical to collect detailed information, a survey with overly technical or experience-based inputs (e.g., complex fire behavior predictions, detailed logistical considerations) can limit the accuracy of an attributed network when data is collected by less experienced personnel. It can also drastically reduce the overall efficiency of POD attribution by forcing forests to rely on subject matter experts or long-term career firefighters. Develop a survey that balances the knowledge and experience of your personnel with the degree of detail necessary and standardize potential responses where possible to minimize variation in response quality.
- 3. Minimize the amount of post-collection verification required by pairing more experienced and/or locally knowledgeable firefighters with less experienced personnel during the attribution process.** Our contacts on the ANF noted that there was considerable variability in knowledge and experience across districts, and therefore an increased risk of variability in the quality of responses. To combat this the ANF intentionally paired firefighters of different experience levels during data collection, minimizing the amount of verification required over time. This solution allows administrative units to take full advantage of seasonal capacity and increases both data quality and overall collection speeds.

Figure 2. An image of the ArcGIS Online Field Maps data collection page. The selected segment is the same line highlighted in Figure 1.

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