Montana Grassland Partnership Big Game Migration Team

Fence Inventory Field Mapping Instructions

Last updated by Maida Knapton on 10/6/2026.

Executive Summary

This document outlines how to utilize the ArcGIS field maps app to inventory fences while out in the field for the Montana Grassland Partnership Big Game Team's Fence Database. In order to improve or replace fences to allow for better wildlife passage, all while improving the quality and lifespan of ranch infrastructure, we need to know the location and quality of fences across our landscape.

In this document, you will find ArcGIS Field maps instructions and attribute descriptions for inventorying fences and adding wildlife observations. The hope is that we can keep the inventory process as standardized as possible to limit personal bias within the data.

Check the update stamp on this document as items and descriptions in this document will likely change as times goes on.

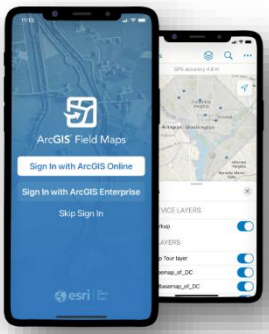
Project Contacts:

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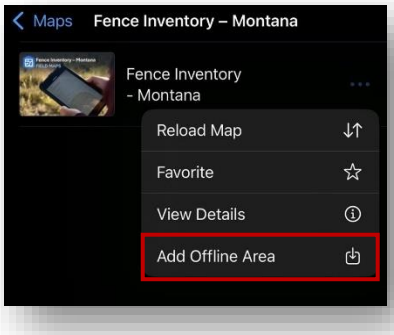
For specific questions, don't hesitate to reach out.

Setting Up ArcGIS Field Maps

1. Download and Install the Field Maps App on your field inventorying device and sign into your account.



2. Open and the **Fence Inventory – Montana** map to begin mapping or download an offline area if your device will not have service.
    a. If you are working offline, download the offline area that you will need in the field. You can select different levels of detail, which will impact your offline map's size (I recommend using the Building to Street level). When you are back connected to the internet, make sure to sync your map to upload your edits to the database.





3. To begin mapping, hit the blue plus button. This is where you need to specify which features you will be collecting: Range Improvements, Wildlife Observations, Fence Features, or Fences.

4. If you make a mistake while mapping, please go back and edit the feature so it is up to date.
5. There is no "Delete All" button in this database, so don't worry about that! You can only delete a feature one at a time.

Tips for Mapping Fences in the Field

I have a couple of mapping notes for those who will be out mapping in the field:

- When you are mapping fences in the field, please make sure that your fenceline is on the location of the true fence. This specificity is super important!
- The goal for this project is to map the fences that are impeding big game movements, so if you are feeling overwhelmed with all the fences that need to be mapped, start with the ones that are impeding big game movement first.
- As you go, check to make sure that the fences in the database are up to date with what is on the ground, and that there are not duplicate lines representing one fence. Some of the data in this database comes from a model, and likely needs to be edited or deleted. Please help to edit or delete incorrect information!

Attribute Descriptions

For the full attribute descriptions built by the University of Wyoming, visit this LINK.

There are three different feature types you can add through the field maps app: **Wildlife Observations** (Point), **Fence Features** (point), **Fences** (Line). For the purpose of keeping the inventory process as standardized as possible to limit personal bias within the data, I will just be outlining the **Fences** (Line) attribute descriptions.

Fence Line Attribute Descriptions

Field Name	Description	Example/ Notes
Agency/Organization	Affiliated agency/organization of the data collector	
Project Name	Name of agency / organization project if applicable	If this has a project ID or conservation project number add it here.
Inventory Status	What we know about the fence. This field will auto fill when you start a new fence, but check if the default is what you want! This helps us track what has been inventoried and what has not. • **Edited** - An old mapped fence that's been updated or edited.	The inventory status defaults to "**Newly Mapped**". Ensure that your inventory status is set to the correct category!

	• **Newly mapped [default]** - New fence you are adding to the database. • **Not inventoried** - An old mapped fence that has not been examined or field verified on the ground. • **Removed Fence** – A fence that has been removed.	
Railtop	Is there a wooden railing running along the top of the fence?	
Fence Material	The material of the fence	
Material Type	Options depend on what the fence is made of. • A **wire fence** can be barbed, smooth, barbed/smooth (some wires barbed, some not), woven/net (like a sheep fence), or woven wire combo. • A **wooden fence** can be either post and rail or buck and rail. An electric fence can be either permanent or temporary. • A **vinyl fence** does not have additional material type options.	
Fence Wire Spacing	Numbers that indicate the height of the wire above the ground (in inches), starting with the bottom wire. The letters denote whether the wire is smooth (S) or barbed (B). This measurement is taken at a fence post. See *Figure 1* for reference to measuring a fence.	15S 30B 45B
# Wire or Poles	If it's a wire fence, count the number of wires from top to bottom. If it's a wooden fence, count the number of horizontal poles from top to bottom	
Post Material	The material type of the posts.	
Fence Conditions	How well does this fence do its job of keeping livestock in? *(see fence condition imaged below!)* • **Poor** - Cattle can get out of this fence. Wires are sagging, posts are bent, etc. *Figure 2*. • **Fair** - Somewhere between good and poor. Showing signs of degradation. • **Good** - Cattle cannot get out of this fence. Wires are tight. No sagging. *Figure 3*. • **Unknown**	
Project Accessibility	How easy is it for someone to get to the fence so they can work on it? • **Easily accessible by vehicle** (roadside) • **Easily accessible by short** (0.25 mile) **hike** • **Other**	

	• **Not accessible as above** (hard to get to by vehicle or foot)	
Project Urgency – This is where you determine how the fence impedes wildlife movement. *(See Figure 4)*	How important is it for the fence to be evaluated for repair, modification, or removal for big game movement? *(See Figure 4)* • Time sensitive - likely impedes big game movement; high fence or low wire • Time sensitive – within a migratory path and/or crucial winter range • Other • Not time sensitive - not as above	
Comments	Any relevant comments.	

Figures



Figure 1: Measuring a fence to determine Fence Wire Spacing. This measurement must be taken at a fence post to maintain inventory accuracy. 0 inches must start at the ground. *Picture from Malta NRCS*.



Figure 2: Image of Poor Fence Conditions. Poor Fence is a fence where cattle can get out due to wires sagging, posts are bent, etc. *Picture from Malta NRCS.*



Figure 3: Image of Good Fence Conditions. Good Fence is a fence where Cattle cannot get out and wires are tight. A good fence is not related to whether the fence impedes big game movement or not, rather, it's related to the condition of that fence.

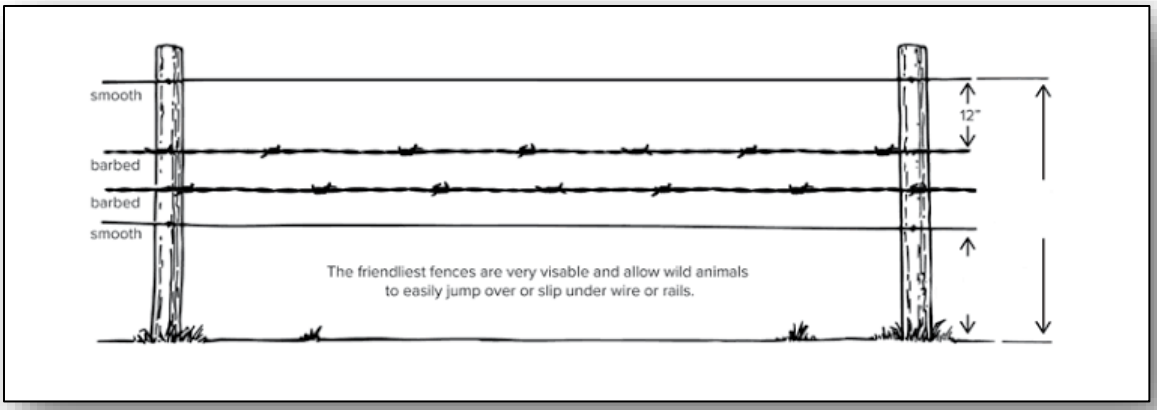


Figure 4: Example of wildlife friendly fence. *Picture from Wyoming Game & Fish*.