FIELD DATA COLLECTION WITH THE ARCGIS ONLINE GEOFORM APP: EXERCISE 3A

Field Data Collection with the ArcGIS Online GeoForm App

Using a GPS-enabled tablet or smartphone to collect data in the field.

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Time to complete

Approximately 50-60 minutes in the classroom
Approximately 50-60 minutes in the field
An Internet Connection is needed for the classroom portion

In this exercise we will use ArcGIS Online and the ArcGIS GeoForm App to:

1) Prepare a map and data for field data collection
2) Create a GeoForm webapp
3) Collect features in the field with a tablet or smartphone and the GeoForm webapp
4) Add field data collected features to a web map
4) Share your Map Online as a webapp

Introduction

Tablets and smartphones are increasingly used to collect field data for use in geographic information systems. There are many map and form-based apps that will allow you to input field data and geolocate it using the tablet or phones internal GPS or an external GPS receiver. In this exercise, you will use ESRI's ArcGIS Online and the GeoForm webapp. This works on tablets or phones, Android or iOS. It integrates seamlessly with ArcGIS Online, yet allows for work to be done offline, when no internet connectivity is available. Collected data can be synched with ArcGIS Online once internet connectivity is resumed.

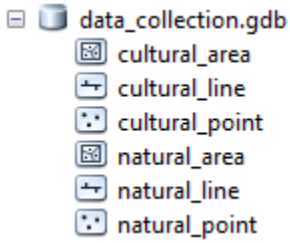
Before going to the field, data are created or prepared in ArcGIS Desktop. An ArcGIS Online Map is then created and shared for the project. In this exercise, the data have already been prepared in ArcGIS Desktop and uploaded to ArcGIS Online. You will set up a data collection form and create and share a map in ArcGIS Online for filed use.

Let's Get Started: data preparation

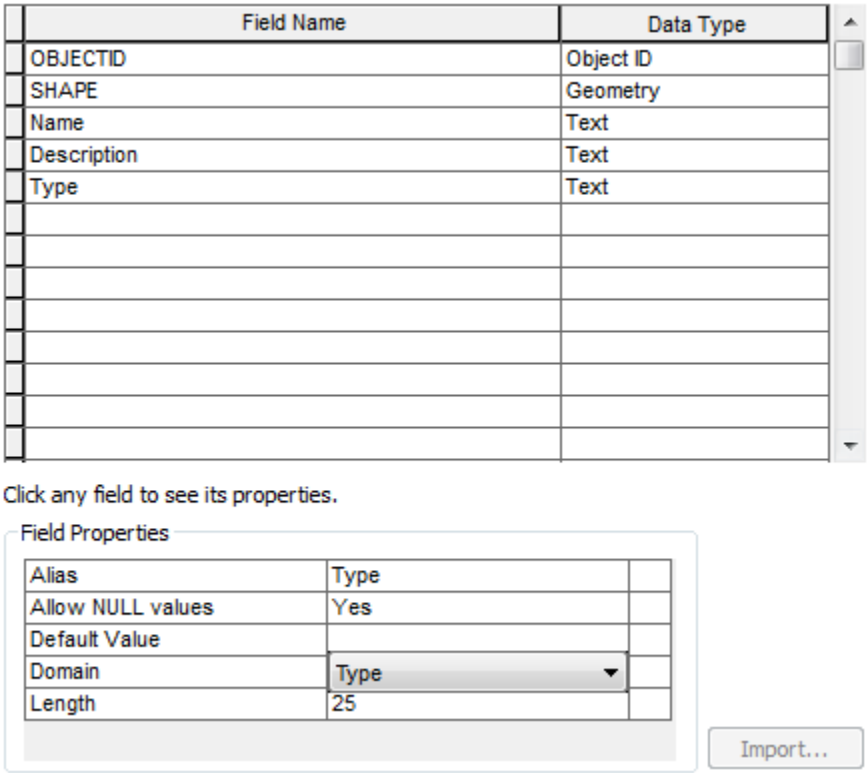
Before we go to the field and collect data, you must prepare your data for collection and publish a web map that can be loaded into the Collector app for field use.

Part 1. Prepare data in ArcGIS Desktop. (Note: This portion has been done for you)

Prior to working in ArcGIS Online, ArcGIS Desktop must be used to create empty datasets that will be populated in the field. It is important to think about the type of features you will collect along with the descriptive information about each one needed. This is done in ArcGIS Desktop by creating a feature class for each geometry type (point, line. or polygon). Each feature class requires an attribute table with a field for each descriptive element you wish to include.



For this exercise, you will collect natural and cultural features in each geometry. A basic set of attributes will be collected. These include the name of the feature, a brief description, and a category or type description.



Note that the Type field in the natural features includes a Domain, which allows the field to include a pick list of allowable descriptions. In this case, for Type, you are limited to Biophysical or Geophysical.

Coded Values:

Code	Description
1	Biophysical
2	Geophysical

Once the features are created, they are published as a service to ArcGIS Online, where they can be accessed for use in a web map.

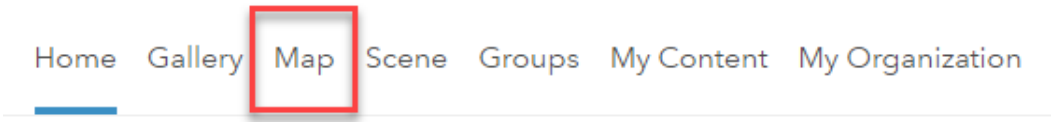
Part 2. Prepare data in ArcGIS Desktop.

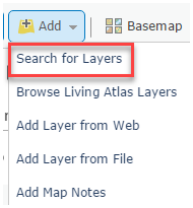
You will now create a map in ArcGIS Online that will be used for storing and managing the features you collect with the Collector app.

Step 1. Create the base map.

Log into ArcGIS online with your assigned student account.

Select Map from the menu bar at the top of the ArcGIS Online page.

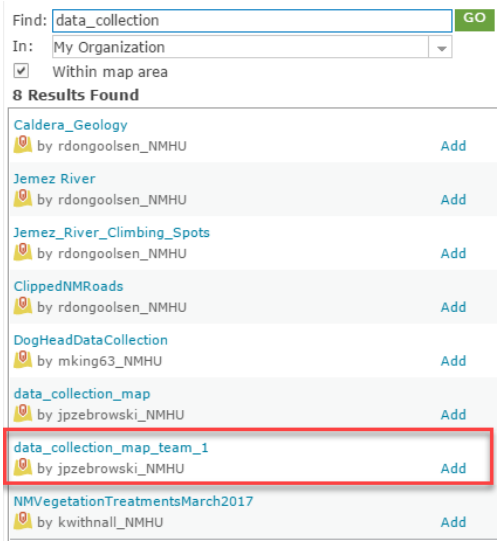




Click on the Add icon and select Search for Layers.

In the Search for layers dialog, type "**data collection**" in the Find dialog box and click on GO.

Find the ***data_collection_map_team_x*** file (x = your assigned team number) and select Add. Select

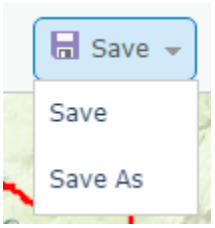


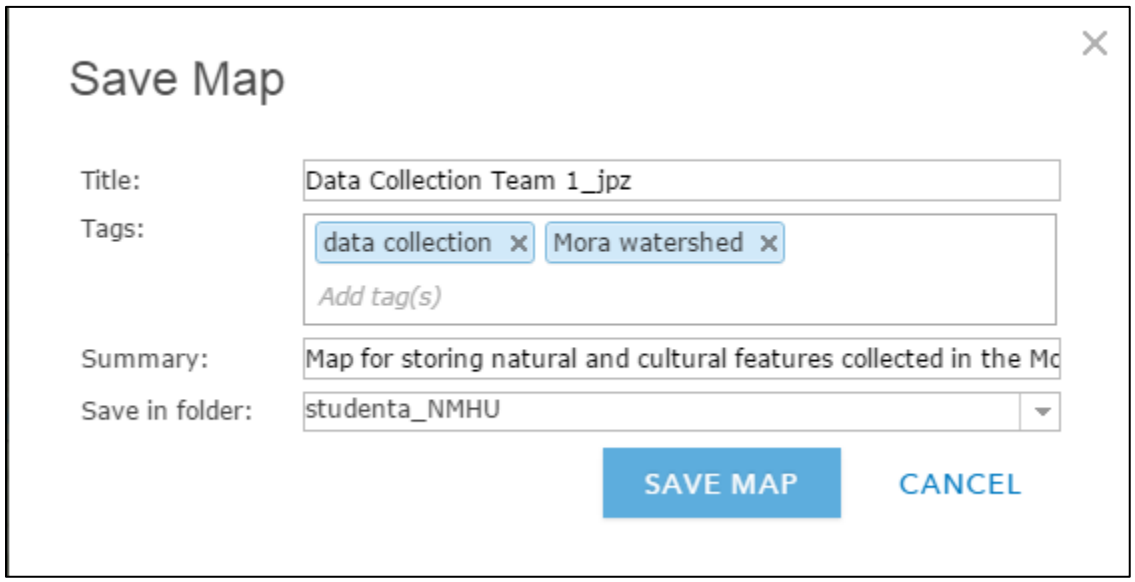
Six feature classes will be added to the map, three each for natural and cultural features, one in each geometry, point, line, and polygon.

Click on the Add icon again, find the ***Mora_Watershed_HUC_08*** feature class, and add it to the map

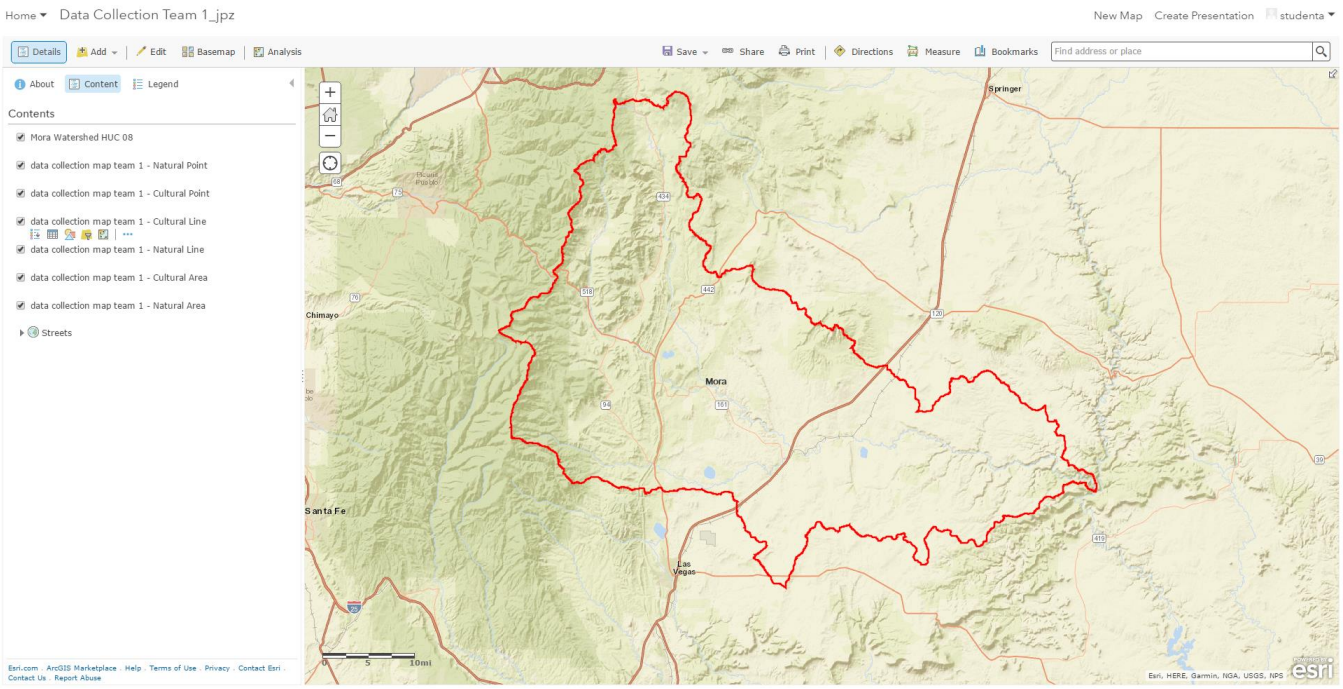
Zoom the map so the Mora watershed fills the map display.

Select Save as and save your map with the following name: ***Data Collection Team X_xyz*** (***x*** = your assigned team number, ***xyz*** = your initials). For tags, type **data collection**, **Mora watershed**. For the summary, type **Map for storing natural and cultural features collected in the Mora watershed**. Save it in your student account folder.





Your map should look something like this:



Step 2. Configure the data collection form.

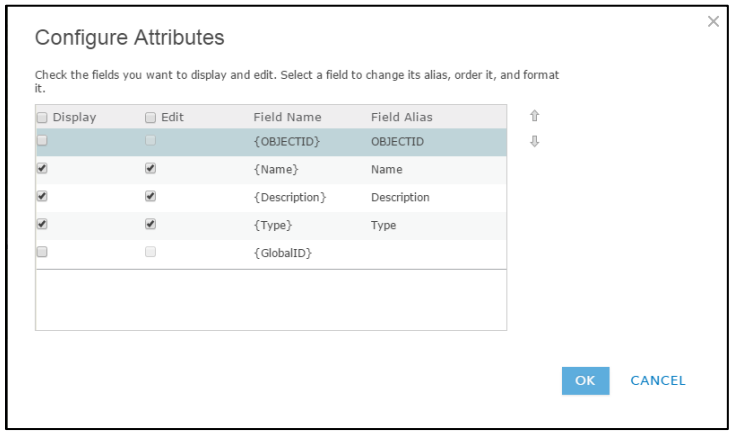
You will now configure pop-up to create a data collection form for the Collector app. The map's pop-up options determine what fields are available to be viewed and edited in the Collector app.

Select the More Options tool next to the first data collection layer in your map's table of contents.

Choose Configure Pop-up. 

Ensure the Show Pop-ups box is checked.

Select Configure Attributes. Make sure the Display and Edit check-boxes for Name, Description, and Type are checked. These are the only boxes that should be checked. Then select OK.



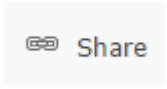
Explore, but do not change, the other options in the Configure Pop-up dialog. Select OK.

Check the Pop-up configuration for the other data collection layers to make sure they are the same as this one.

Save the map.

Step 3. Share the map.

Now you need to share the map and adjust some setting to make it available for use in the Collector app.

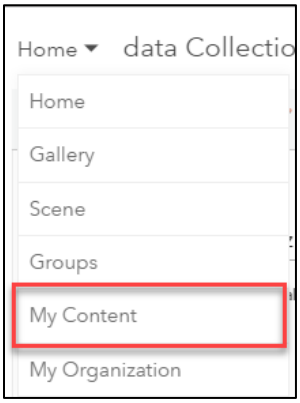
Select  from the top menu.

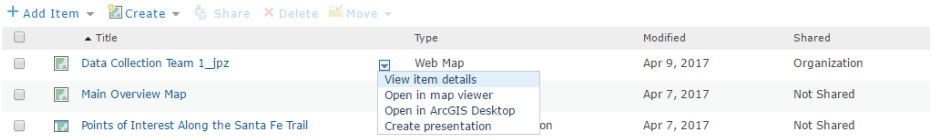
Select New Mexico Highlands University GAINS Lab and Rio Mora Watershed Exploration. Then select Done.

Save your map.

Now you will adjust some settings:

Click the pull-down arrow next to Home on the top left menu. Then select My Content.





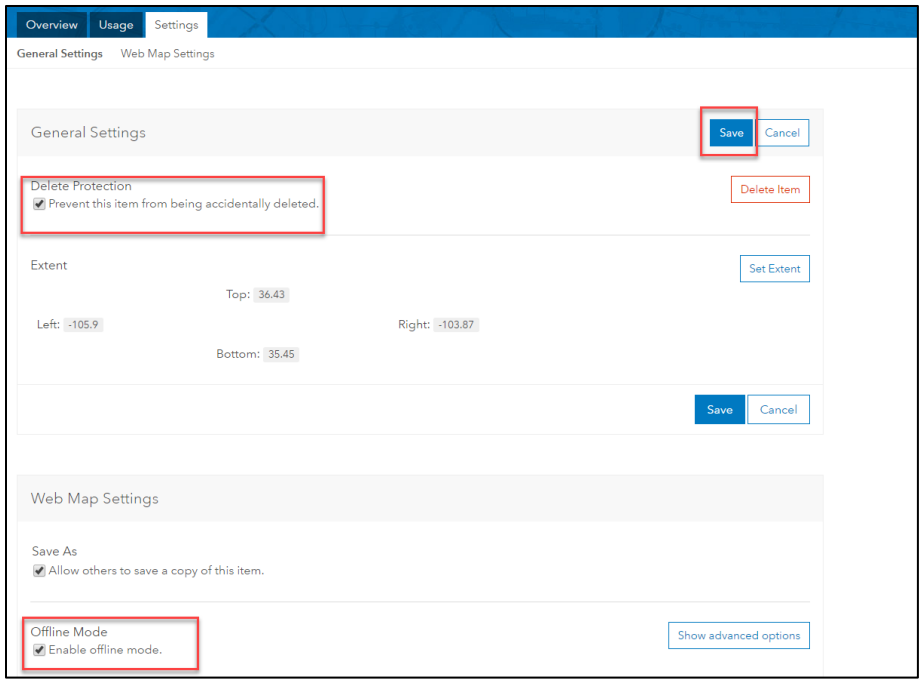
Select view item details from the pull down menu next to the name of your map.

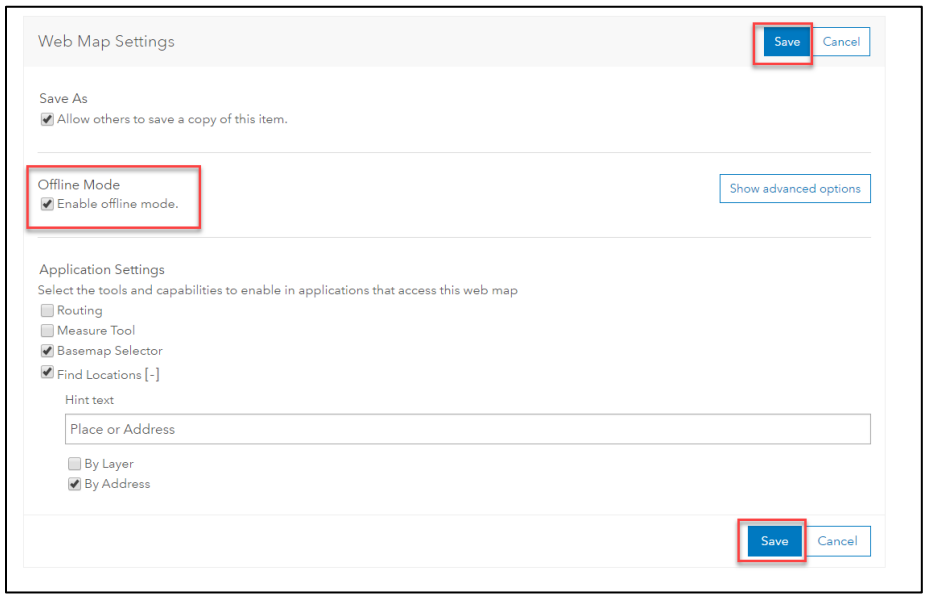
Select the Settings tab.

Check the box next to **Prevent this item form being accidentally deleted** and select Save.

Ensure **Enable offline mode** is checked.

Uncheck the **Routing** and **Measure Tool** under **Application Settings**.





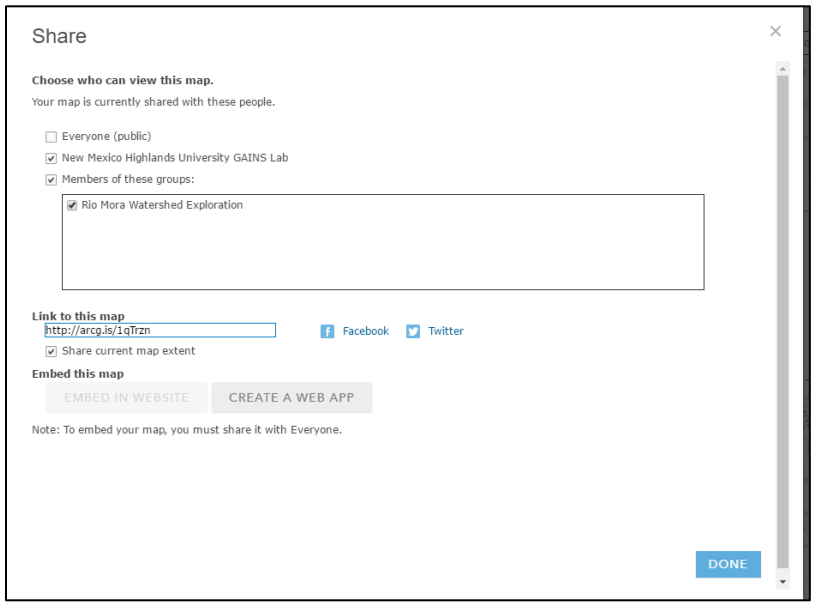
Save the Web Map Settings and the Application Settings.

Return to the map view and save the map.

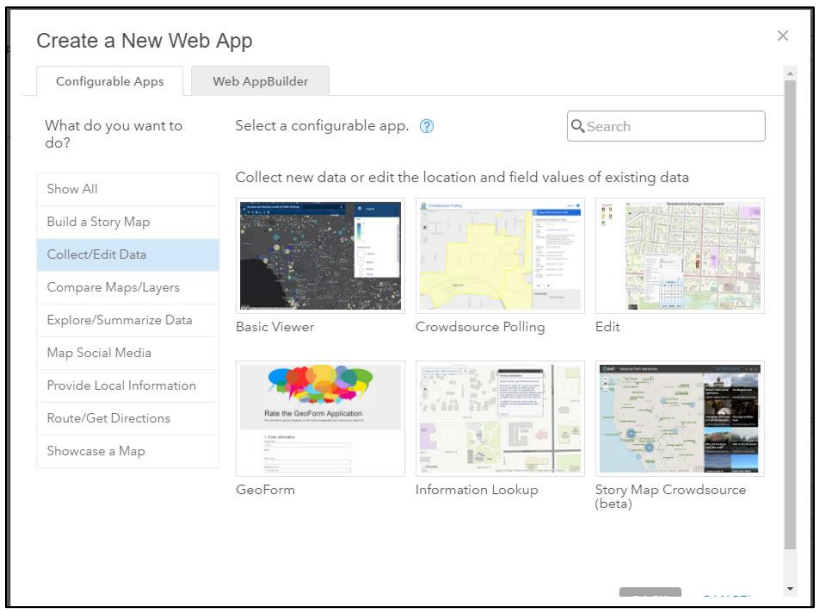
Congratulations, you have now prepared a map for online and offline use in the Collector for ArcGIS app.

Part 3. Create the GeoForm Webapp.

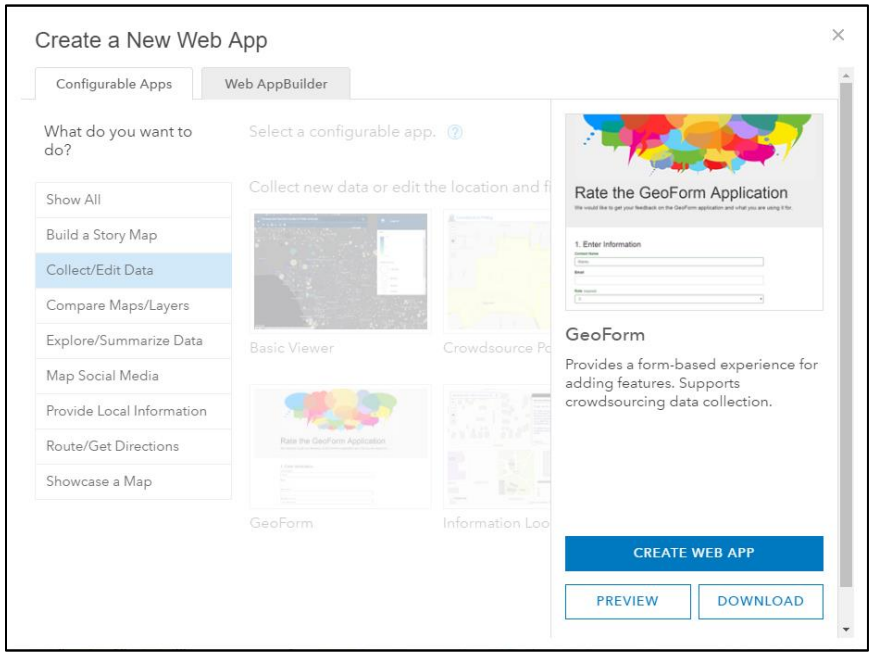
Select Share and then select Create a Web App.



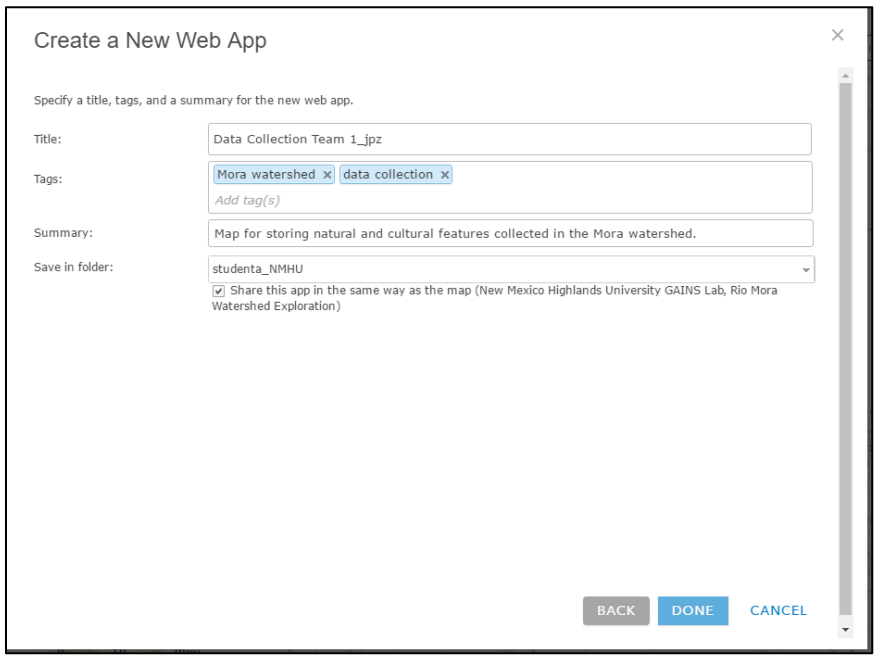
Select Collect/Edit data from the options under What do you want to do. Then selectGeoForm from the list under Select a configurable app.



Select Create Web App.

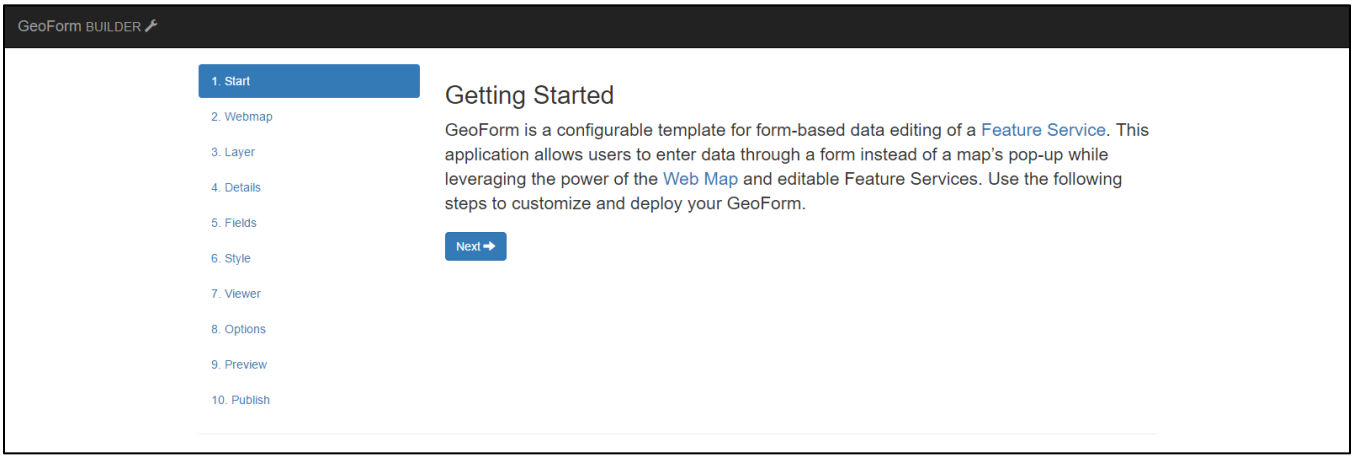


The title, tags, and summary from your Web map should automatically populate the metadata for your app.

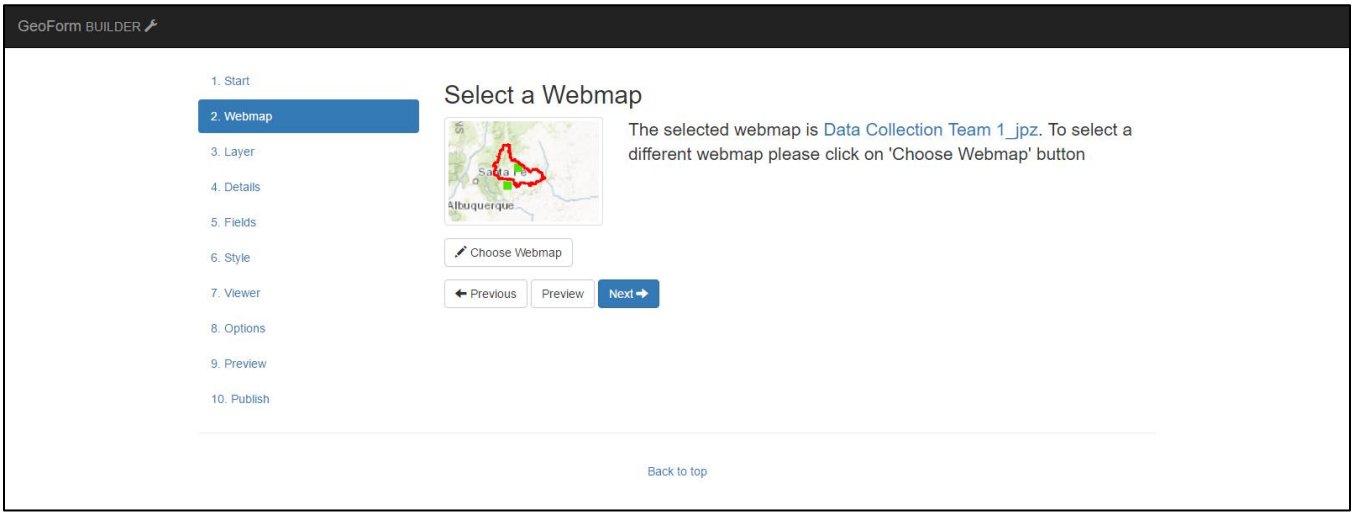


Select done and your app will now be ready for configuration.

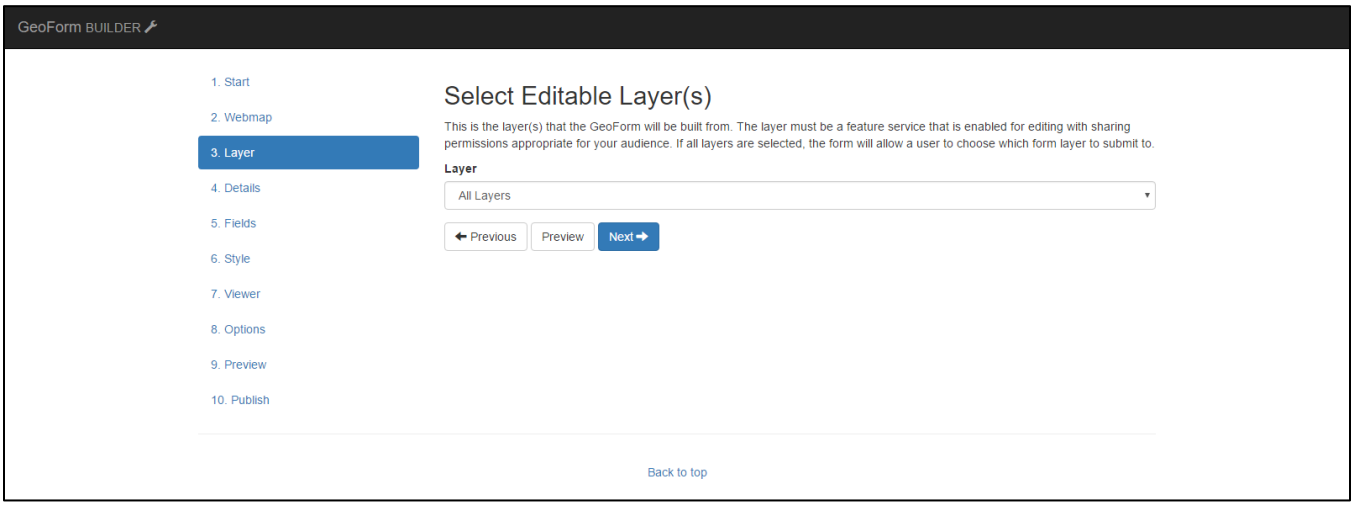
Read the information in the Getting Started page of the GeoForm builder. The press next.



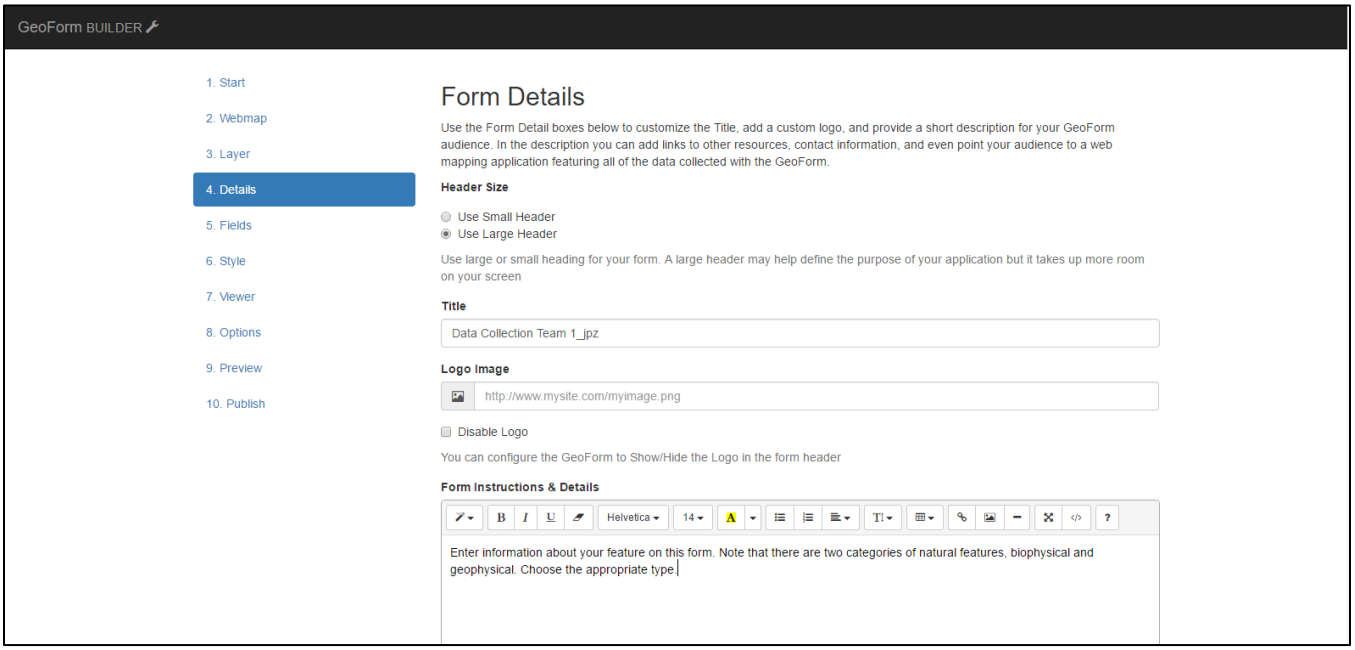
In the Select a Webmap page, map sure your data collection map is selected and then press next.



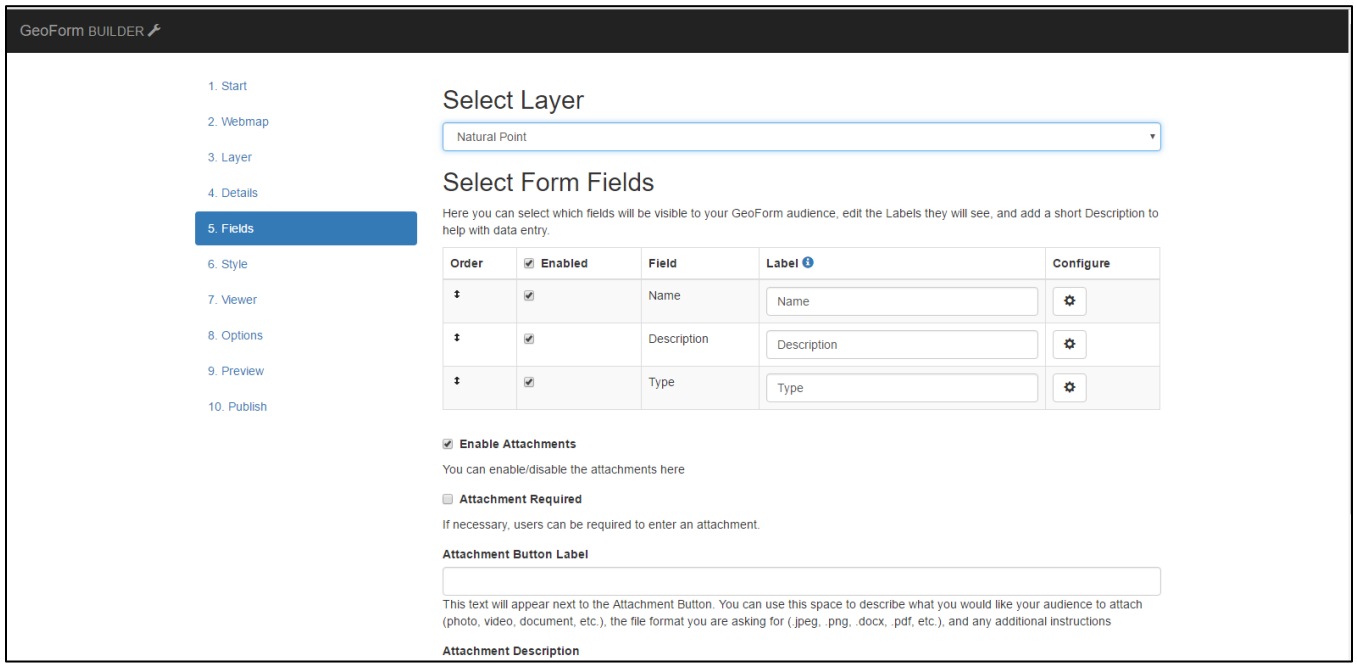
Select All layers on the Select Edita\ble Layer(s) page. Then press Next.



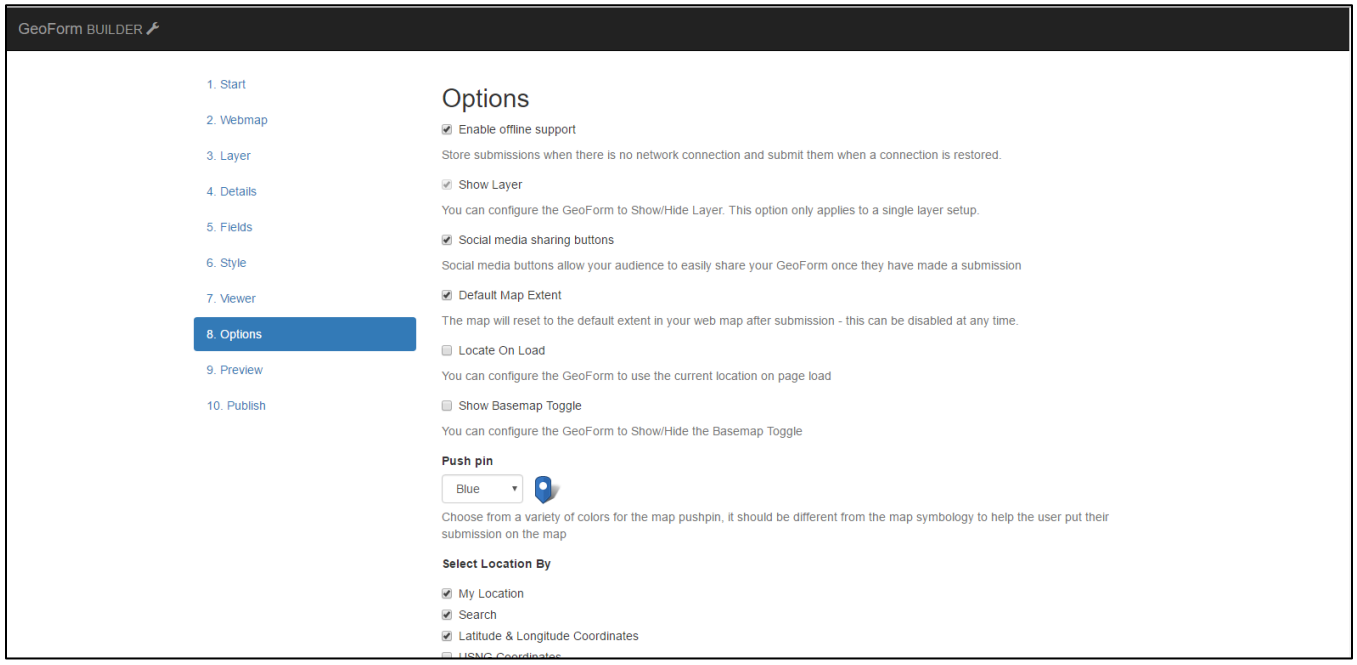
Enter the following in the Form Instructions and Details section. “Enter information about your feature on this form. Note that there are two categories of natural features, biophysical and geophysical. Choose the appropriate type.” Press Next.



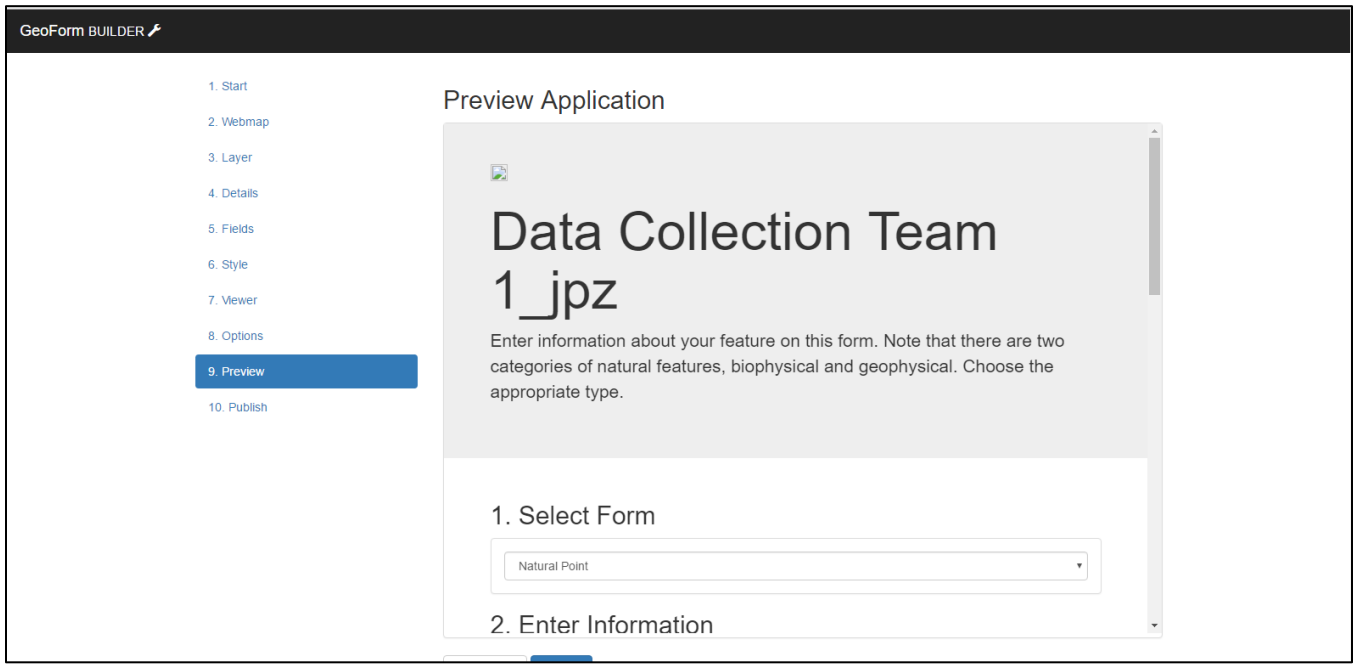
Make sure attachments are enabled on the Fields page. Review and accept the defaults. Then press Next.



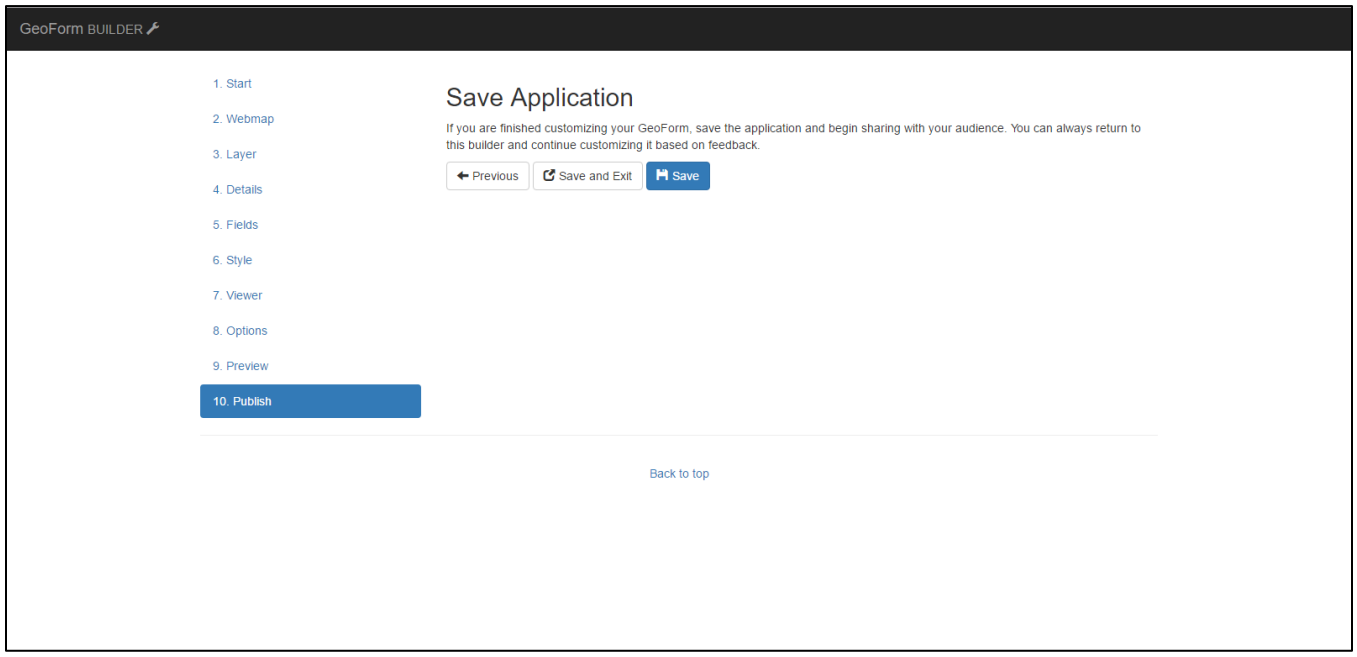
Accept the defaults under the Style, Viewer and Options sections (make sure Enable offline support is checked on the Options section.



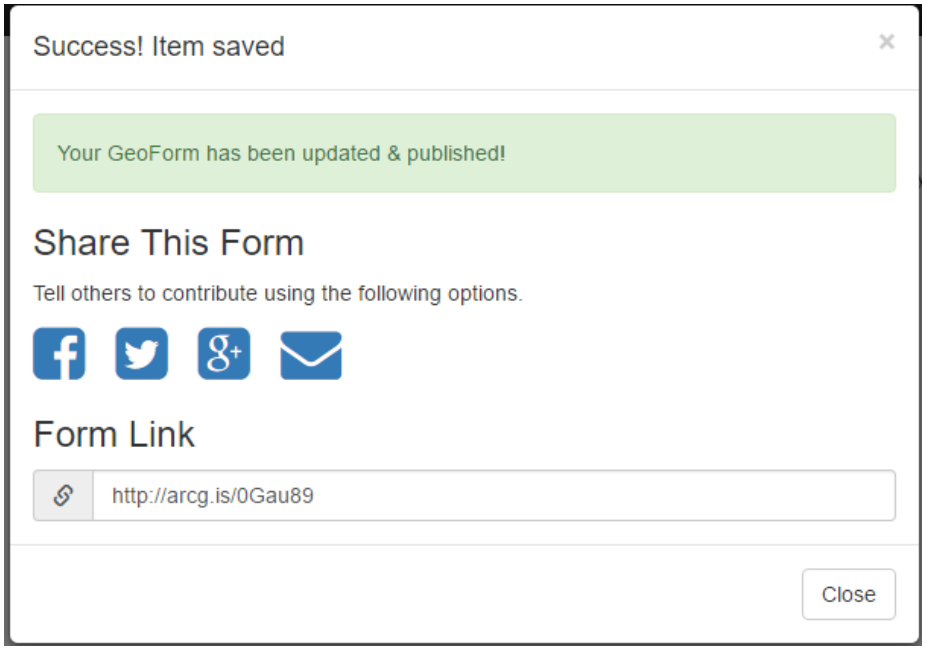
Preview the Webapp and if everything looks good, press Next.



Press Save and your GeoForm is ready for deployment.



A window with a web link and various sharing options will appear. Write down the link and, optionally, email the link to yourself.



Part 4: Collect data with the GeoForm

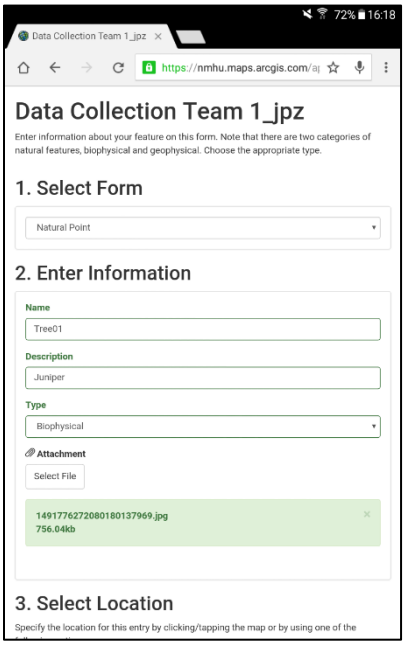
While the GeoForm can be used to interactively collect data on any computer with a web browser, its real power is in the ability to use it on a tablet or smartphone in the field.

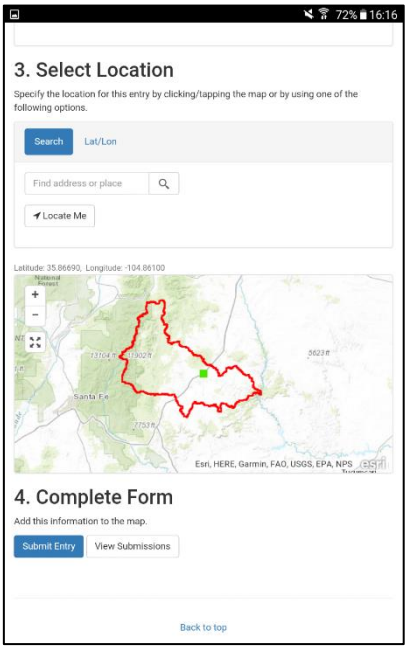
Although you do not need internet access to collect data, you will need to open the application at a location where you have internet available. Also, location information may not be very good when working off line.

Open a browser on your handheld device and navigate to the url you copied from the previous section.

Log in to ArcGIS Online with your student credentials.

Your GeoForm will open and you can start entering data. To collect the location of your device, you may need to add https:// to the beginning of the url if it is not already present (e.g. **https://**nmhu.maps.arcgis.com/apps/GeoForm/index.html?appid=1affb098e0c04da7bbea8e96abf141f9)





You can add a photo from your device's camera by pressing Select File under the Attachment section.

Use the Locate Me button to collect the location at your device.

Note: If you are working offline, you must open the application while online and leave the browser open until you connect to the internet again. The data will automatically synchronize after a few minutes.

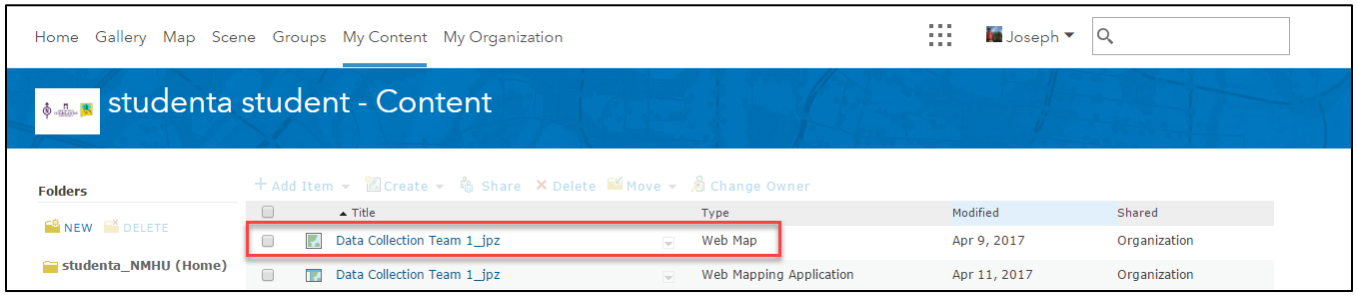
Select Submit Entry once you have entered the data in your form. A blank form will then appear.

Select View Submissions to see all the locations you have collected.

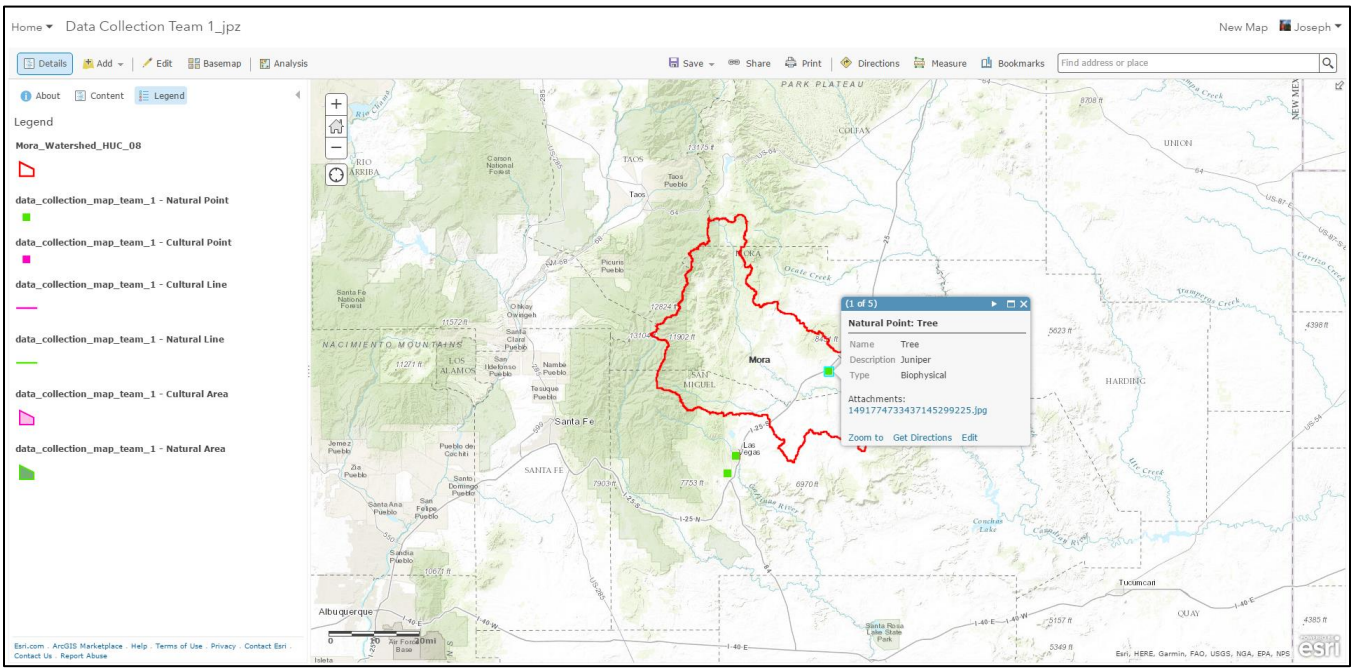
Press the back button on the browser to return to your form.

Part 5: View the data you collected in the webmap and create a webapp to share your map.

Once you have returned to a computer and have synched any data you collected offline, log back into ArcGIS Online and open your web map. Close the browser on your phone or tablet.



Your web map will open. You can click on one of the features you collected. A pop-up window will appear showing the data you collected. If you took a photo, a link to the photo will show up under attachments. You can interactively edit or delete points by choosing Edit from the pop-up window.

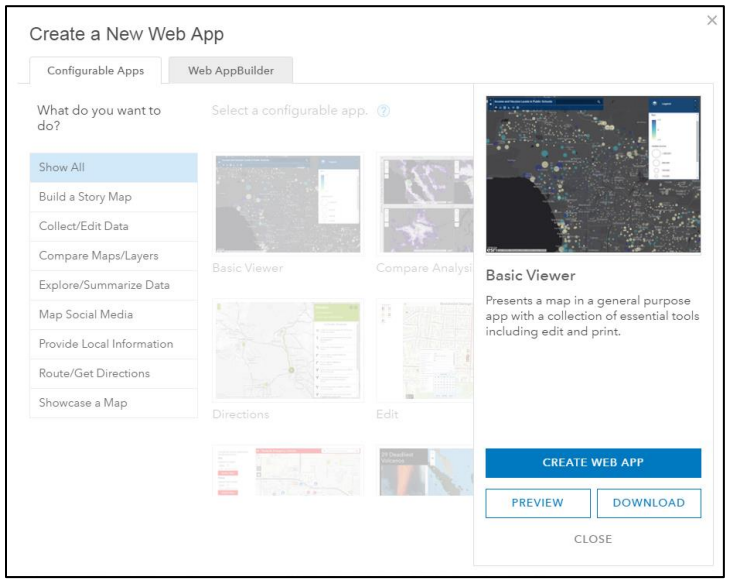


When you are satisfied with your map, save it and then select Share.

In the Share dialog, make sure the map is shared with the New Mexico Highlands GAINS Lab and the Rio Mora Watershed Exploration group.

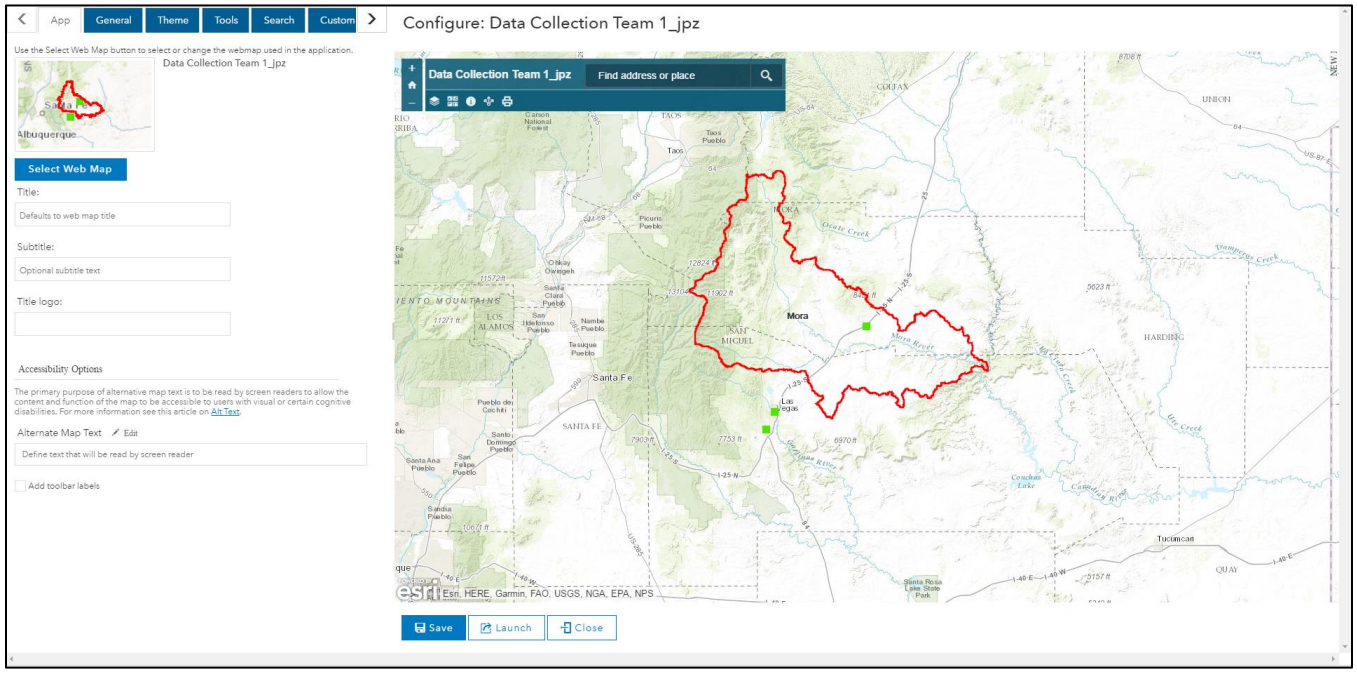
Select Create a Web App.

Choose the Basic Viewer and select Create Web App.

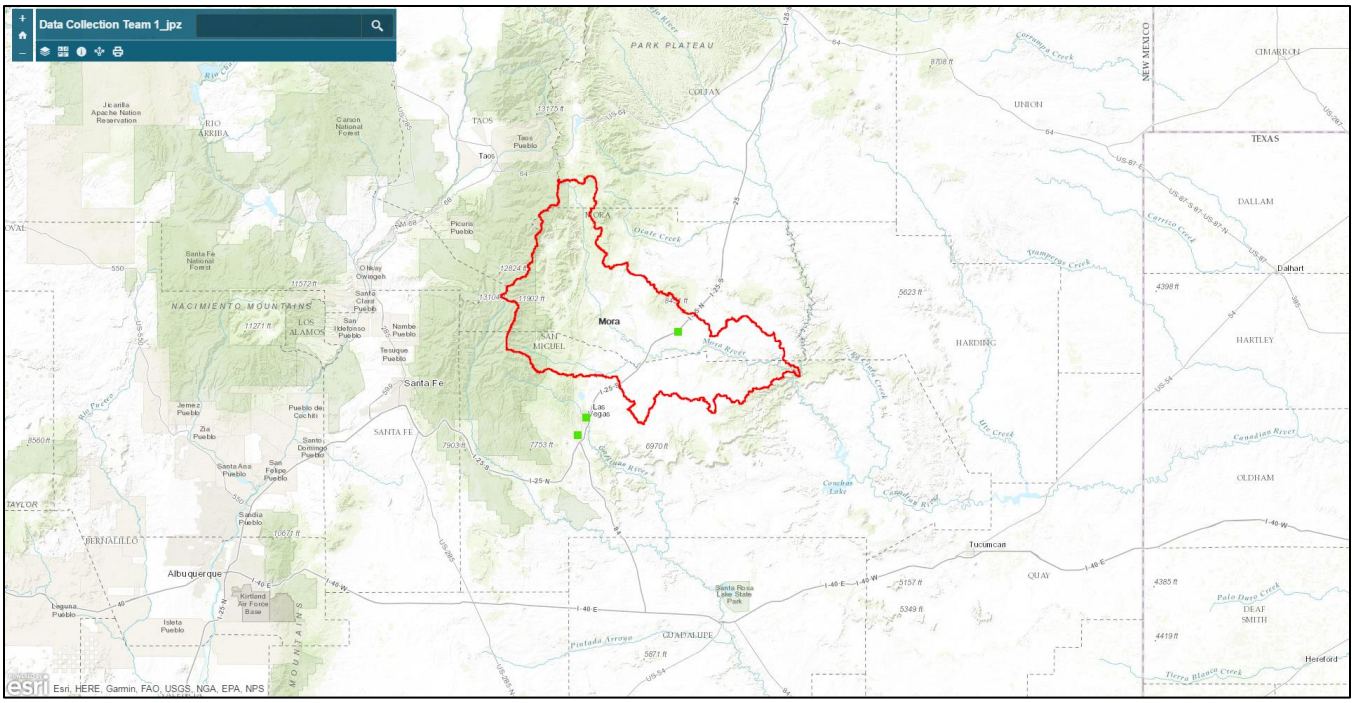


Accept the Title and tags shown. In the summary box, type **Web app for sharing natural and cultural features collected in the Mora watershed.** Select Done.

A dialog for configuring the web app appears.



Accept the default settings and press Save. Press Launch.



The interactive web map application will open in a new browser tab. Zoom in and out, change the background, and explore the other tools available on the menu bar.

Press the Share icon on the menu bar. 

Write down the map link for your web map and have one of your teammates open it in a new browser.

Congratulations. Yiou have created a web map designed to support the collection of features using the GeoForm webapp. You then customized the GeoForm web app and collected data. Finally you examined the collected data in a web map and shared it as an interactive webapp.