

Invasive Species Early Detection Monitoring Protocol for Klamath Network Parks

Standard Operating Procedure (SOP) #6: Data Collection and Entry

Version 2025Jun09

Citation for this SOP:

Klamath Network. 2025. Standard Operating Procedure 6: Data Collection and Entry: 2025Jun09. Klamath Network Invasive Species Early Detection Monitoring Protocol. Unpublished National Park Service Standard Operating Procedure, Klamath Inventory and Monitoring Network, Ashland, Oregon.

Citation for the original protocol:

Odion DC, Sarr DA, Mohren SR, Klinger RC. 2010. Invasive Species Early Detection Monitoring Protocol for Klamath Network Parks. Natural Resource Report. NPS/KLMN/NRR—2010/227. National Park Service. Fort Collins, Colorado <https://irma.nps.gov/DataStore/Reference/Profile/2124867>

(Note that updated versions of the protocol are linked from the original IRMA record.)

To create a new version of this SOP, carefully follow the instructions for the KLMN (caves) SOP: Revising the Protocol (<https://irma.nps.gov/DataStore/Reference/Profile/2238840>). Use the Revision History Log below to describe the revisions:

- Populate the top table of the revision history log, providing the previous version date, author of the change, a specific but concise description of the changes made, the footnote number associated with change details, and a new version date.
- In the bottom table, add a footnote and as much text as needed to describe in detail the reasons for and implications of the change.
- Replace en dashes with text.

Previous Version Date	Author of Change	Changes Made	Footnote #	New Version Date
02/2010	E. Edson	Changed workflow to using Field Map app not Arc Collector	–	10/02/2018
10/02/2018	Snyder	Updated to match protocol, hardware, and software changes	–	4/18/2025
4/18/2025	T. Berrian	Formatted to adhere to 508 compliance standards.	–	6/09/2025
–	–	–	–	–

Footnote #	Detailed Reasons for and Implications of the Changes
–	–
–	–
–	–
–	–

The purpose of this SOP is to guide field crews in ISED data collection using ESRI Field Maps. The Field Maps user interface may differ slightly depending upon device and operating system. For this guide, Field Maps app screenshots were taken using a tablet running Android version 14, and ESRI Field Maps app version 24.3.

Pairing the Tablet with the External GPS Receiver

An external GPS receiver can be used with the field tablet to improve accuracy. Currently, we are using the Trimble R1.

Be sure that Bluetooth is enabled on the tablet. Turn on the Trimble R1 by holding the on/off button for a few seconds until you get 2 green lights. The left LED should then flash blue and yellow. The Trimble R1 is automatically in pairing mode (if this doesn't work follow the instructions for your receiver).

On the tablet, open *Mobile Manager* and click **Select**. Find the Trimble R1 and select it and then press **Connect**. If prompted for Bluetooth pairing, click **Pair**.

If the devices don't seem to be communicating, click **Scan**.

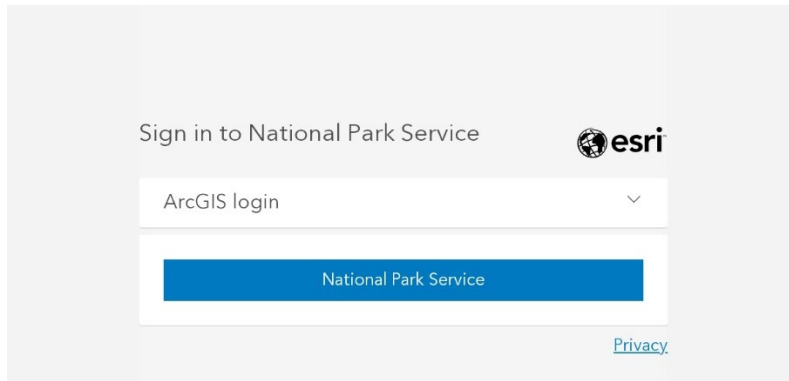
Make sure the device has a clear path to the sky and wait for it to start receiving information from satellites.

Connecting Field Maps to the GPS Receiver



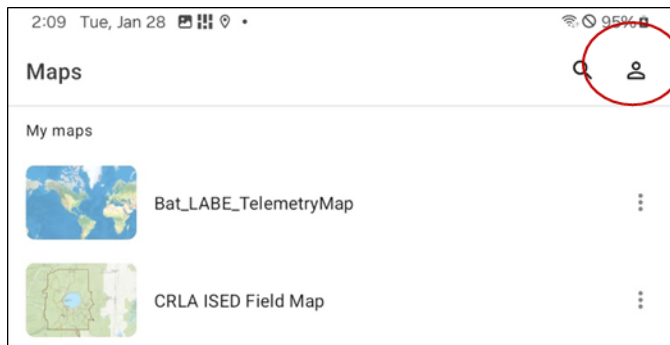
Open Field Maps and log in if prompted. Click on **Sign in with ArcGIS Enterprise**.

Then select or type **nps.maps.arcgis.com**. Then click on the **National Park Service** button.

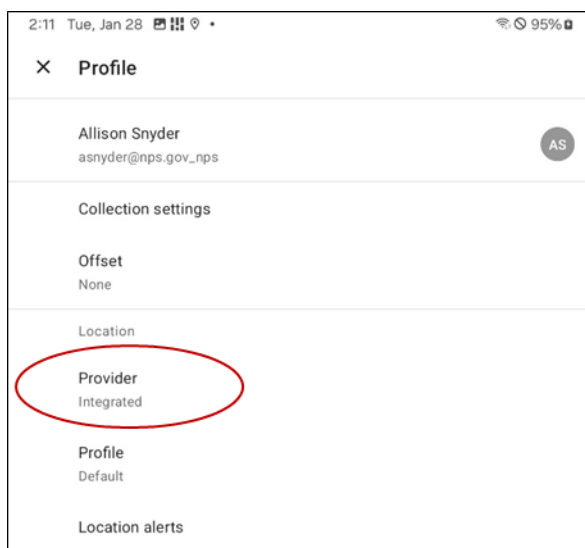


When prompted, select or type your UPN (e.g. asnyder@nps.gov). You may need to authenticate from a separate device using Microsoft Authenticator. For now, click “No” to “stay signed in?”.

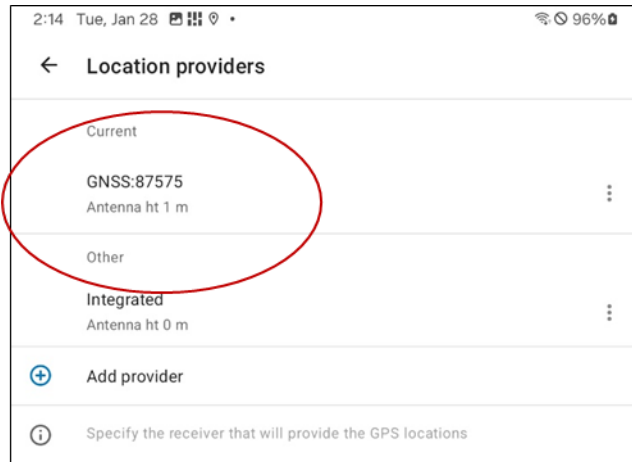
In Field Maps, from the Maps page, click on the little person icon in the top right to open your profile.



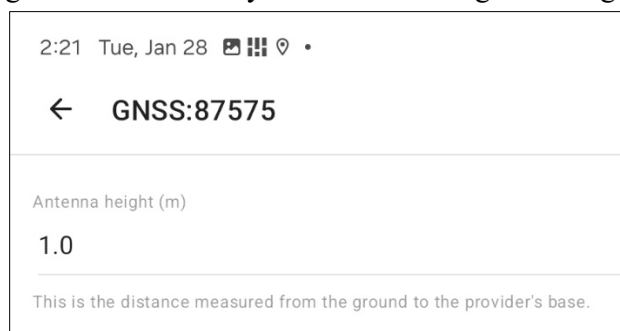
When your profile opens, be sure that the Provider is the GNSS, not Integrated.



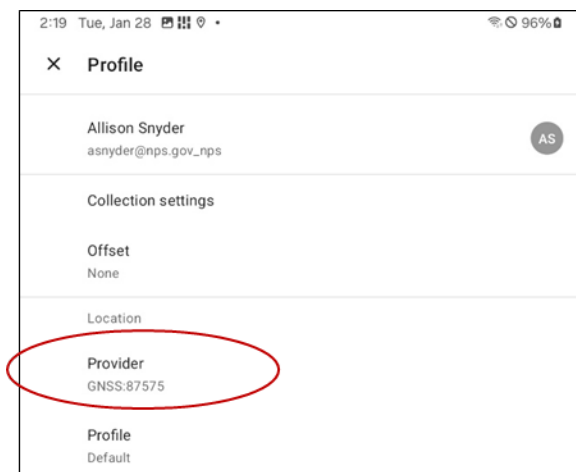
If it is Integrated, click on the Provider and select GNSS so that it displays under Current.



Adjust the antenna height if necessary. Click on the three dots of the right of the receiver name and go to *Details*. Here you can set the height. Then go back.



If the Provider under the location heading does not show the R1 device, this needs to be added using Add provider. Go back to the Profile and make sure the Provider is the GNSS.



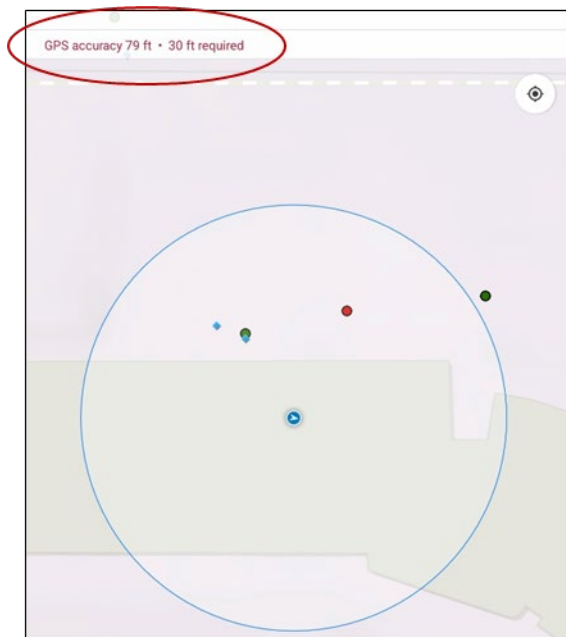
Then close the Profile.

Collecting Data In Field Maps

If not already done, turn on the tablet and make sure the location services (GPS) are switched on.

Open Field Maps and select the offline map to be used for data collection. When a map is opened, it should zoom into the GPS location, marked on the screen with a blue dot and circle. **Please note-** if using a downloaded map and the current GPS location is outside the extent of the downloaded base map, it may just show a white screen until the GPS location is within the map extent. This may indicate that the wrong map has been opened by accident, or the work area was not large enough!

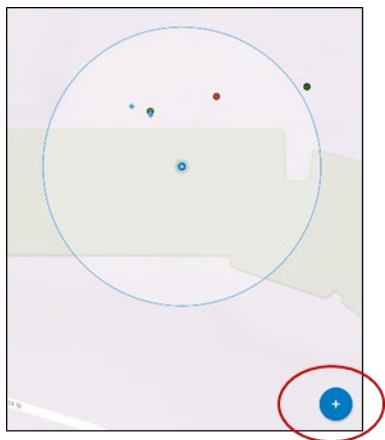
The GPS accuracy is indicated in the top left of the screen.



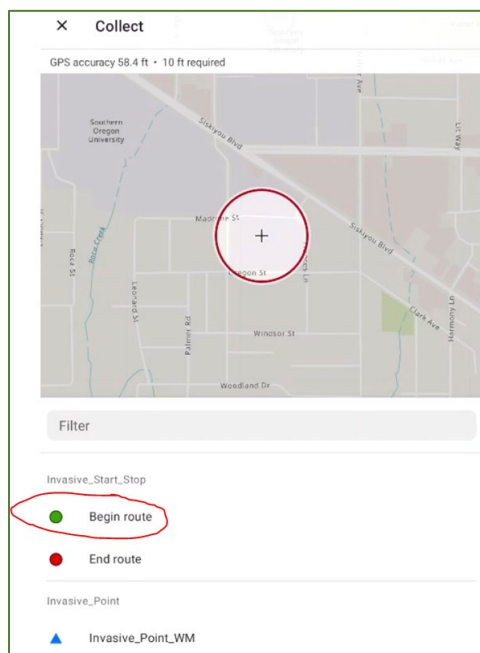
When it is blue, it is good, but when it is red a GPS data point will not be able to be collected as the accuracy exceeds the set threshold. This symbol will turn blue again when accuracy improves to within the threshold. If you press on the GPS accuracy, a window will open and you will see if you are using the Trimble or the Integrated receiver. If you want to use the Trimble but it is not working, close Field maps completely and re-open the map.

Collecting a Start/Stop Point

To start collecting data, select the blue circle with the white plus sign inside, in the lower right corner of the map.



Tap Begin route.

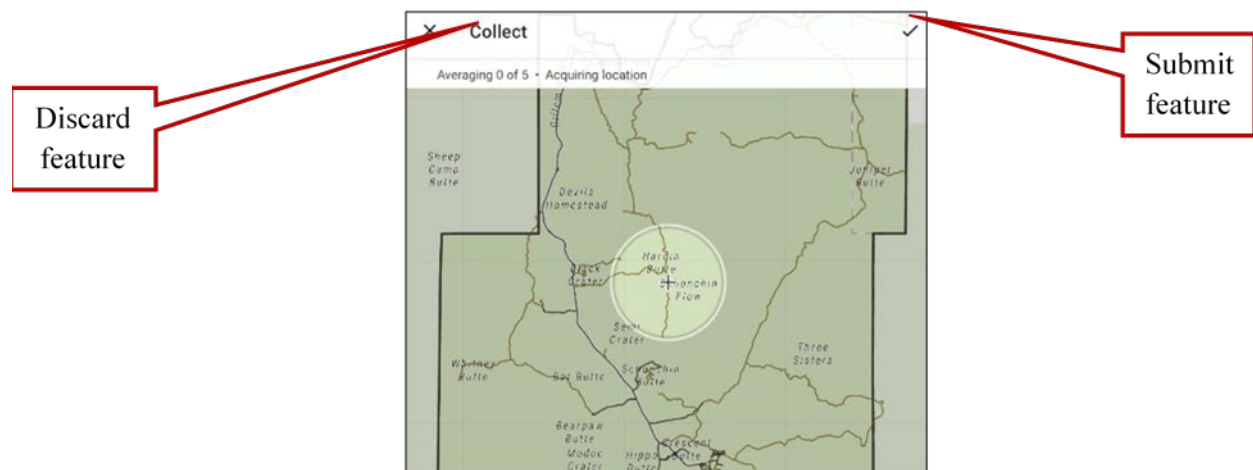


The data point will appear on top of the GPS location dot. Depending on the symbology of the layer this might be hard to see! Data can either be collected with the GPS or by manually tapping on the map to place the point, but **please note- only data collected with the GPS will capture elevation values**. A basemap with good resolution will help determine if the data point location is accurate.

Tap in each box to fill in the *Route Start/Stop* data entry form.

Note that the Route Start/Stop will be populated based on the button selected to open this form. If a field has a star by the name, then it is a required field. When filling in the date field a date picker will appear. Tap the **Today** button to auto fill in with the current date.

When all the fields have been filled in, click the check icon at the top right of the screen to submit the feature. If this was accidentally created or is otherwise an error, discard the point.



Collecting an Infestation Point

If you happen upon an infestation, click on *Invasive_Point*.

Filter

CRLA_ISED_DataEntry_2025 - Invasive_Point

Invasive_Point

CRLA_ISED_DataEntry_2025 - Invasive_Start_Stop

● Begin route

● End route

This opens the Invasive Point Data Collection Form. Many fields have drop-down lists to select from. Fill out all required fields and add any comments if needed.

✕ Collect ✓

◆ CRLA_ISED_DataEntry_2025 - Invasive_Point

No location

Invasive Point Data Collection Form *

Species from Priority List *

Bromus tectorum

NonPriority Species

No value

Survey Date *

Feb 6, 2025

Phenology *

Rosette

Distance from the road/trail to infestation (m) *

9

Infestation size (sq. meters) *

1-25

Percent of area infested *

75-95

Was the infestation treated? *

No

Notes

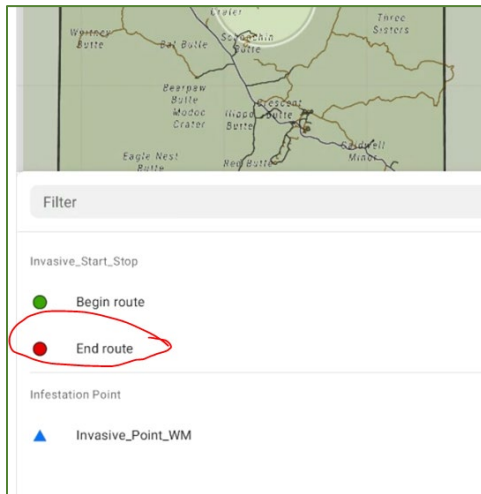
Is this an Extra Area survey? *

No

When done, submit the record by clicking the check in the upper right corner.

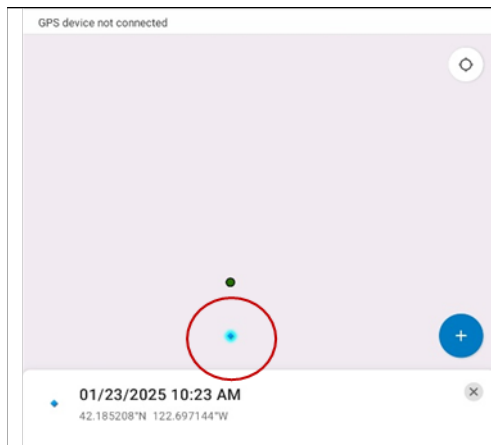
Add a new point for each infestation.

At the end of the route, click on **End Route**. Fill out the form and submit it.



Editing an Existing Point

Collected data can be selected and edited at any time. Tap on the existing point to edit; it should be highlighted in bright blue.



Tap on the **edit pencil symbol** at the bottom of the form to edit. Make changes and submit the form.

ROUTE
Cleetwood Trailhead

GPS_Unit
trimble

Species_NonPriority
-

Position source type
External GNSS Receiver

Receiver Name
GNSS:87575

Latitude
42.185208

Longitude
-122.697144

Delete a Point

If a point needs to be deleted, click on the 3 dots at the bottom and select Delete. This removes the data point and associated attributes from the layer completely. This option is dependent on the types of permissions set for the database and may not be available.

Scroll down for more options.

PARK_Unit
CRLA

Route_Comments
-

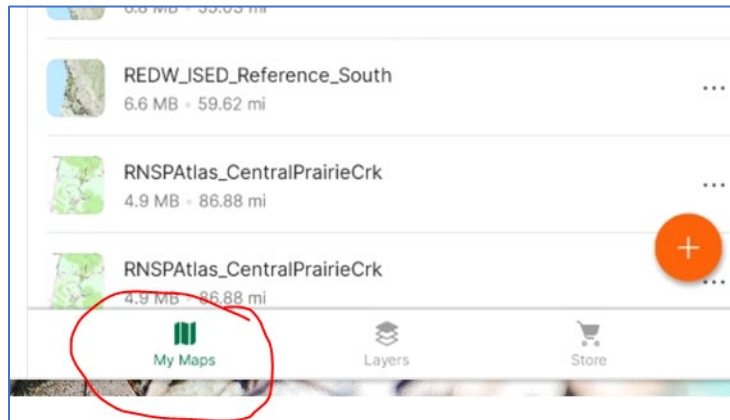
ExtraArea
No

- Collect here
- Directions
- Compass
- Favorite
- Delete

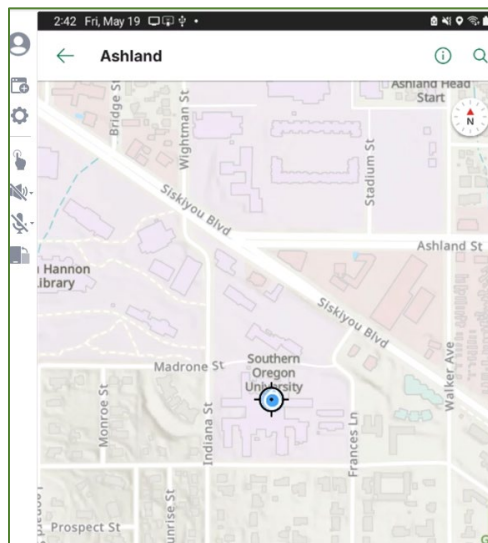
Collecting Trackline Data in Avenza

We are currently using Avenza Maps to map tracklines.

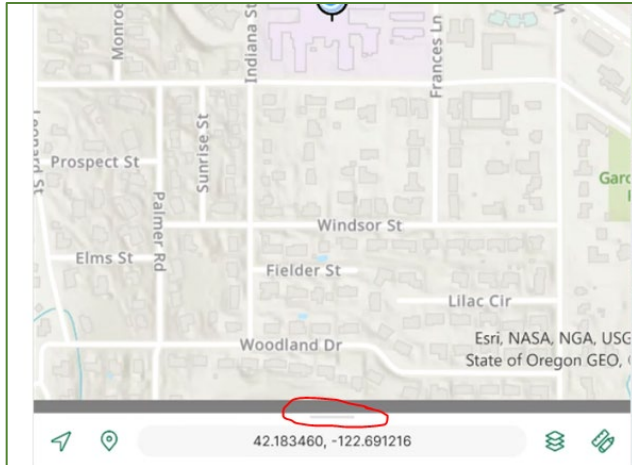
Click on the Avenza Maps icon. Go to “My Maps”. Click on the basemap that you want to use.



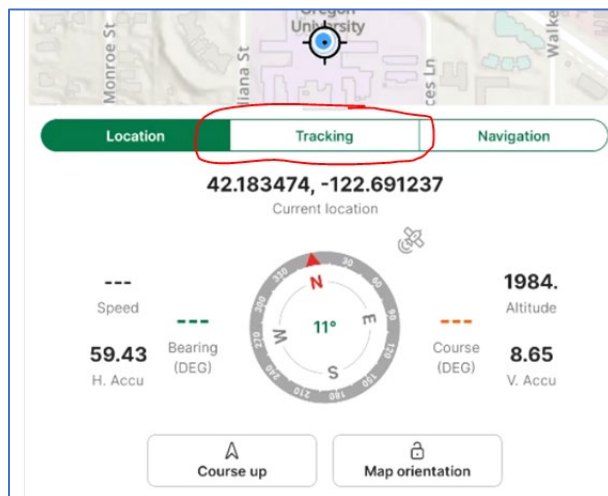
In the next window, your map will appear.



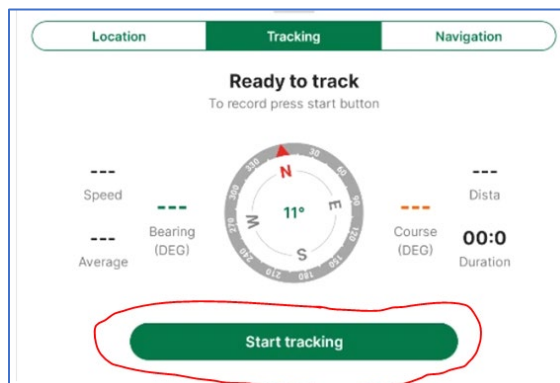
Click the line at the bottom of the screen. *It may have you “Calibrate Compass”. Follow the instructions if prompted.



The “Location”, “Tracking”, and “Navigation” tabs will become visible. Select “Tracking”.



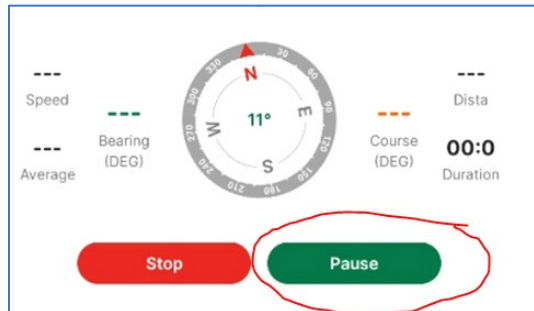
Select “Start Tracking”. If prompted, select “Allow all the time” to access location; then click the back arrow. Be sure the app is tracking before you start to move.



Pause Tracking

Pause tracking during lunch and breaks to save battery life.

Open Avenza maps, navigate to your tracking lines (in the map), click “*PAUSE*”.

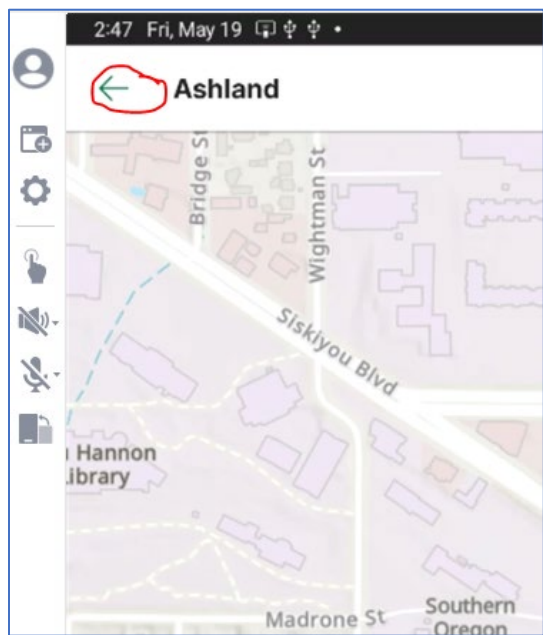


After the break, restart tracking by clicking “*RESUME*”. Be sure to wait until the app starts tracking before you start to move.

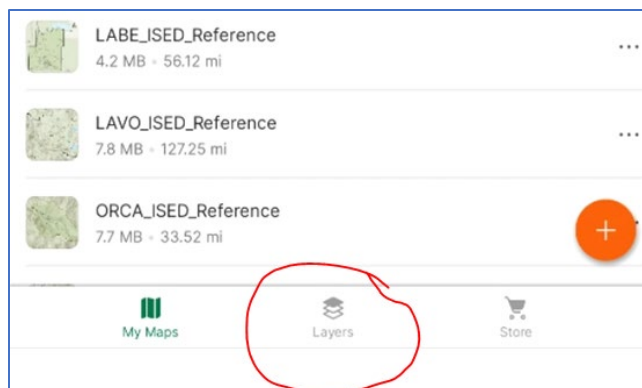
Finish Survey

At the end of data collection, click **Stop**.

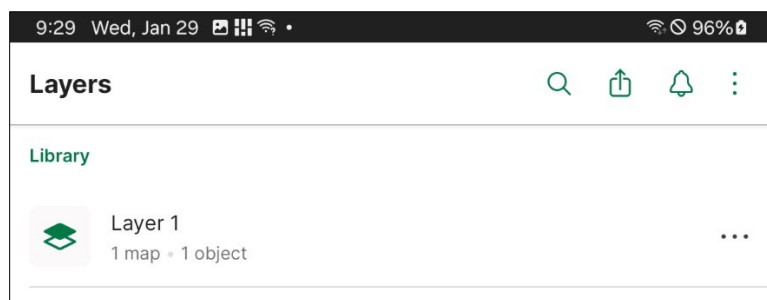
Navigate back to the home screen.



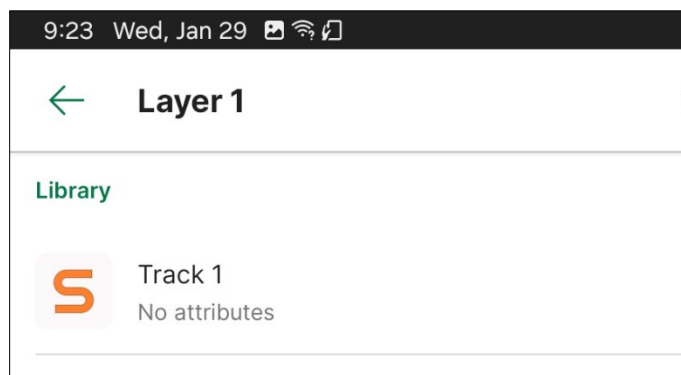
Click Layers.



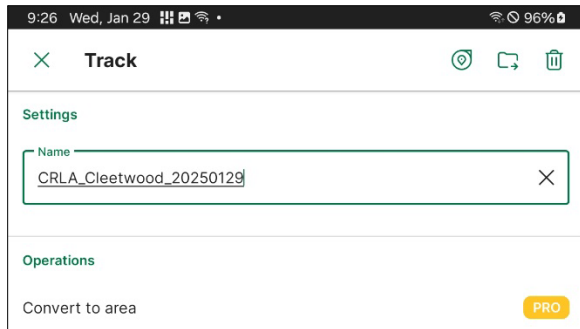
In the Layers page, click on the Layer you are using.



Select the Track you just created (hint: it will have the day's date and time).

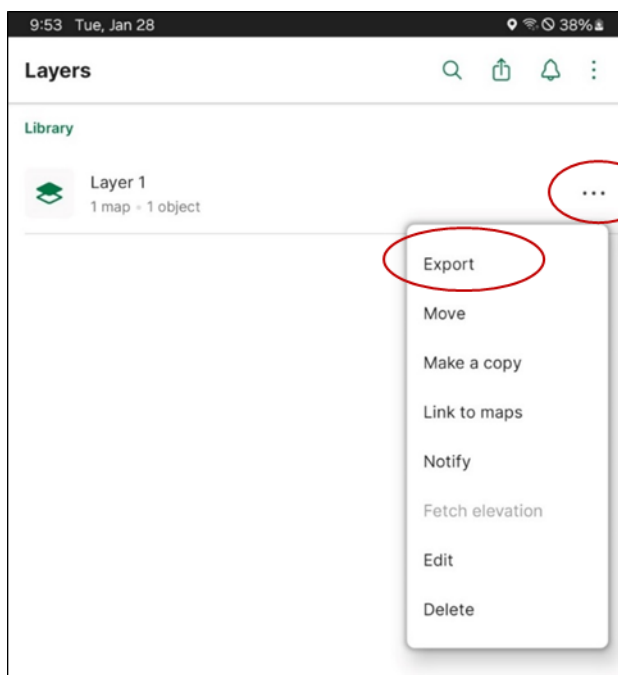


This opens the Track settings. Rename in a way that distinguishes it from other tracks, such as park, road or trail name, and date.

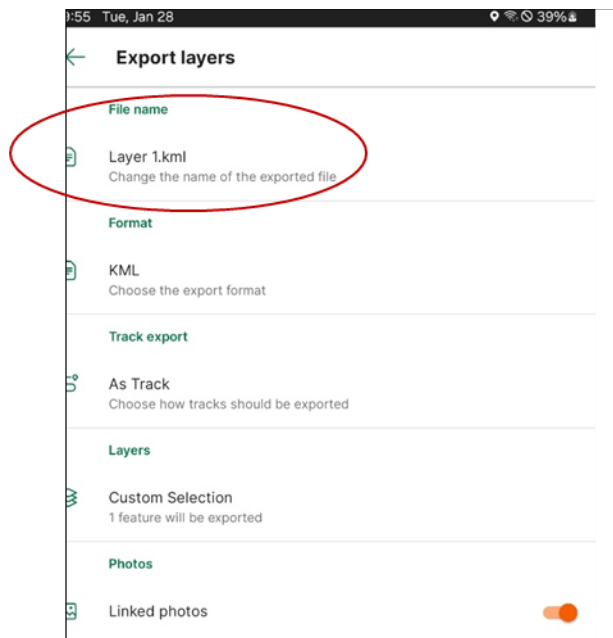


Avenza Data Export

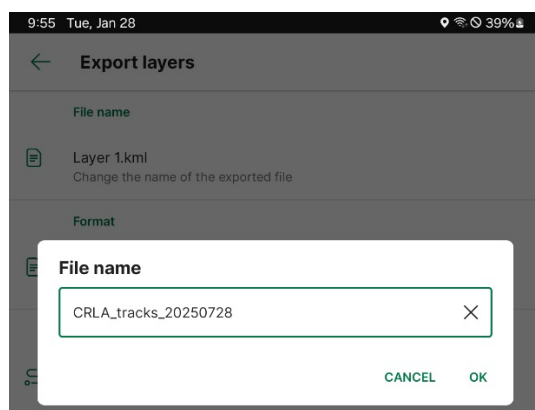
In Avenza, go to *Layers* (at the bottom of the screen). Click on the 3 dots next to the layer you want to export. Select **Export**.



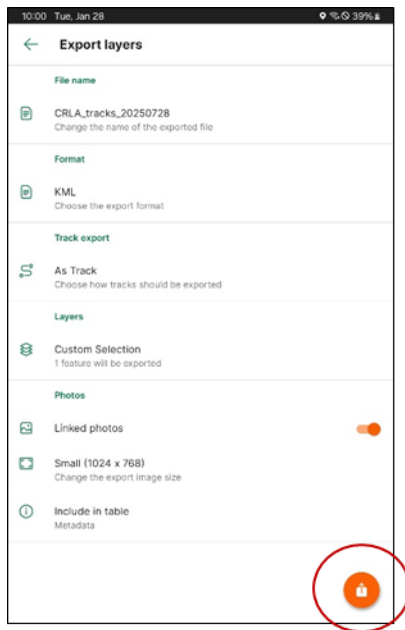
Click on the *File name* (e.g., Layer 1.kml)



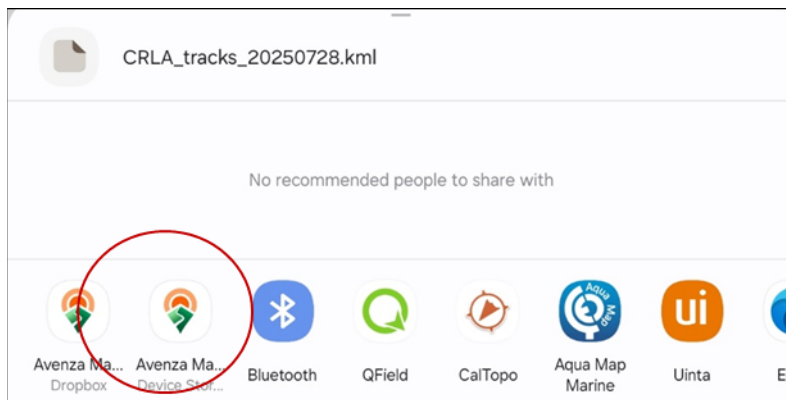
Rename the layer to include the date.



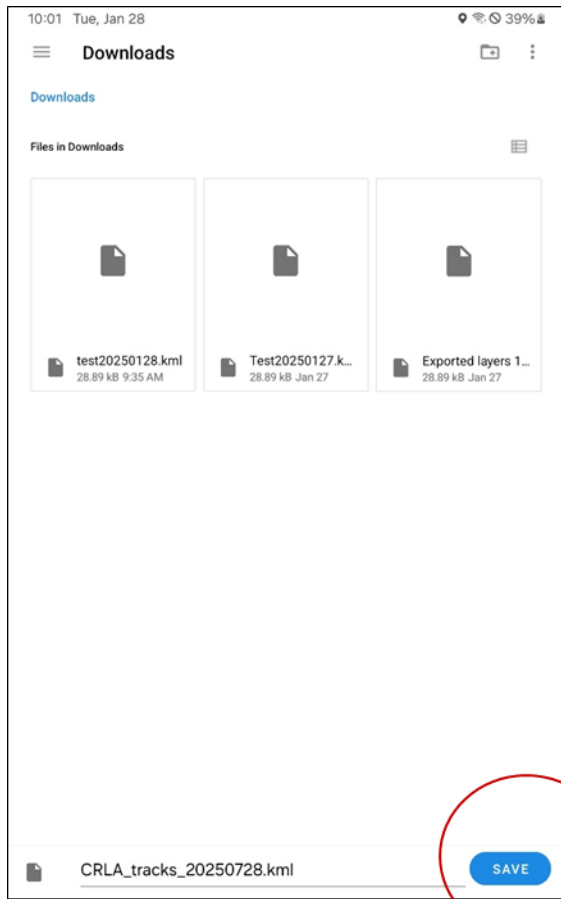
Click **OK**.



Then click the **Export** button. When prompted where to put the layer, select *Avenza Maps Device Storage*.



In the *Downloads* page, click **Save**.



Backing Up Data in the Field

Field Maps Data Backup

Laptop Backup

Connect the tablet to the laptop with a cable.

On the laptop, go to This PC\Galaxy Tab Active5 5G\Internal storage\Android\data. Copy com.esri.fieldmaps. Paste this to the laptop C drive. Rename the folder to include the date at the end of the folder name (e.g., com.esri.fieldmaps_20250727).

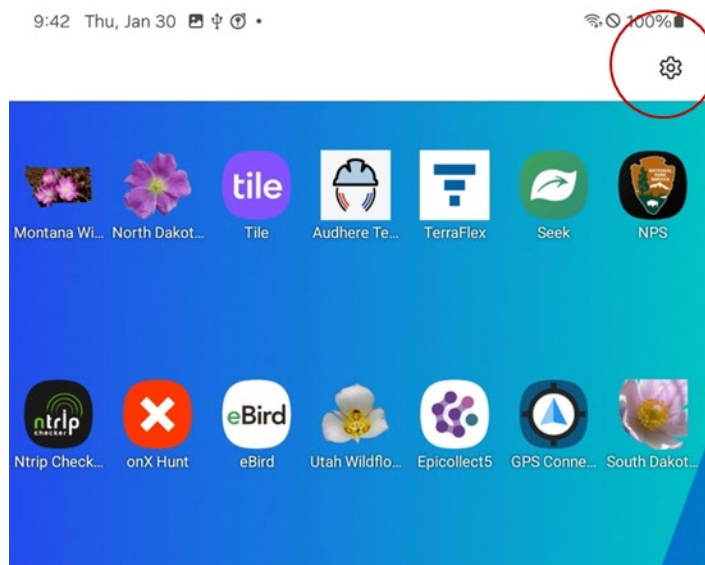
Backup to Second Tablet

For this section, use the following:

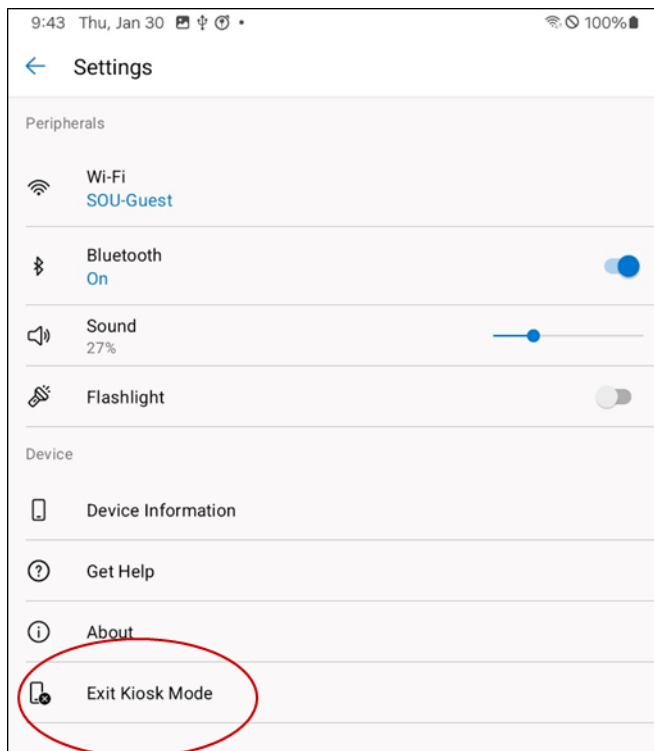
data device- the device containing the Field Maps ISED data you wish to backup

backup device- the device that you want to backup the data TO

Unlock both devices and take out of kiosk mode. Do this by pressing Settings.

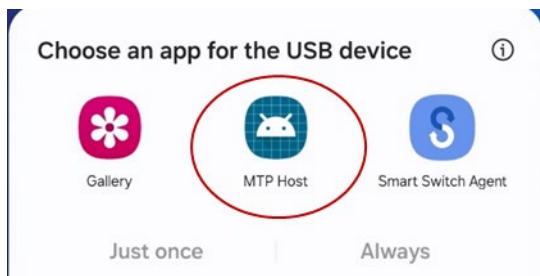


Then press Exit Kiosk Mode



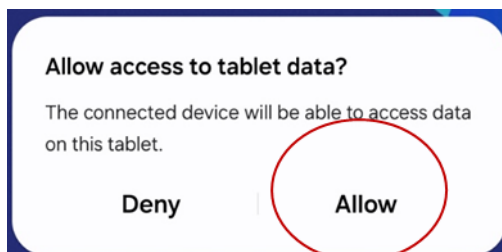
Enter the code 1886 and press Continue.

Once both tablets are out of Kiosk Mode, connect them with a USBC to USBC cable. Connect to the backup device first. When the tablets are connected, the backup device should show the following:

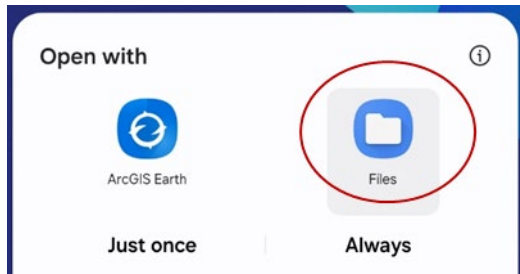


If this appears on the data device, unplug the cables and try again.

Click on **MTP Host** and **Just once**. When the device tablet asks about access, press **Allow**.



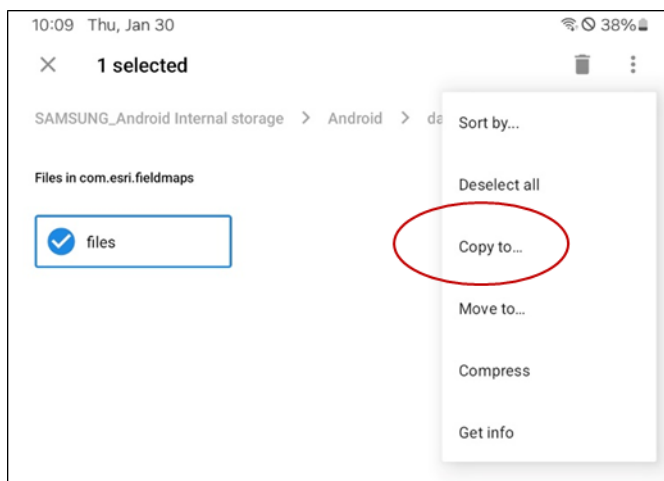
If it appears again, select **MTP Host** again. On the backup press **Files**.



You may need to go to Developer Options, Default USB configuration and change to Transferring files.

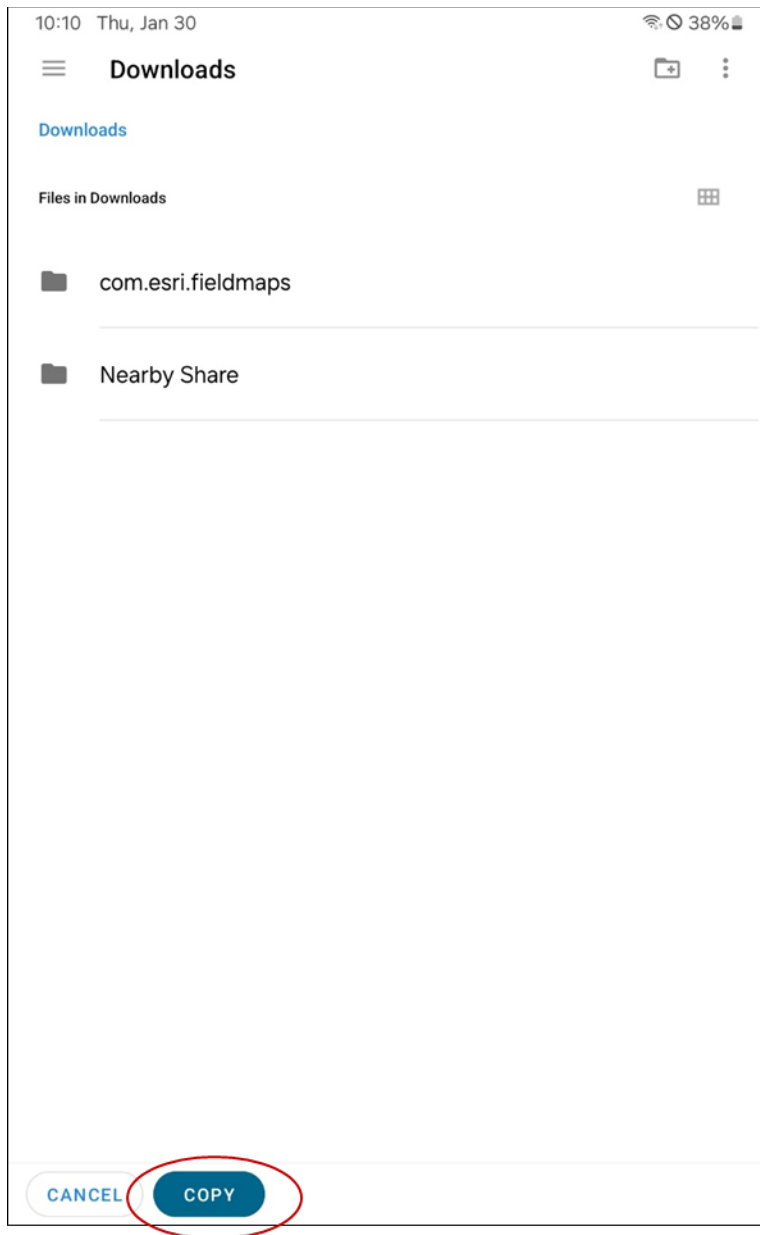
The Files app on the backup device will open, showing the top-level directory on the data device. Using the backup device, navigate to the directory on the data device that contains the file or directory that you want to backup. Tap and hold to select the target directory (Android\data\com.esri.fieldmaps\files\).

Tap 3 dots in the upper-right corner and select Copy to...



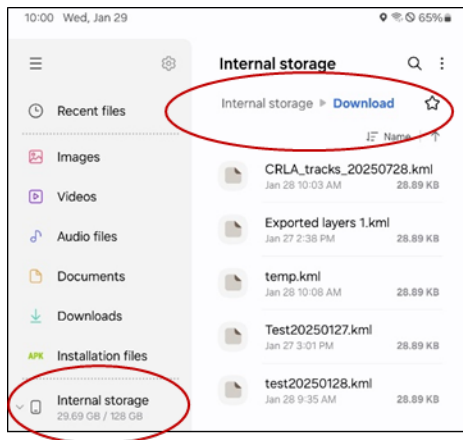
This will probably default to Downloads, but if you hit the overflow menu in the top-left corner (stacked lines), you can choose any other location on the backup device, including a micro SD card (if equipped).

Tap Copy. The directory/directories from the data device should copy to the backup device. The new folder should be renamed to include the date (e.g., files_20250130).

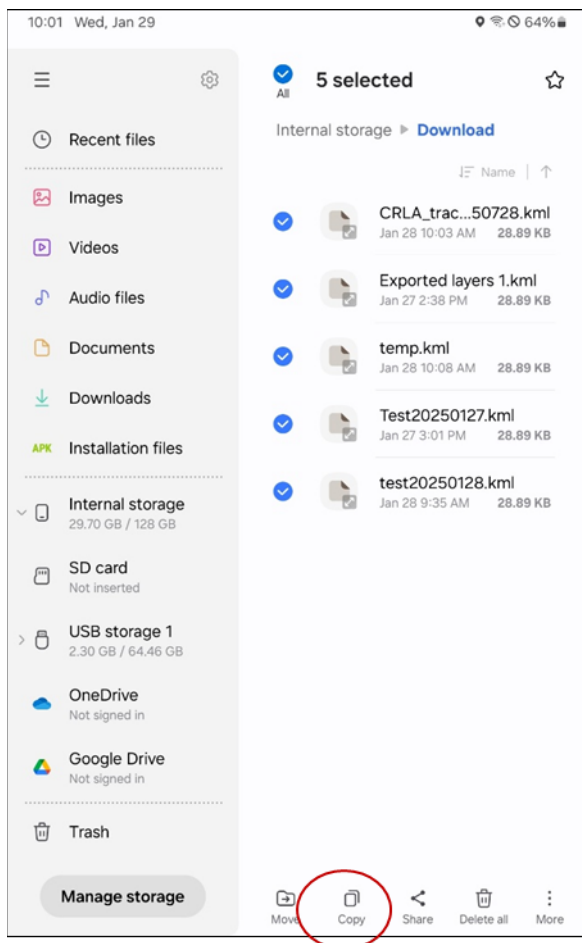


Avenza Data Back Up

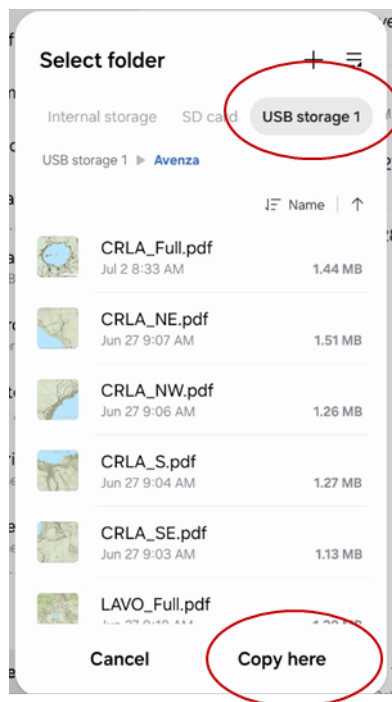
If already backing up Field Maps data to a laptop or second Android, it is probably easier to backup Avenza data the same way. However, if needed, Avenza data can be backed up to a flash drive or SD card. Take the tablet out of Kiosk Mode to access the My Files app. Here, navigate to Internal Storage/Download.



Press on the file you want to backup. You can also select more than one or all. Then click Copy.



This will open a window to Select folder. Select the SD card or flash drive where you want to save the backup. Press Copy here.



You should get a message that the copy is complete.

Remove Offline Maps

When a map is no longer needed on the tablet, it should be removed. The original web maps in AGOL will still be available for re-download at any time.

In Field Maps, go to Maps. Select the map you no longer need and make sure there are no outstanding records to sync. Click the three dots to the right of the screen and tap **Remove area**.

