How to Recover the Runtime GDB

When sync is not working

ORWA BLM Mobile Team

10/12/2022

Contents

Purpose

The S1 Mobile Mapper Application stores offline replicas in a runtime geodatabase (GDB) folder as a **.geodatabase file** (mobile geodatabase file) before they are synchronized to the feature service.

In the event the offline edits cannot be synchronized normally via the mobile application to agol, this document outlines the process to manually sync it back. We need to locate our runtime GDB folder on our mobile device, which depends on if our mobile device uses an SD card or not and save that folder to our local computers (or Citrix). Then we use one of two options; the Sync tool (ArcPro v2.1 or higher) or use the **Append** tool in ArcGIS Pro to append the features from the .geodatabase file to the feature service in ArcGIS Online.

NOTE: This process should be used as a last resort if the normal sync process is not working for some reason. Prior to doing this, ensure you have a good wifi or data connection and ensure the feature service or webmaps is accessible via web browser, and attempt to sync one last time in the normal way just to be sure.

Step 1a: Android Mobile Device with an SD Card Start Here

In the S1 Mobile Mapper application, you may need to use the **Recover** button option to move your geodatabase folder from your SD card to a folder that is more accessible through the Android file system. The Recover button is not needed for mobile devices that **do not** have an SD card. **No Mobile SD Card**, start with Connect via USB to Local Computer below.

The Recover button copies the data to the S1 Mobile Mapper's internal storage folder called RecoveredGDB, so the user can grab it later (a workaround for Android 11 lockdown of its SD card storage access).

The Recover Button for Mobile with SD Cards

NOTE: You do not have to use Wi-Fi to use the Recover button in the S1 Mobile Mapper application.

☐ In S1 Mobile Mapper, **open** the **Manage Map Layers window** from the Application toolbar by tapping on the Manage Map Layers icon.

Manage Map Layer Icon in S1 Mobile Mapper App

☐ **Tap** the **Map Data picture** icon on the Manage Map Layers page to open the list of Map Data downloaded to the S1 Mobile Mapper app.

☐ Second, **Check** the box for the map data you want to add to the Recovery folder. Third, click the **Recover button,** and last, confirm the folder your GDB Recovery data is being saved to, then click **OK.**
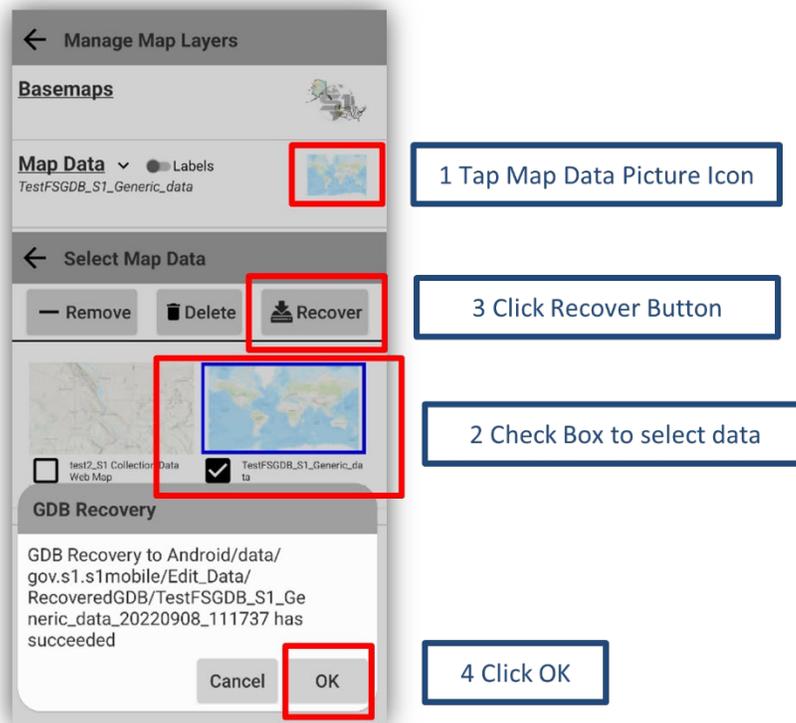
*Manage Map Layers Recover Option for Map Data*

Step 1b: Android mobile device without SD card start here. Or continue from step 1a

Connect the mobile device to a local computer via USB to locate the runtime geodatabase file (.geodatabase file). The runtime geodatabase file will be transferred to the local computer to be used in ArcGIS Pro for syncing data with ArcGIS Online data services.

☐ Connect the mobile device to your computer via USB.

NOTE: Ensure Files and Media are enabled in the S1 Mobile Mapper App Settings. An example:

Settings → Apps → S1 Mobile → Permissions → Allowed
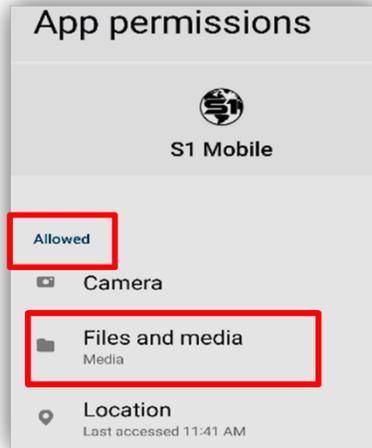
S1 Mobile Mapper App Settings Permissions

☐ **Allow** access to your data on your connected device within the pop-up window. (If you do not see an "allow access" pop-up, check your S1 Mobile Mapper app permissions settings from the **NOTE** above).
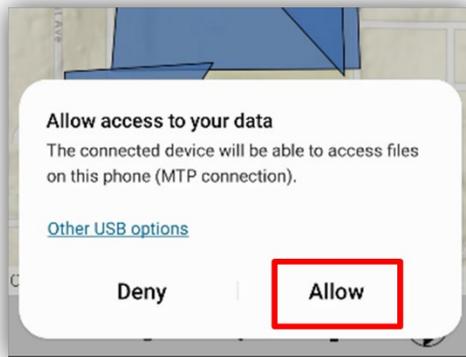

Allow Mobile Data Access Pop-up Window

☐ Use Windows File Explorer on your computer to navigate to one of the following locations to confirm the .geodatabase file location:

NOTE: If unable to browse files using the Android device, you may need to install a third party file explorer application to access the data.

a. **Device with SD Card (after the Recover button in S1 Mobile Mapper App):**

This PC\[YourDeviceName]\Card\Android\data\gov.s1.s1mobile\Edit_Data \RecoveredGDB
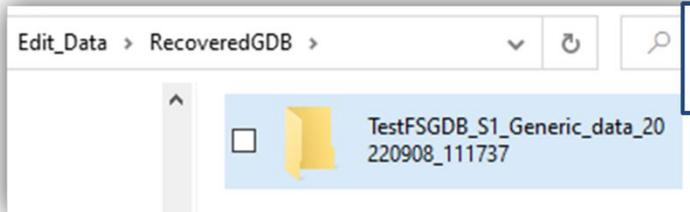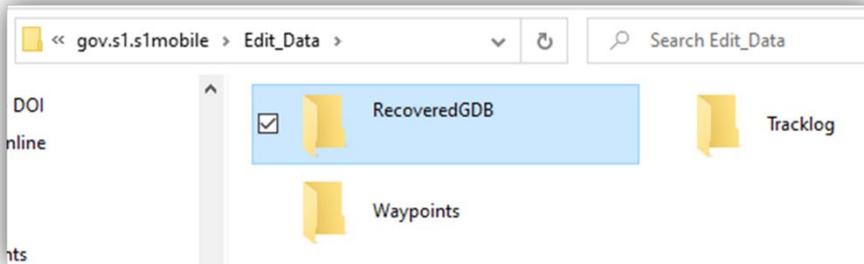
The RecoverGDB folder to Runtime GDB Folder

b. **Device without SD Card:**

This PC\[YourDeviceName]\Phone (internal storage) \Android \data \ gov.s1.s1mobile\Edit_Data
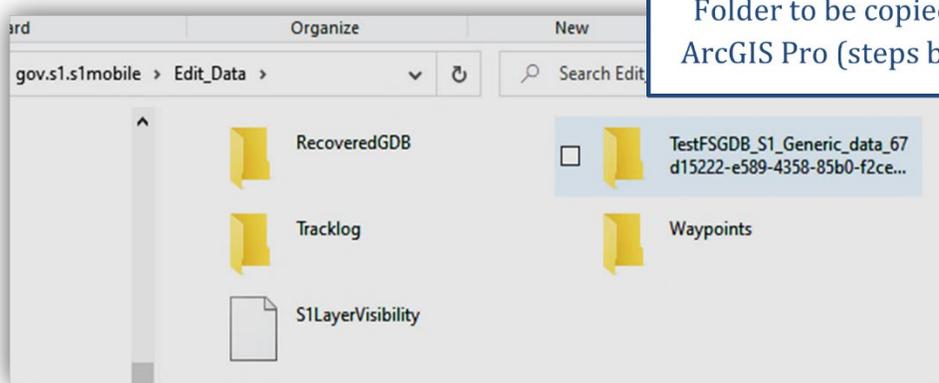
Runtime GDB Folder that Contains the .geodatabase File

Confirming the .geodatabase File Location

☐ Confirm that the .geodatabase file is in the folder to be copied to a local computer or Citrix C:\ drive.

☐ Depending on if the data to be recovered is from a **Web Map** or **Feature service,** the .geodatabase file will be from the location listed above, **plus** these next folders:

Device **with** SD Card:

For Web Maps: (…\Edit_Data) \RecoveredGDB \[name of your web map]\p13\.geodatabase

For Feature Service: (…\Edit_Data) \RecoveredGDB \ [name of your Feature Service]\. geodatabase

Device **without** SD Card:

For Web Maps: (…\Edit_Data)\[name of your web map]\p13\.geodatabase

For Feature Service: (…\Edit_Data)\ [name of your Feature Service]\. geodatabase

The .geodatabase File in the Runtime GDB Folder

☐ After confirming the .geodatabase file is in the folder, back up one folder level and **copy the entire Runtime GDB folder to your computer** or Citrix C:\ drive. **See Notes Below.**
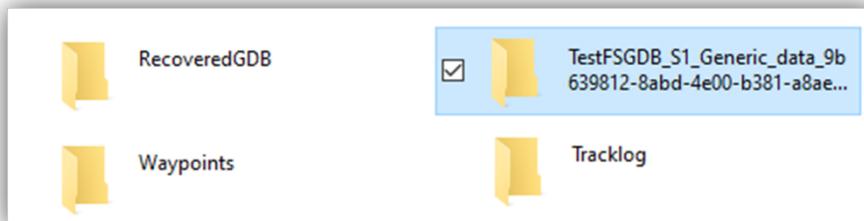
Copy the Runtime GDB Folder to Local Computer or Citrix

NOTE 1: If using ArcGIS Pro on your local computer (verses on Citrix), then use a local folder address to save the Runtime GDB folder into:

☐ Build the local folder address below to **copy the runtime GDB folder** into for use in ArcGIS Pro:

C:\Users\<username>\Documents\ArcGIS\Projects

NOTE 2: Android 11 BLM employees that use Citrix, copy this folder to the **C: \ tmp folder** on the Citrix server you are connected to.

NOTE 3: FS employees, cannot run Pro Tools from the T : drive , it needs to be copied to your Local C: drive.

More Information

How To: Access offline edits from ArcGIS Field Maps directly from an Android device.
https://support.esri.com/en/technical-article/000026798

Step 2: Adding Data to Sync in ArcGIS Pro

We need to create a blank map template to use either the **Sync tool** or the **Append tool** to sync our mobile data to ArcGIS Online data.

NOTE: See below if you get an error message #50 pop-up for trying to create a blank map template.

- ☐ Open ArcGIS Pro, make sure ArcGIS Pro is up to date (this is Pro v2.9.2). Newer versions of the application are less prone to errors and crashing.

- ☐ Sign-in to your ArcGIS organization, in the upper right corner of the ArcGIS Pro startup page.
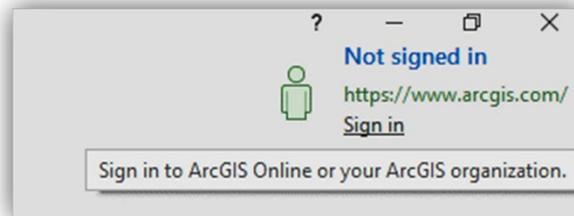

Login for ArcGIS Organization in ArcGIS Pro

- ☐ Click on a **New Blank Map Template** in the center of the start page.
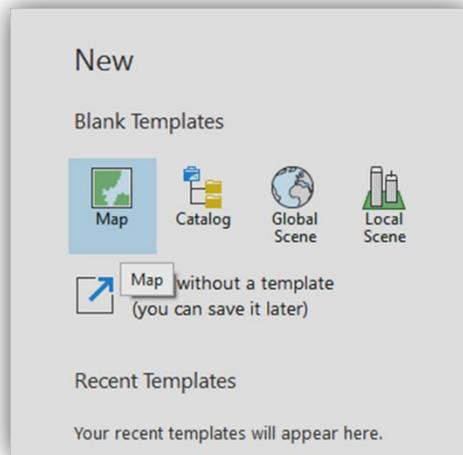
New Blank Map Template Selection in ArcGIS Pro

☐ If you get an error #50 message trying to start a new blank Map Template, then go to Security Error Message listed at the end of this document to fix the error. Once the error is fixed or you **did not** get an error pop-up message #50, then continue here.

☐ Give the project a new name and browse to the location you want to store the new project.
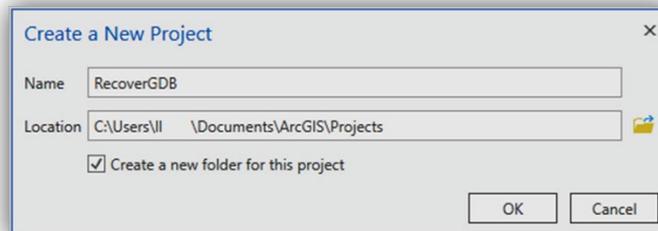

Create a New Project Name and Location in ArcGIS Pro

☐ ArcGIS Pro opens with a new blank map template listing two default basemaps in the Contents window.
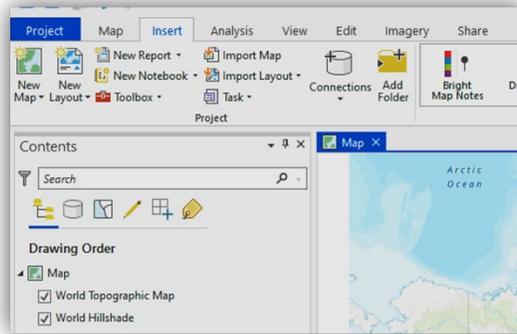
New Blank Map Template with Basemaps in ArcGIS Pro

☐ Go to the Catalog window (usually on the left-hand side of the map view)and expand the **Folders** file.

☐ Right click on the **Folders file** and click **add a folder connection. Browse** to the folder storing your .geodatabase file that you copied from your mobile device to your local computer. Then click OK.
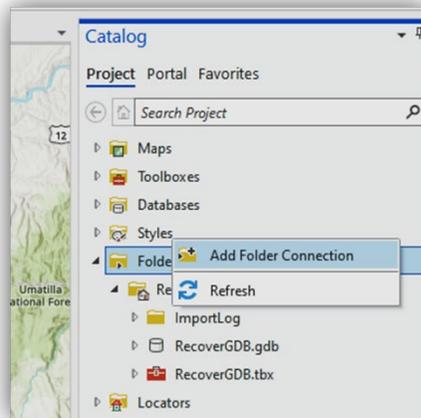

Folders File in the Catalog Window
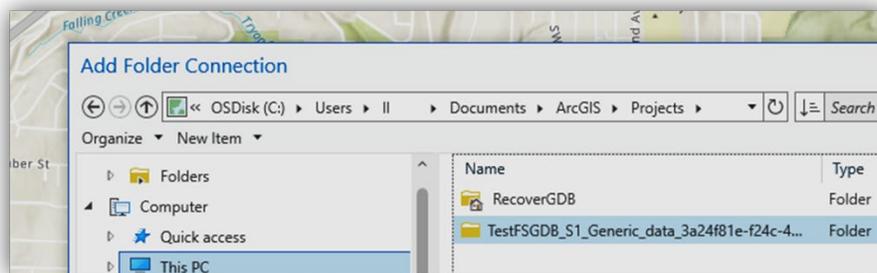
Add Folder Connection to the Runtime GDB Folder

☐ Once connected to the Runtime GDB folder in the Catalog window, expand the folder to the .geodatabase file (if it is a web map, further expand the **p13 folder**) and then

expand the .geodatabase file to expose the **feature class** files.
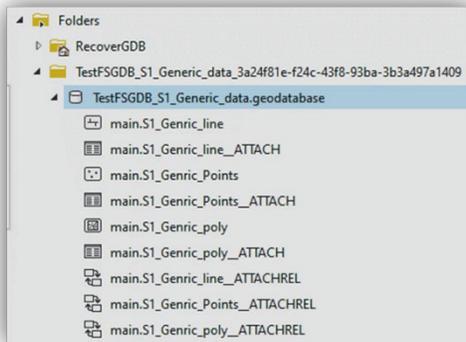
Feature Classes Stored in the .geodatabase File

☐ Using the Ctrl key, **select** only the feature classes that you want to sync and **drag them to the map.**

☐ **NOTE:** No need to grab the table icons or relational icons from the GDB, just the spatial feature class icons you want to sync.
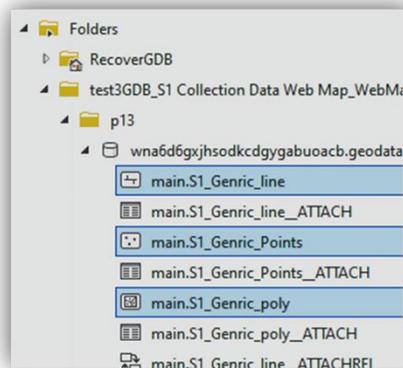
Selected Feature Classes Stored in the .geodatabase File

☐ The feature layers will be listed in the **Contents** window.
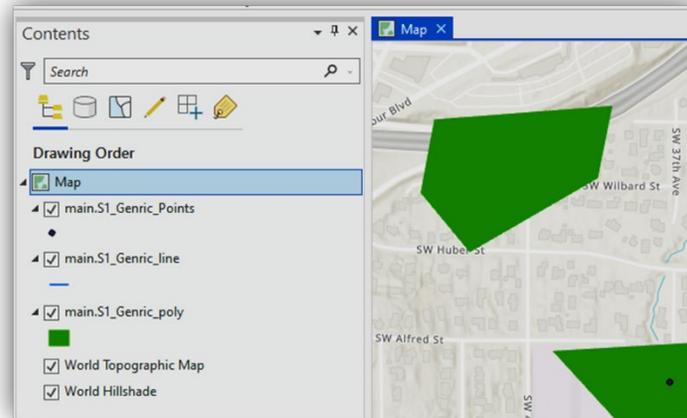
Feature Class Layers Listed in the Content Window

☐ Next, you will choose which tool in ArcGIS Pro will work
   best to sync your mobile data to data on ArcGIS Online.

Step 3: Recover Data Tool Options

There are a couple ways we can sync the runtime GDB from the mobile device to our data on ArcGIS Online. As **of ArcGIS Pro v2.1**, there is a **Sync** tool available in ArcGIS Pro to use explained in Option 1. Example of why you may need to use Option 1 is if there is a weak Wi-Fi connection that is keeping you from being able to sync from the mobile device.

Option 1: Sync Tool in ArcGIS Pro v2.1 & Above

The Sync tool will sync your new data edits (deletes and added data) to your online data. **NOTE:** This option can only be used it if is the same user doing the recover that downloaded the data using the same agol account the mobile version is tied to the user's account.

☐ On the ribbon at the top in ArcGIS Pro, select the **Map tab.**
   In the **Offline group,** the **Sync and Remove tools** become
   active when a valid offline dataset is added to the map
   contents.
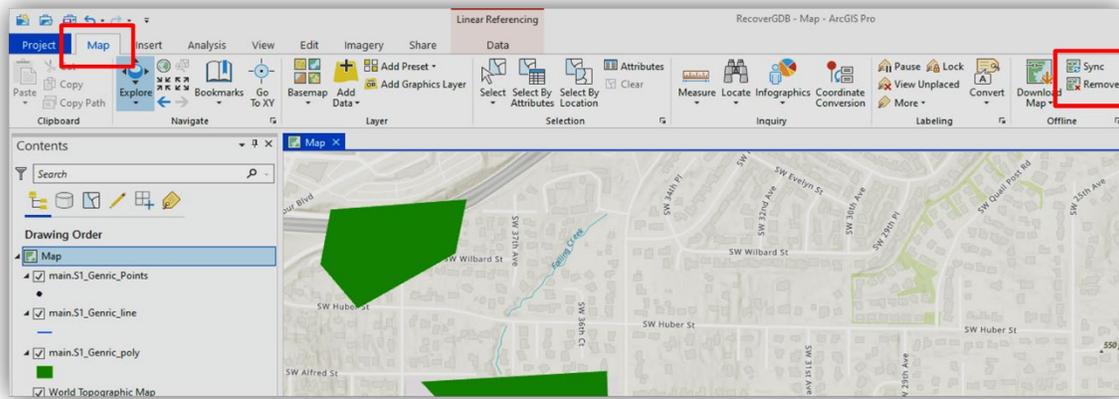
Sync Tool Active in the Offline Group of the Map

☐ Highlight the map document at the top of the list and then click **Sync.** This should sync all feature layers listed in the Contents window to the correlated hosted feature service in ArcGIS Online.

☐ Confirm your data has been synced by opening ArcGIS Online and checking your data updates in the Map Viewer.

Option 2: Append Tool in ArcGIS Pro

In ArcGIS Pro, the **Append tool** can be used to append the runtime GDB data to data stored on your local computer or to data stored on ArcGIS Online.

In the examples below, we will append the runtime GDB to data stored on ArcGIS Online. Below are the steps to **Append** with data through a Portal to data stored on ArcGIS Online. **Only use the Option 2 Append tool if the Option 1 Sync tool does not work for you.**

**CAUTION NOTES: Append Tool**

- Use the **Select tool** to select only the features that have been edited (newly collected features offline) prior to initiating the Append tool. Appending data that was not edited will cause duplicate records. For example, you created two new polygons, only select those two polygons, and then use the Append tool on the polygon layer. If no polygons are selected, then it will append all polygons in the runtime geodatabase layer to the target layer creating duplicates. **Use this method** if you know what features are new and can select only them. Usually, a small set of newly created offline data collected.

- It may be easier to **delete the original record** from the hosted service prior to initiating the Append tool. **Use this method** if a whole dataset was downloaded onto the mobile device and new data features were created and/or deleted. **Recommend**

saving a backup copy of the hosted feature service on AGOL before using the append tool.

- If the dataset contains related tables, be sure to append data from the runtime GDB table to the hosted related tables as well.

Assumed:

- You are signed into your organization in ArcGIS Pro from the start page in the upper right corner.
- You opened a new blank map document in ArcGIS Pro without an error message as explained above.
- Made a folder link to the recover geodatabase stored on your local computer (or working within Citrix) listed above.
- And, you have selected only the feature classes that you want to sync and dragged them on to the map.

☐ After you have completed the assumed steps listed above, then go to the **Catalog window** in ArcGIS Pro and select the Portal tab. This is how you will connect to your data hosted on ArcGIS Online.
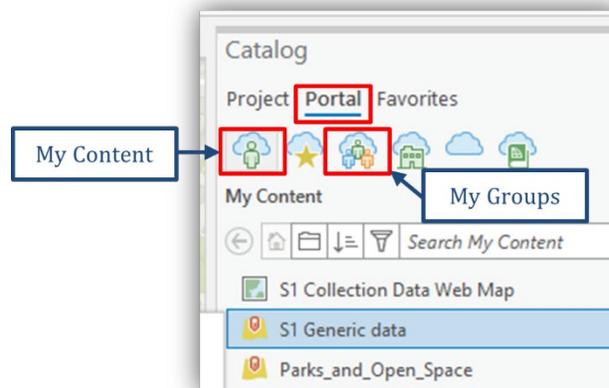
*Portal Connection to ArcGIS Online Data in the Catalog Window*

☐ Select to use the **My Content** option to find the hosted feature layer or select the **My Groups** option and then locate the hosted feature layer through the Portal to ArcGIS Online.

☐ Select and drag the hosted feature layer into the map and the layers should list in the **Content** window.

☐ Confirm you have both of your data sources listed in your Contents window.

☐ It is beneficial to tap the **List by Data Source** in the Contents menu to distinguish between the .geodatabase layers (runtime GDB) and the hosted service layers. Note the **icons** next to the different layer group types.
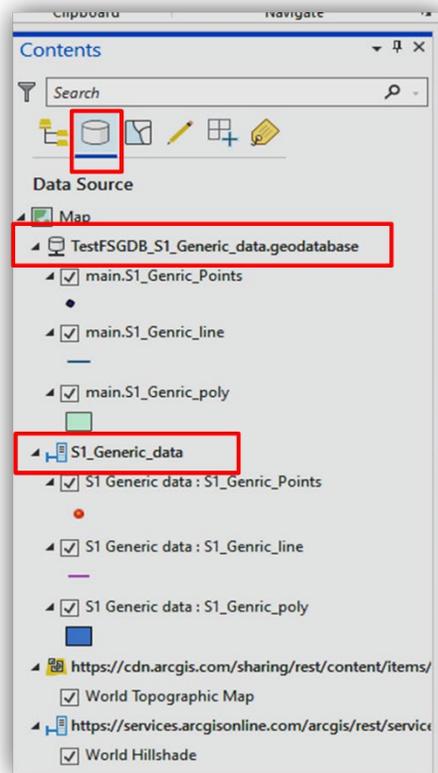
Showing the Feature Layers by Source in the Contents Window

NOTE*: If you need to connect to a Web Map in ArcGIS Online, try to locate the hosted feature layer that serves to that web map **OR** drag the web map into ArcGIS Pro, which will open a new map tab for that web map. Then you would need to add the .geodatabase file to that new web map by going back to the Project tab in the Catalog window and dragging your .geodatabase feature classes onto that web map. Then move to the next step below.*
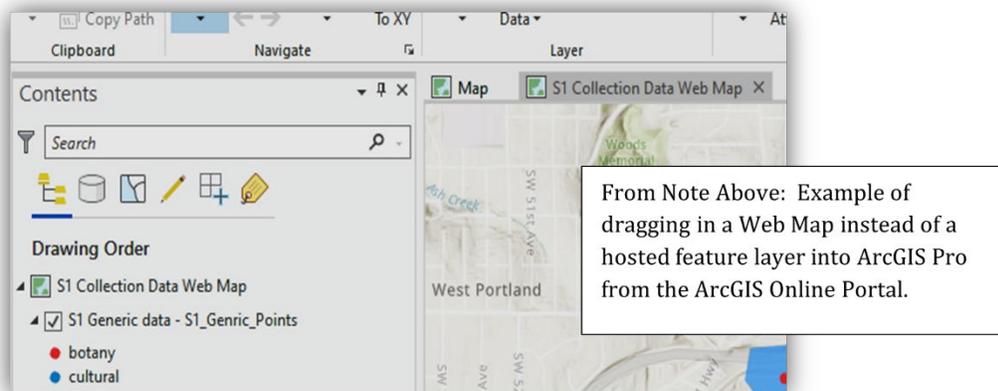

New Tab of Web Map Dragged onto the Map View

Option 2a Append: Select Features Method

Use this method if you know what features are new and can select only them. Only the selected features will be Appended. Usually, a small set of newly created offline data.

- ☐ Before running the Append tool, use the **Select tool** to
      select the edited features (new features collected) that
      you want to sync to the hosted feature layer <u>or</u> **Add a
      Clause** <u>or</u> SQL statement to select a subset of input dataset
      records. For example, if you have a date field, append
      only the features collected on or after a specific date.
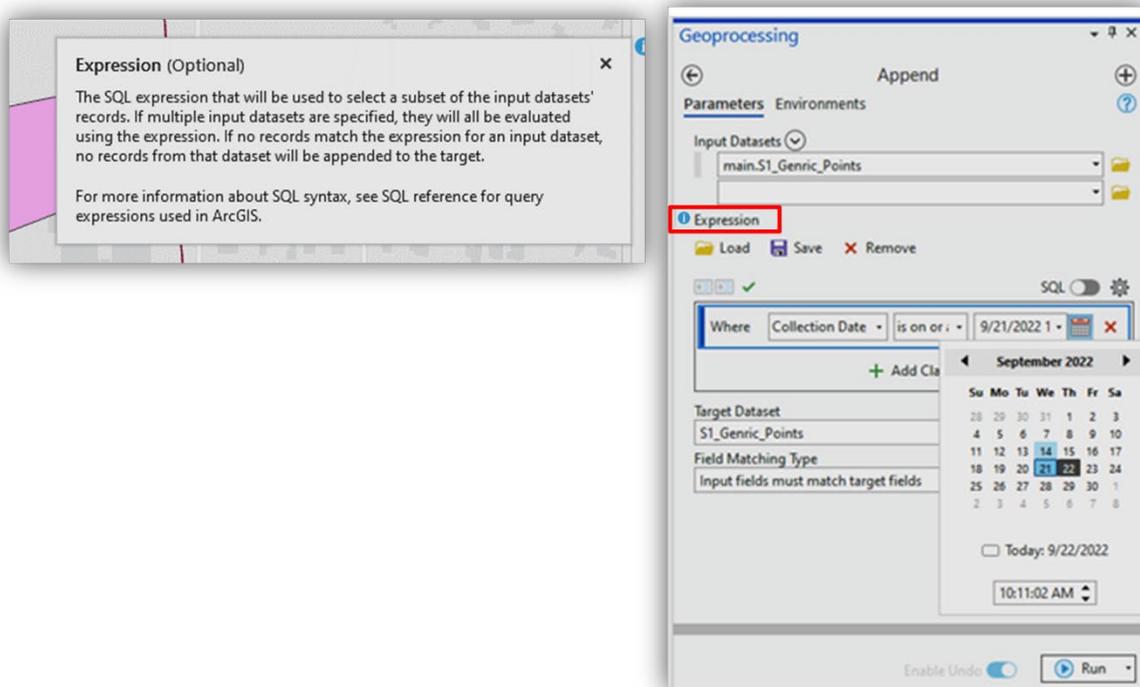
Adding an Expression for a Date Field in the Append Tool Window

Once the tool has run successfully, the appended data should be visible on AGOL.

- ☐ Confirm your data has been synced by opening ArcGIS Online
      and checking your data updates in the Map Viewer.

## *Option 2b Append: Delete Hosted Feature Layer Method*

Use this method if a whole dataset was downloaded onto the mobile device and new data features were created and/or deleted. **Recommend** saving a backup copy of the hosted feature service on AGOL before using the append tool. **Caution:** this method is not recommended if more than one user potentially has synced any data to the service since the mobile version was downloaded, as that data would be lost in this workflow.

☐ Before we delete a whole hosted feature layer in ArcGIS Pro to use the Append tool, let's first make a backup copy of the hosted feature layer in ArcGIS Online (AGOL). **See** [How To: Create an independent copy of a hosted feature layer in ArcGIS Online](#).

☐ Confirm in your ArcGIS Online account that you have a new feature layer backup copy listed in **My Contents.**

Confirming the Backup Copy of a Hosted Feature Layer in ArcGIS Online

☐ **Back in ArcGIS Pro,** right click the hosted feature layer you want to delete records from, select the **Selection** option, and click **Select all.**
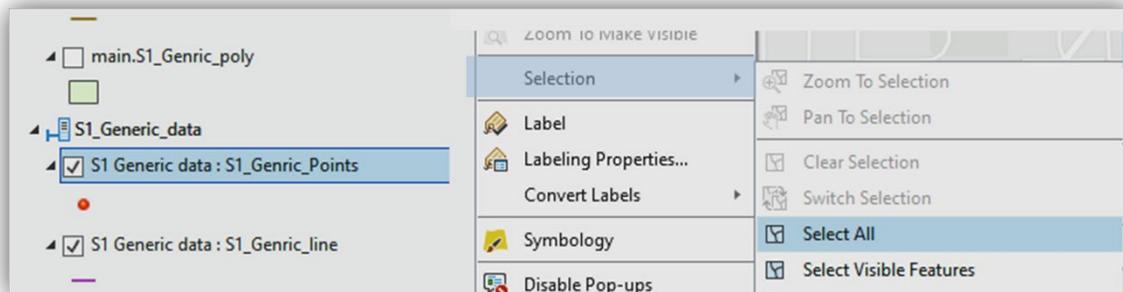
*Select All Feature Tool for a Layer Listed in the Contents Window*

☐ Then Select the **Delete** tool from the **Edit** tab above on the top ribbon. This will delete all records, but the empty hosted feature layer will still be listed in the Contents window, right click the layer, and open the attribute table to confirm all records are deleted. This empty layer will now be your target layer in the Append tool. Do this for each layer you need to append all new features to. **The Undo button will undo the delete if you need it.**
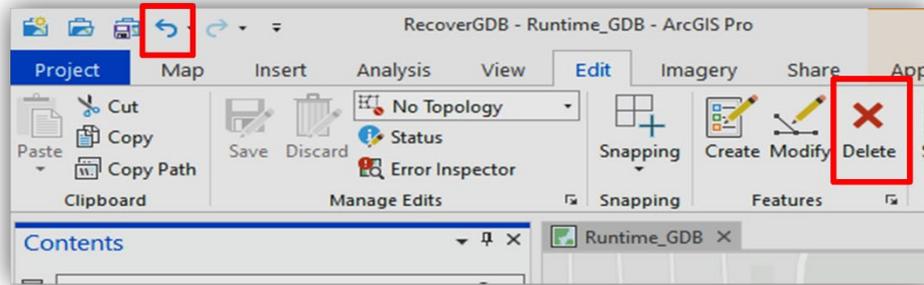
*The Activated Delete Tool and the Undo Tool in ArcGIS Pro*

Running the Append Tool (after options 2a or 2b)

☐ On the **Analysis tab,** in the **Tools group,** scroll down to find the **Append tool,** and tap to open the tool. The Append tool will need to be run against each feature layer and any related tables. **For example,** run the Append tool for the point layer, then run it again for the line layer and then for the polygon layer if there were edits made to each of the layer types.
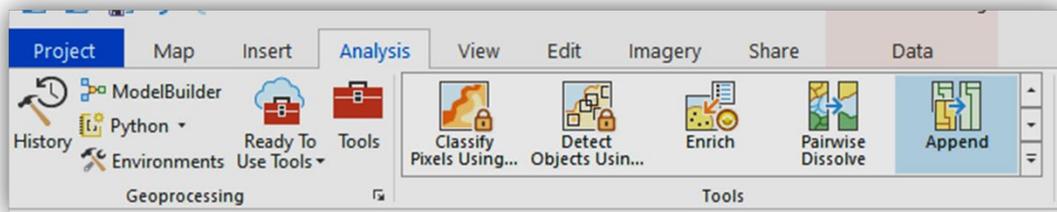
The Append Tool in the Tools Group on the Analysis Tab

☐ The **Input Dataset** will be the feature layers in the .geodatabase (runtime geodatabase), one layer type at a time. The **Target Dataset** is the hosted feature layer. If the dataset contains related tables, be sure to append the applicable tables. The relationship between the parent feature and table record should be maintained once the data is appended.

☐ Keep the defaults for the tool settings, even if the dataset uses subtypes (even for VMAP). **Toggle ON the Enable Undo** shown at the bottom of the Append tool inputs window, just in case you need to undo the Append tool actions.
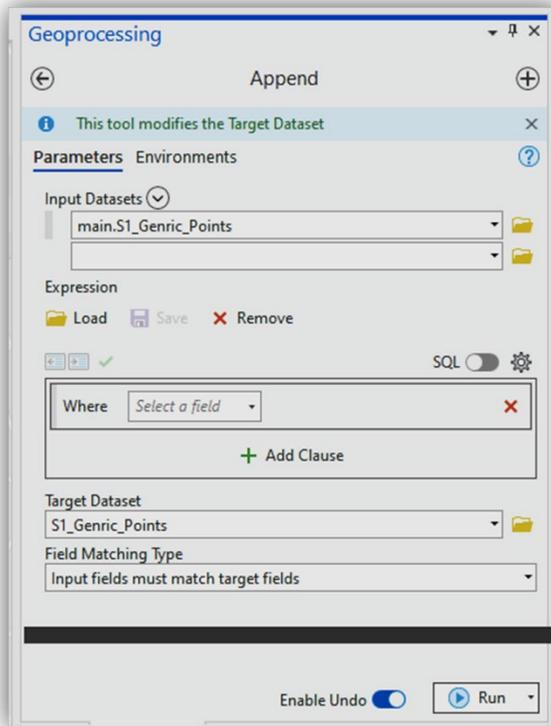
Append Tool Settings and Inputs

☐ Run the Append tool.

Once the tool has run successfully, the appended data should be visible on AGOL.

☐ Confirm your data has been synced by opening ArcGIS Online and checking your data updates in the Map Viewer.

Possible Error Message Fix and Append Related Table Records

*Tip 1. If the tool gives an error, re-run Append and change the Schema Type from *Input schema must match target schema* to *Use the Field Map to reconcile schema differences*, even if no changes to field mapping needs to occur. For some reason this often reconciles issues.

Hover over the Info icon for explanation of how the attribute fields from the input datasets will be transferred or mapped to the target dataset.
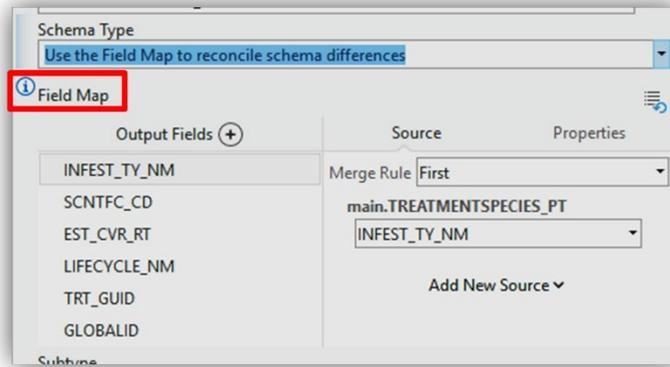
Schema Type Change & Field Map Info on Attribute Fields

* Tip 2. To append related table records for a subset of the data in the runtime GDB, Select the parent feature(s) in the map, right click on the layer in the Contents window, select Attribute Table. Once the Attribute table is open, tap the action button (3 bars) -> Related Data -> then select the applicable related table. Now that the related table records are selected proceed with using the Append tool for the table.
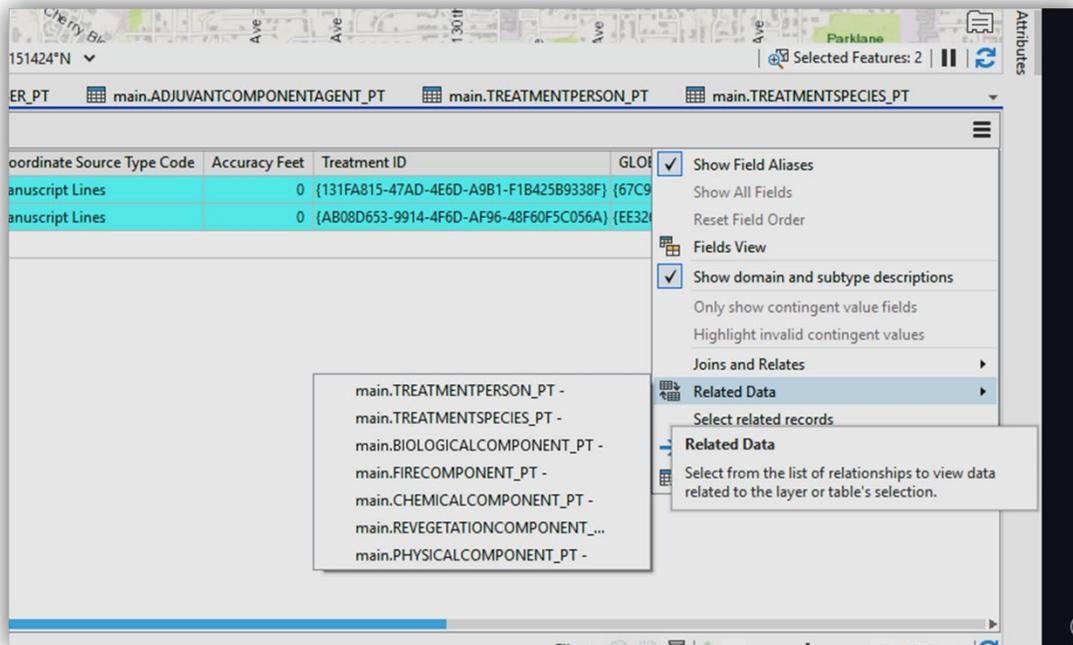

Append Related Table Records for a Subset of Data

More information:

Security Error Message #50 in ArcGIS Pro
If you get an error message #50 when you try to create a **new map template**, it is most likely because of security setups on your work computers. See the support doc link below to build a connection locally on your computer (or link to a Citrix folder) to solve the error:

https://support.esri.com/en/technical-article/000026929
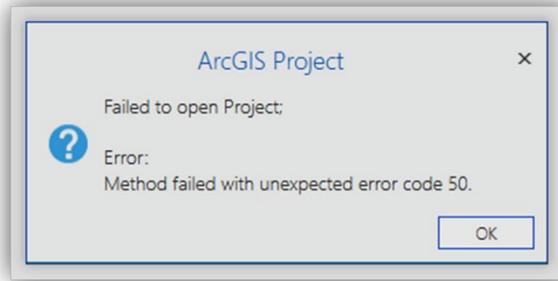
ArcGIS Project Error Message #50

NOTE: If using a local ArcGIS Pro, then use a local folder address:

☐ Build the local folder address below to store the **new map template** in and to **copy the recover runtime geodatabase folder** into for use in ArcGIS Pro:

☐ C:\Users\<username>\Documents\ArcGIS\Projects

[S1 Mobile Mapper Team Website](#) and [Feedback & Ideas Page](#)