

## Procedure For Putting A GPS-Enabled GeoPDF Map On An iPhone or iPad

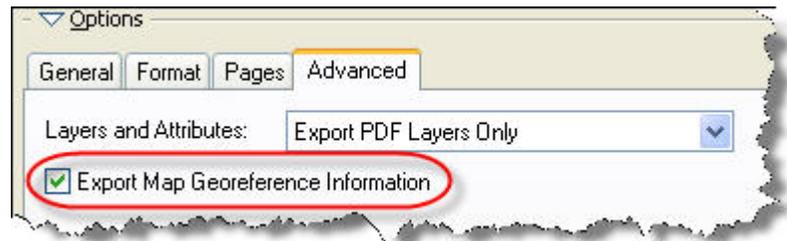
Carl Beyerhelm – GIS, GPS, and Data Management – Coconino National Forest – 7 Nov 2011

**Background** – iPhones and iPads (referred to here as iDevices) can accommodate GPS-enabled GeoPDF maps. Since the maps are geo-referenced, an iDevice's GPS position marker can move across its surface, permitting users to determine their location with respect to the map's features.

The procedures described here represent only a few of many possible approaches.

**Produce the GeoPDF and its corresponding QR code** – Map authors should follow these 4 steps to prepare a GeoPDF, and to make its content available to map consumers.

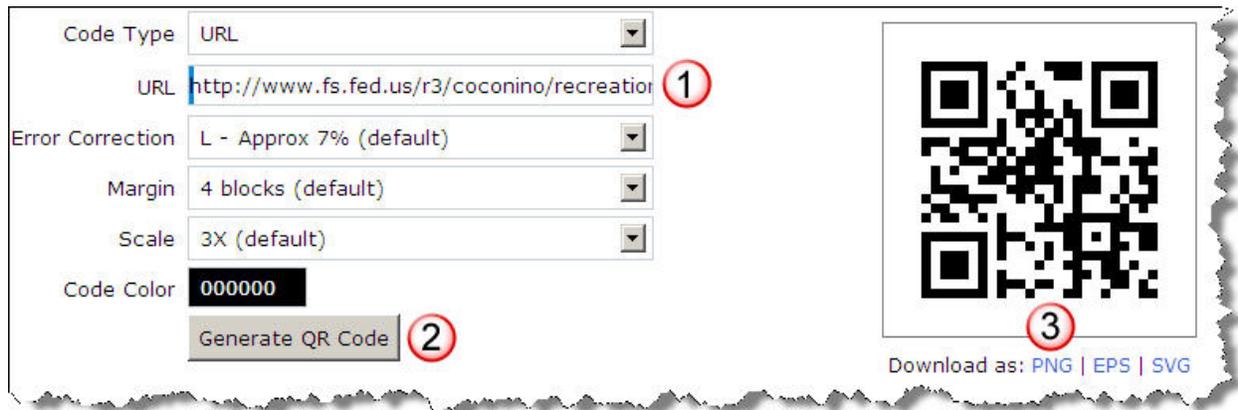
**Step 1** – Use the **File – Export** option in ArcMap to create a geo-referenced PDF of a map layout, being sure to check the **Export Map Georeference Information** box (right) on the Export dialog's **Advanced** tab.



**Step 2** – Publish that GeoPDF to a website, FTP folder, or other browser-accessible location that is available to the map's intended consumers.

**Step 3** – Use the sequence described below to generate a QR code representing the GeoPDF's URL. Many on-line QR code generators are available. I used this one: <http://delivr.com/qr-code-generator>

1. Copy and paste the GeoPDF's URL into the indicated location.
2. Click **Generate QR Code**.
3. Download the resulting QR code image to your PC in **PNG** format.



**Step 4** - Make that QR code available to the map's consumers. For instance, the QR code could be:

- Printed in an Incident Action Plan,
- Printed on a hardcopy version of a map,
- Stapled to a bulletin board in fire camp,
- Published on a web site,
- Affixed to a public information kiosk, or
- Affixed to a Carsonite post at a trailhead.



**Configure the iDevice to make use of GeoPDF maps** – Map consumers should touch the **App Store** icon (left), and then follow these 2 steps to prepare their device for making use of GeoPDF maps.

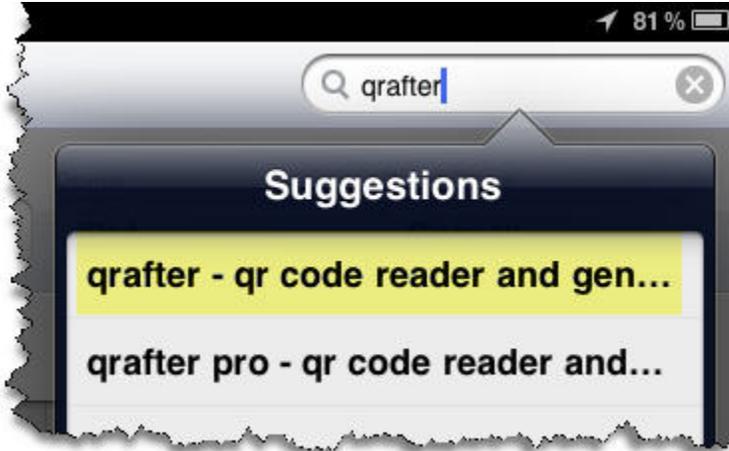
Hint: When the desired app has been located, first touch

FREE

, then touch

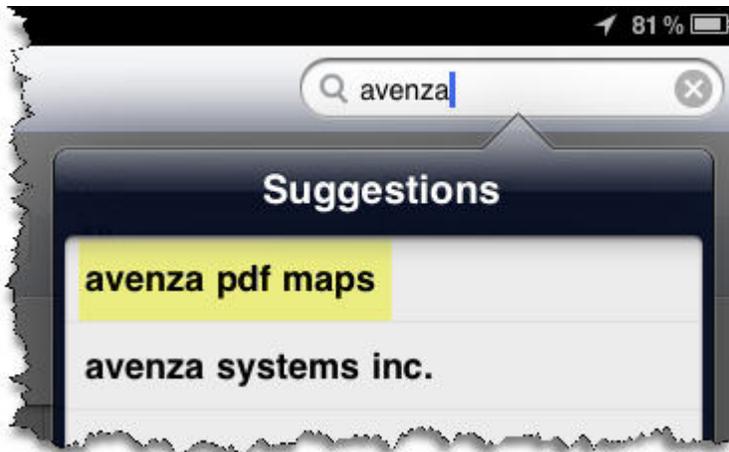
INSTALL APP

, and then standby while the app loads.



**Step 1** - Load the free **QRafter** app from the iTunes App Store to the iDevice.

This app will scan a QR code, and connect the iDevice to its URL.



**Step 2** - Load the free **Avenza PDF Maps** app from the iTunes App Store to the iDevice.

This app will cache and render a GeoPDF map, as well as provide live GPS positioning on the map.



**Scan the QR code and connect to its URL** – Map consumers should touch the **QRafter** icon (left), and then use the iDevice's camera to scan the QR code, example at right.

When the code block has been scanned, touch **Go to URL**, as below.



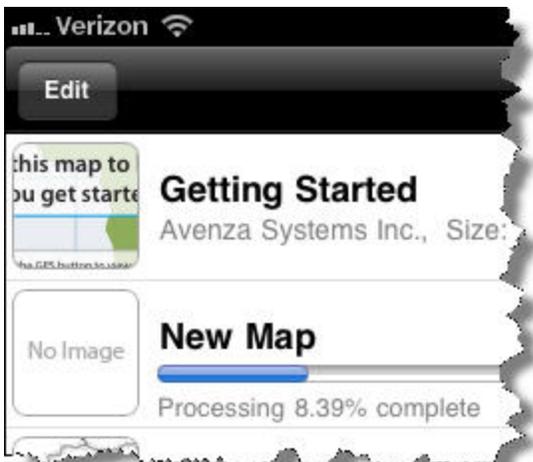
The GeoPDF's content will begin streaming to the iDevice if WiFi or 3G coverage is available.

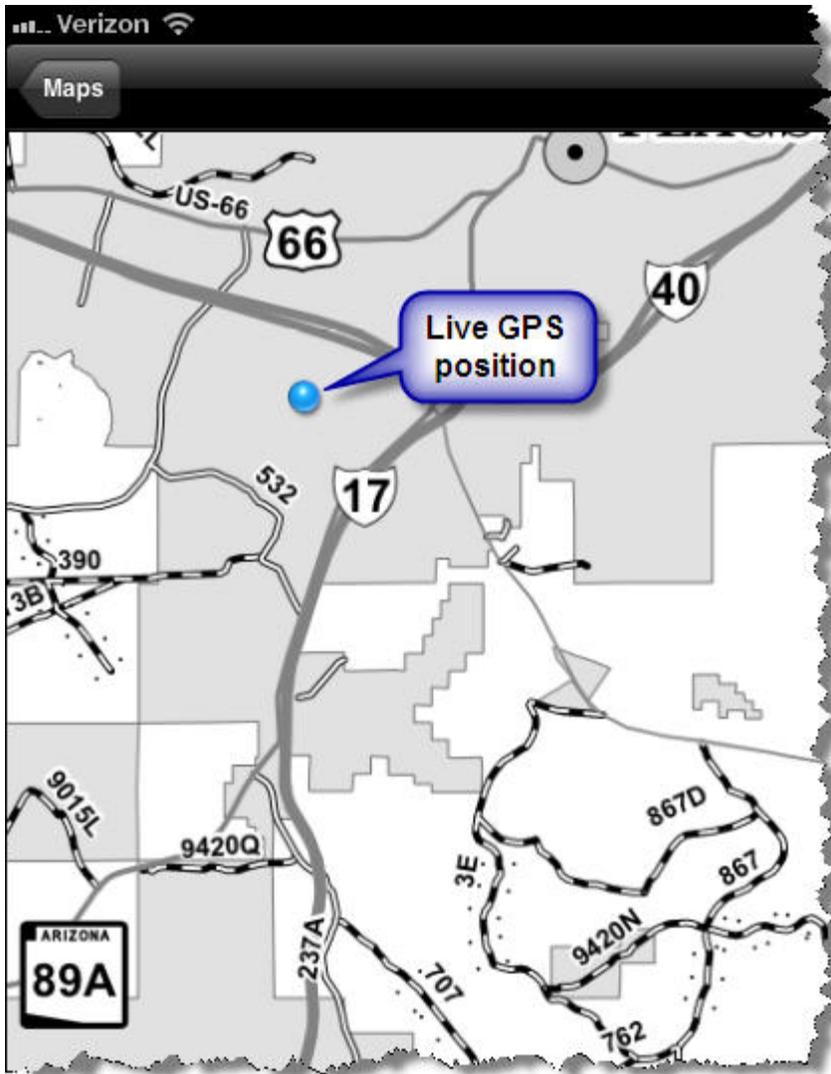


**Techie Note:** It is interesting to observe that the decoded URL doesn't match the original URL illustrated on page 1. This indicates that the QR coding service has utilized DNS, or some other method, to redirect the decoded URL to the original URL.

**Cache the map's content in the PDF Maps sandbox** – The **PDF Maps** app should recognize the file's streaming content as a geo-aware PDF.

When prompted, map consumers should touch **Open in PDF Maps** (right), to direct the file's content to the **PDF Maps** file store, and to initiate processing of the map's content (below).





**Activate the map** – When processing is complete, the new map will be listed on the **Maps** page.

Touch a map's entry on the **Maps** page to open it in **PDF Maps**.

Since the map's content is cached on the device, WiFi or 3G coverage is not required for map use.

However, only iDevices with 3G capability are able to provide true GPS positioning. WiFi-only iPads can provide a positioning service, but it is not GPS-based, and it is generally less accurate than GPS positioning.

**Move around the map** – Users may pan, zoom out, or zoom in using the flick, pinch, or expand gestures on the multi-touch screen. The maximum zoom level is 400%.

**Use map view functionality** – The function of 7 buttons appearing in map view are described below.

 Center the map view on the current GPS position.

 Create a waypoint at the current GPS position. Users may rename a waypoint, attach an attribute, note, or photo, edit its coordinates, or delete it.

 35.17145, -111.68255 Displays the current GPS position's coordinates. Touch it to change the format of coordinate values.

 Facilitate organization of waypoints into folders, as well as exporting waypoints in CSV, GPX, or KML format.

 Expose tools to measure distance and area, add waypoints, orient the map to the compass direction, and find coordinates.

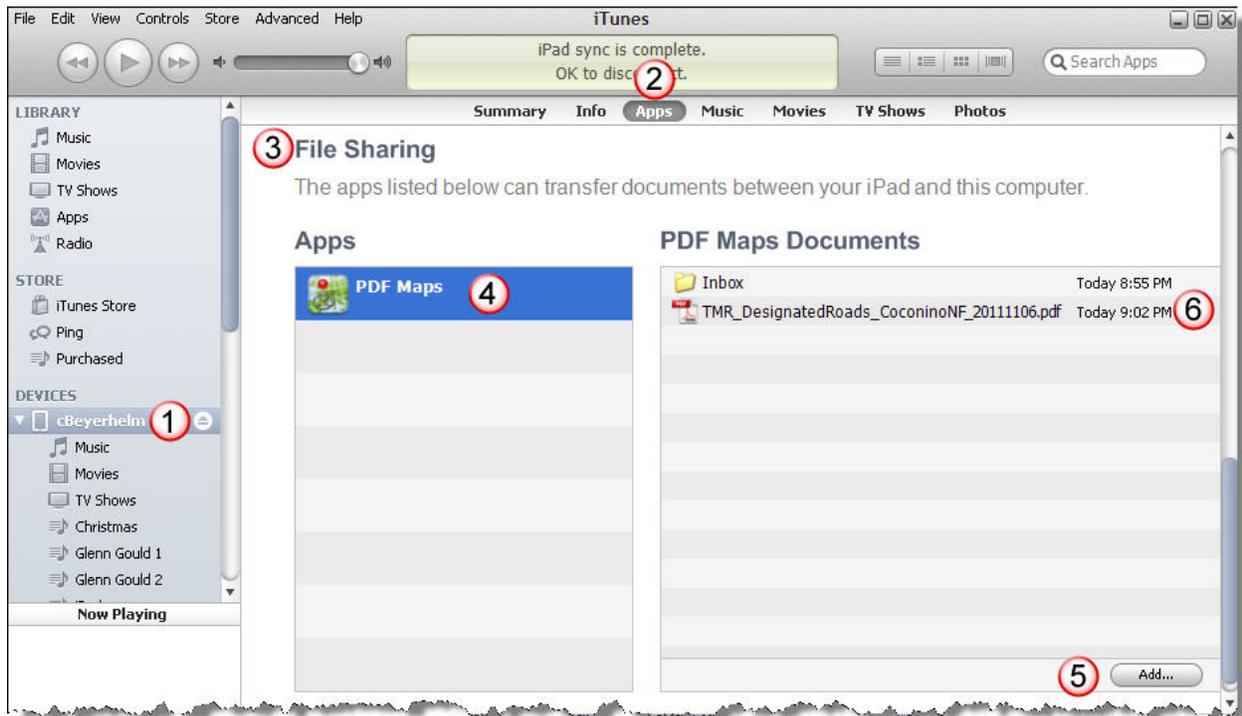
 Permit users to edit the map's name, set advanced map options, or delete the map.

 Return users to the map list.

**Alternate methods of importing maps to PDF Maps** – In addition to the QR code method described above, map consumers can import maps to **PDF Maps** from either iTunes File Sharing, or directly from http, https, or ftp URLs, as described in **Method 1** and **Method 2** below.

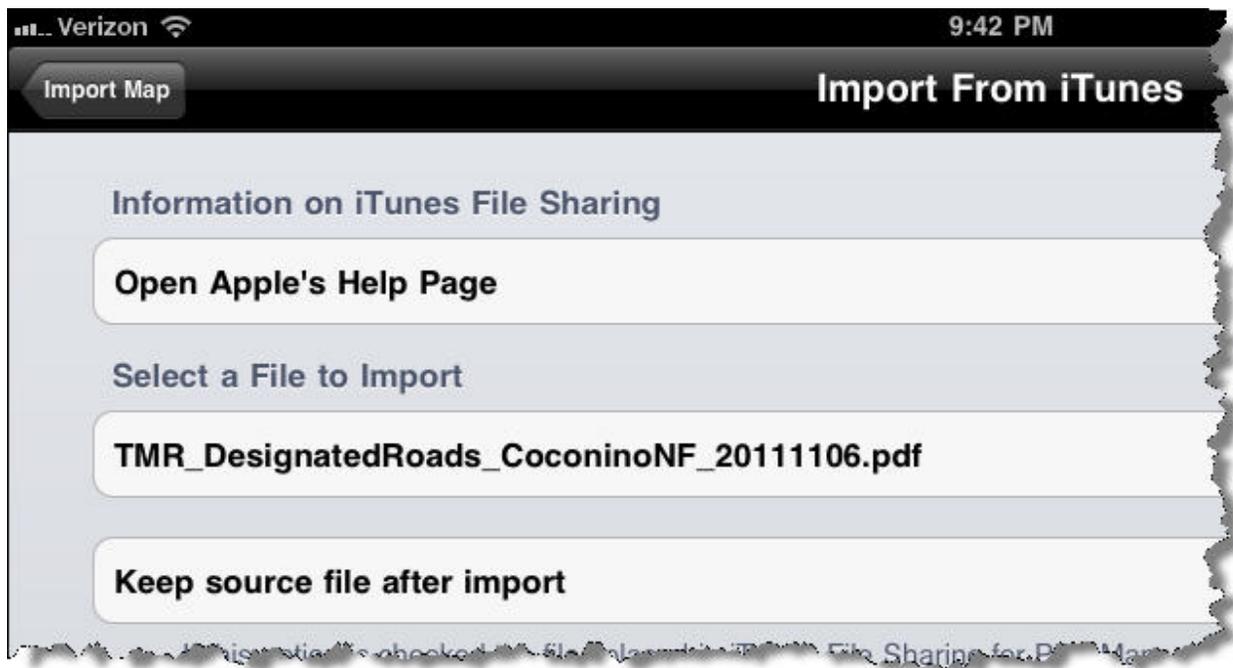
**Method 1 - Import maps from iTunes File Sharing** – GeoPDF map(s) may be staged in iTunes File Sharing by opening iTunes on a PC that is attached to an iDevice via its USB cable, and then following these steps.

1. Click on the attached device, **cBeyerhelm** in this example.
2. Click on **Apps**.
3. Scroll down to the **File Sharing** section.
4. Click on the app that file(s) are to be shared with, **PDF Maps** in this example.
5. Click on **Add...**, and browse the PC's filing system for GeoPDF(s).
6. The listed GeoPDF(s) are now synced and available for iTunes File Sharing.

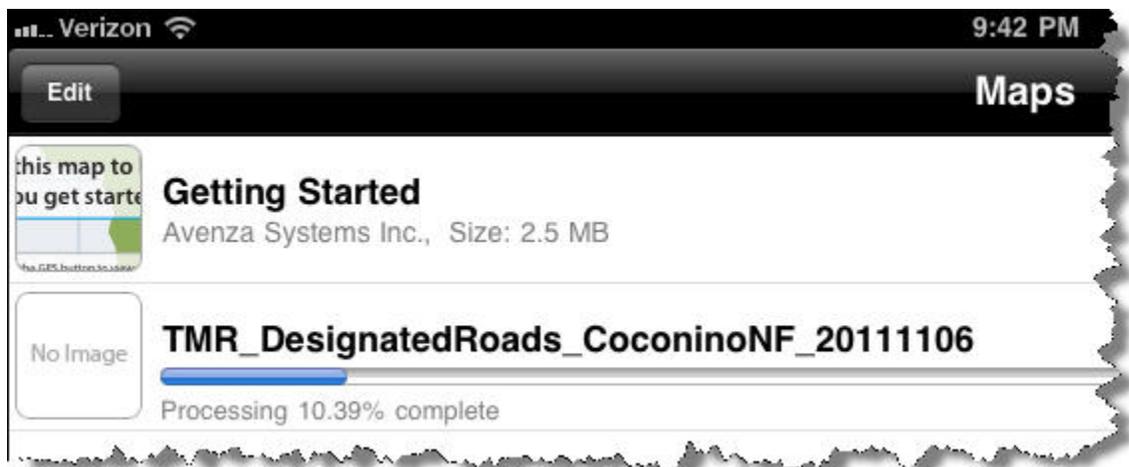


Next, open the **PDF Maps** app, touch  on the **Maps** page, and then touch **From iTunes File Sharing** on the **Import Map** page. Remember that the iDevice must remain connected to the PC by its USB cable.

GeoPDF file(s) that have been staged in iTunes File Sharing will be listed under the **Select a File to Import** heading. In this example, only the **TMR\_DesignatedRoads\_CoconinoNF\_20111106.pdf** had been staged in iTunes File Sharing.

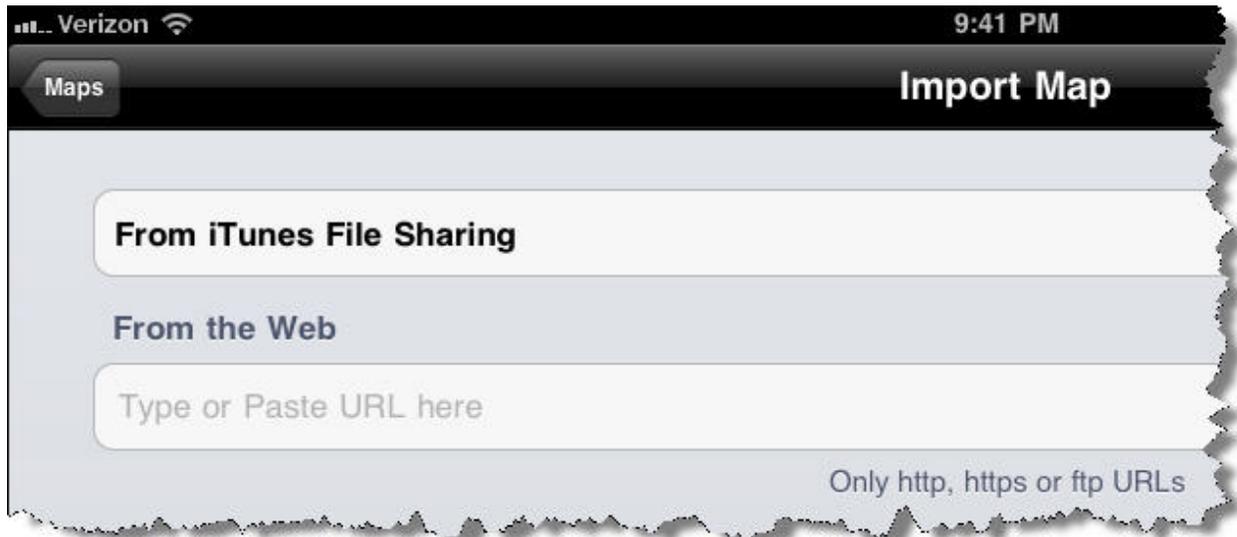


Touch the desired GeoPDF to initiate map import and processing of its content.



**Method 2 – Import maps from the Web** – GeoPDFs may be imported to **PDF Maps** directly from an http, https, or ftp URL, as described below.

Open the **PDF Maps** app, touch  on the **Maps** page, and then type or paste a GeoPDF's URL into the indicated location on the **Import Map** page to initiate map import and processing of its content. WiFi or 3G coverage is required.



### **Pros of PDF Maps**

Once the map has been imported, WiFi or 3G coverage is no longer required because the map's content has been cached on the device.

Remember that only iDevices with 3G capability are able to provide true GPS positioning, even in the absence of 3G coverage.

WiFi-only iPads can provide positioning service, but it is not GPS-based, is generally less accurate than GPS positioning, and is available only where WiFi coverage exists.

### **Cons of PDF Maps**

**PDF Maps** is, evidently, unable to interrogate the map's current view extents because it does not automatically refresh the view when the GPS position marker moves out of view.

### **Is there a Droid void?**

No way! [Mobile MFD](#) is a moving map app for Android devices that supports direct import of uncompressed GeoTiff maps, and shows a GPS position on the map. I have not tested this app.

**Credits:** Thanks to the Pad lad, Noah Bard, for a tip on QR codes.

**Comments and corrections are welcome:** 928.527.3635, [cbeyerhelm@fs.fed.us](mailto:cbeyerhelm@fs.fed.us)