

## Toolkit Task Guide #46 Global Positioning System and Real Time Tracking

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### Abstract

Real Time Tracking allows users of mobile office technology to view their current Global Positioning System (GPS) location within ArcMap while providing full functionality of the ArcMap software. In addition to viewing current location, GPS data can be saved directly into a file in shapefile format. An external antenna has been provided to all Kansas mobile office users and is intended for use with the Wide Area Augmentation System (WAAS). Real Time Tracking using the WAAS yields horizontal accuracies  $\leq 3$  meters 95 percent of the time. Real Time Tracking will not function with the use of the U.S. Department of Agriculture (USDA) GPS backup. Refer to the help menu in DNR Garmin for additional information regarding Real Time Tracking.

### Instructions

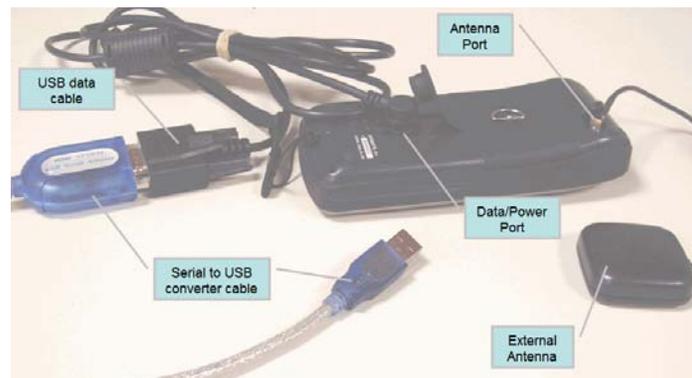
#### Setup the Garmin Map 76 for use with WAAS

1. Turn on **Map 76** and access the main menu (press **Menu** button twice)
2. From the **General** tab, rocker to **WAAS** and select **Enabled**
3. From the **Interface** tab, rocker to **Serial Data Format** and select **Garmin**

*Note: When the USDA GPS backpack is used without Real Time Tracking, the WAAS setting must be "Disabled" and the "Serial Data Format" setting must be RTCM in/NMEA out.*

#### Connecting the GPS Map76, Tablet, and External Antenna

1. Connect the GPS data cable to the center back of the GPS Map76; the same as when used to download data to a workstation.
2. Connect the opposite end of the data cable to one of the USB ports on the tablet personal computer (PC).  
*Note: For use with the tablet PC, each mobile office user has been provided a serial to USB converter cable that must be used to connect the GPS Map76 to the tablet PC.*
3. Place the GPS external antenna in a location that will have line-of-site to as many satellites as possible. If the antenna is used with a motor vehicle, it should be placed high and away from the motor. *The antenna should not be run through the window as the cord can become pinched if the window is closed. The antenna should instead be run through the door as the weather strip will not pinch the cable when the door is closed.*
4. Connect the external antenna to the antenna port on the GPS Map76. This is the same antenna port used with the USDA GPS backpack.



## Setup ArcMap and DNR Garmin

1. Open **ArcMap** and use the **Load Geodata**  button as needed.
2. From the Kansas toolbar, click the **DNR Garmin**  button.  
If the DNR Garmin window does not display “Connected” in the lower left-hand corner or errors are received, there are settings in DNR Garmin that will need to be adjusted.
  - a. The GPS port may need to be changed.
    - i. In DNR Garmin, click the **GPS** menu then click **Set Port**.
    - ii. Select one of the ports that are active (not grayed out.) There may be 4-5 ports available, but only one will work with the GPS unit. The port changes depending on which USB port you plug into on the tablet PC.  
*Note: Do not use the USB port option. Even though we are using a USB cable, the computer signal is not USB, it is a serial signal.*
  - b. Verify the GPS Baud Rate is correct.
    - i. In DNR Garmin, click the **GPS** menu then click **Set Baud Rate**.
    - ii. Verify the Baud Rate is set to **9600** (Garmin Default.)

## Real Time Tracking – Save to DNR Garmin Interface

1. Start Real Time Tracking: From the DNR Garmin interface, click the **Real Time** menu, then click **Start Real Time Tracking**.

*Real Time Tracking is now gathering data from the GPS unit which is being stored in the DNR Garmin interface. This is the same window that stores the GPS data after a download from the GPS Map76. ArcMap is also displaying the current location and a “bread crumb” trail of the GPS points.*

*To switch between the DNR Garmin interface and ArcMap, click the application on the task bar at the bottom of the monitor. Do not open more than one copy of ArcMap or DNR Garmin.*

2. Stop Real Time Tracking: Close the Real Time Tracking Window.  
*The data that has been captured in the DNR Garmin interface is now available for download to ArcMap using the standard process.*

## Real Time Tracking – Save directly to a shapefile

1. Start Real Time Tracking: From the DNR Garmin interface, click the **Real Time** menu, then click **Start Real Time Tracking**.
2. From the Real Time Window, select **Point, Line, or Polygon** for the output data type.
3. Click the **Load File** button
4. Navigate to the location the file will be stored on the hard drive.  
*Data associated with a Toolkit customer should be stored in a subfolder of the customer at C:\Documents and Settings\<Login Name>\My Customer Files Toolkit\<CustomerFolder>\.*
5. For the filename, use a descriptive name that does not have spaces or special characters.
6. Click **Save**
7. The Real Time Window will be available with the following recording options.



Mark Point - This applies only to point type shapefiles and marks the current location.



Start Recording - Starts recording locations to develop the point, line, or polygon data which is then stored in the shapefile.



Pause Recording – Stops recording but does not close the current shapefile.



Stop Recording – Stops recording and closes the current shapefile.