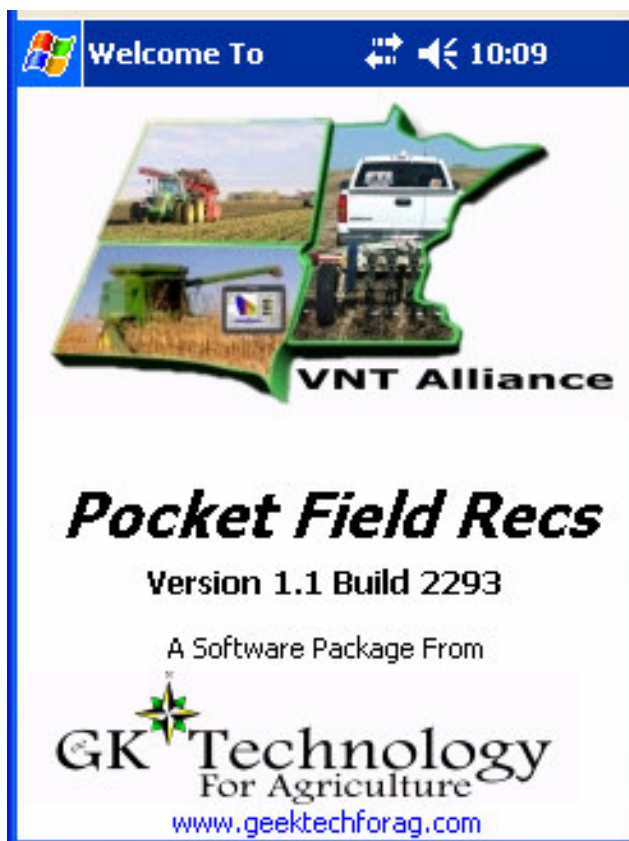


Pocket Field Recs

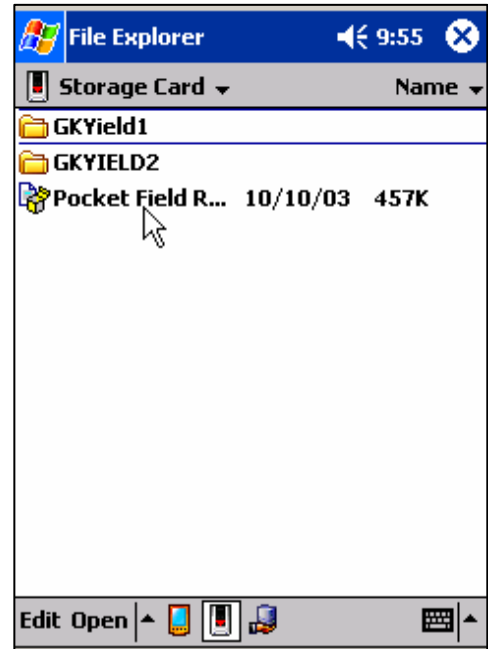
Pocket PC Version 1.1



Installing Pocket Field Recs without ActiveSync:

Copy the CAB file on the installation CD to the data card using ActiveSync. Click on the *Window icon* in upper left corner and then *file explorer*. In the drop down box below the window icon click on *Storage Card*. In there you will see *Pocket Field Recs* (as shown to the right). Double click on *Pocket Field Recs* and it will install. It will then automatically delete itself from the storage card to save space on the card. If you would like to save a copy of the Pocket Field Recs CAB file on you storage card, you must first save it someplace else.

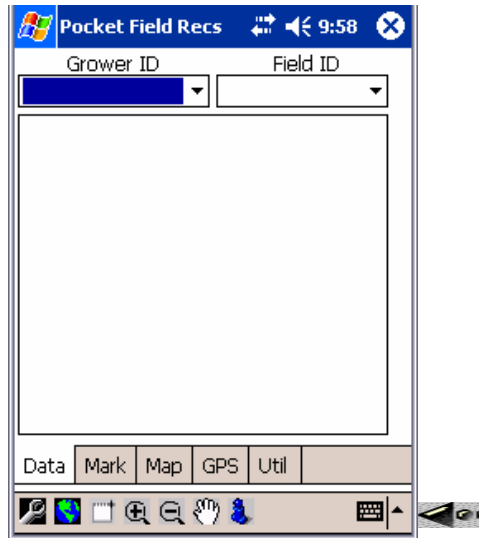
Note: Pocket PC 2000 or Pocket PC 2002, also need to install Microsoft .NET Compact Framework that is included on the installation CD. Windows Mobile 2003 already has Microsoft .NET Compact Framework installed.





Close *File Explorer*, and you are ready to start *Pocket Field Recs*.


Click on the *Window icon*, go to *Programs*, scroll down to *Pocket Field Recs* (satellite hovering above the earth icon), double click. This will open *Pocket Field Recs*. The main screen will be GK Technology with a Start GPS and Stop GPS.


Buttons on the toolbar





Settings  This button brings up a menu with settings for GPS and data storage.


Zoom Window Tool  will allow you to zoom in on a particular part of the field. Click and hold and draw a box around what you want to see and that will zoom in just that portion of the field.

Zoom to extents button  will zoom out to show the all of the data that has been loaded in the map.

Magnifying glass  will allow you to zoom in even closer. Click on Magnifying glass and then by clicking anywhere on the map, it will zoom in and redraw the map with the center that point on the screen.

Magnifying glass  will allow you to zoom out. Click on Magnifying glass and then by clicking anywhere on the map, it will zoom out and redraw the map with the center that point on the screen.

Hand tool  Click on the hand and then click and hold on the screen and move any direction you want the field to move. It will slide the map where you want it.

Info button  Click on the *Info* button then click inside the field boundary and you will see the information on that field: Field Boundary and acres of the field. You will also have a chance to view the data base information stored for the object.

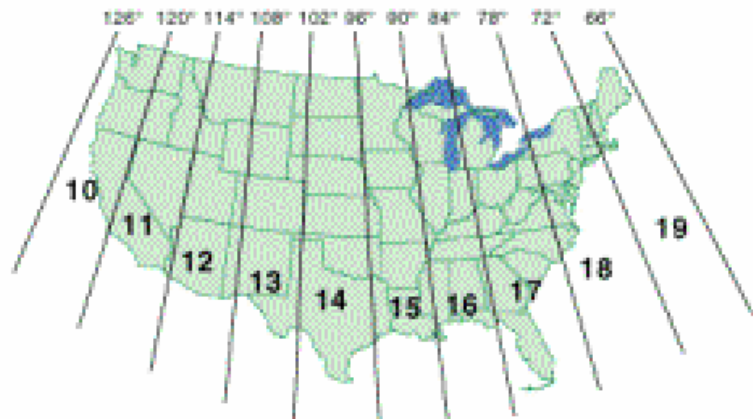
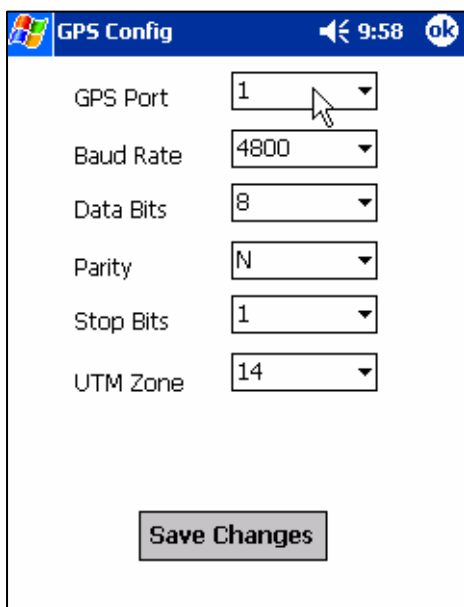
GPS Configuration:

Any GPS receiver that is capable of sending data that conforms to the NMEA-0183 specification should be capable of being configured to work with the software.

The GGA string and either a VTG or RMC string must be sent from the receiver once per second. The VTG or RMC string is required for providing ground speed and direction of travel. Without this data, mark offsets and swaths cannot be calculated properly.

With Satloc receivers, select the VTG instead of the RMC, as most Satloc receivers that we have worked with, send a malformed RMC string.

To get to the GPS Settings in the software, from the Main Screen on the "GPS" Tab, click the "File"->"Settings"->"GPS Settings", the screen below will appear. It defaults to the most common settings. If the GPS is connected to the Port on the Bottom of the Pocket PC, it will be Port 1.

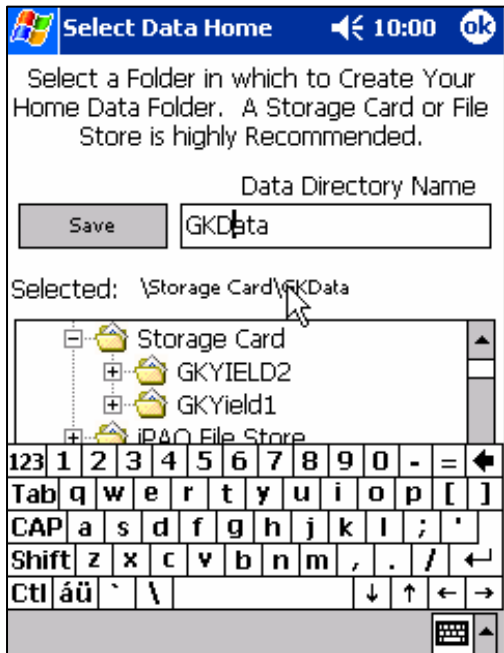


Note: The first time *Pocket Field Recs* is run after a fresh install to insure success in collecting data, you must configure the GPS. In the bottom left part of the screen, click on *File*, *Settings* and *GPS Settings*, if you are going through the port on the bottom of the iPAQ, you will be going through Com Port 1.

Most GPS will be set at default rates of 4800 Baud Rate. Data Bits will be 8. Parity Bits none. Stop Bits 1. And the UTM Zone (pictured above) needs to be set at Zone 14 for users in the central United States. That is an east to west switch, so how far you are east to west depending on your longitude will define what UTM Zone you are in. Even if you are in zone

14, click on your UTM Zone so it writes a default value and then hit *Save Changes*. After you save changes you will go back to the main screen. The GPS has now been configured. Now we will set the location on the iPAQ where the data will be stored. Click on *File, Setting* and *Set Data Home*.

Note: It is highly recommended to have a storage card to hold your data in case the battery goes dead on you iPAQ. If you don't have a storage card for you data and your battery goes dead, your data will be lost.



It is set as a default right on the root path of the iPAQ called GKData. If you would like that to be storage card, click on *Storage Card* and make a folder in the storage card by typing what you would like it called in the box under Data Directory Name (in this sample, GKData is typed in).

This is your final path where your data will be stored. This is the path that is recommended.

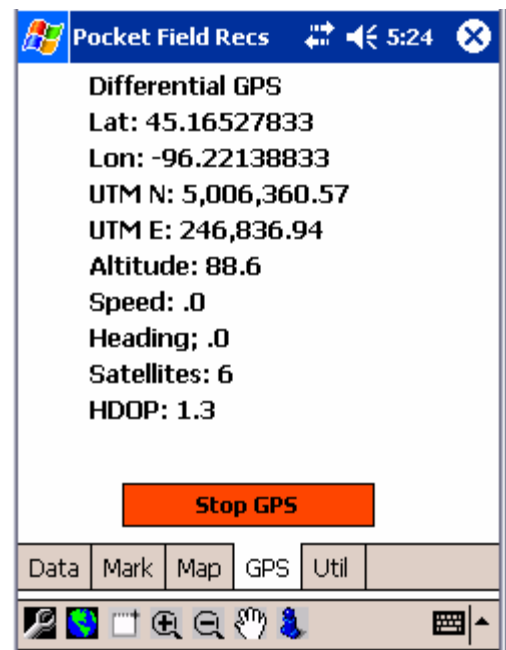
Selected: \Storage Card\GKData

Click *Save* and that will store the location of the data folder that you will be using. You will then go back to the main screen.

You are now ready to start GPS. Click *Start GPS* on the main screen and GK Technology will disappear and if everything is connected correctly, you will see the following screen. Latitude, longitude, speed, heading, northing and easting, altitude, number of satellites, Horizontal Dilution of Precision or HDOP (which should be below 3.0 for accurate mapping) and the Differential status (one of three options...no fix, GPS fix only or Differential GPS). For most mapping operations, it should be Differential GPS.

Note: This is set up, by default, not to record data unless you have Differential.

The only indicator on the mapping screen that you do not have differential is that the cursor will stop moving. Then go to GPS tab and see what the Satellite status is.



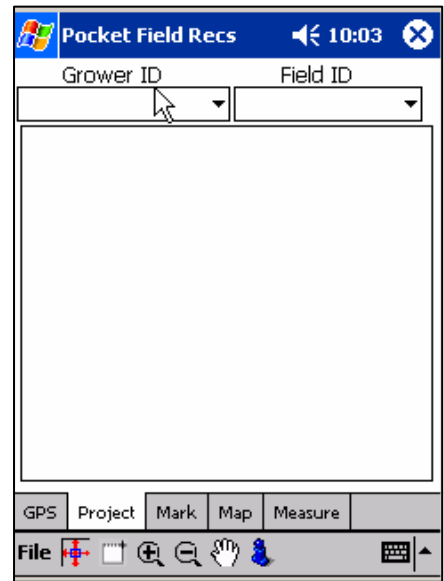
PROJECT

Click on the *Project* tab on the bottom of the screen.

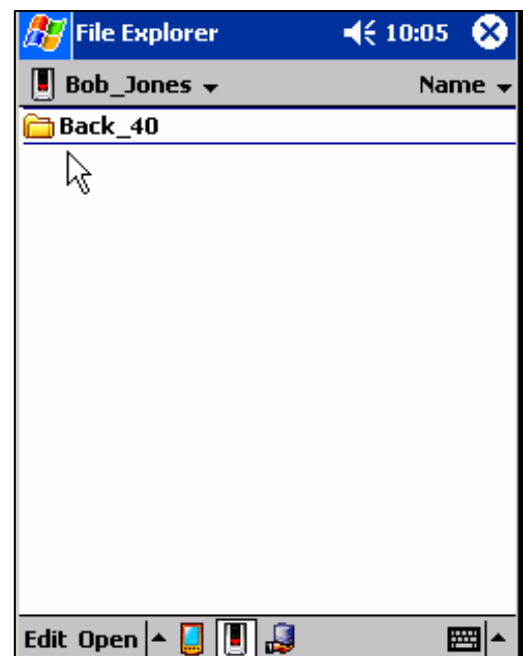
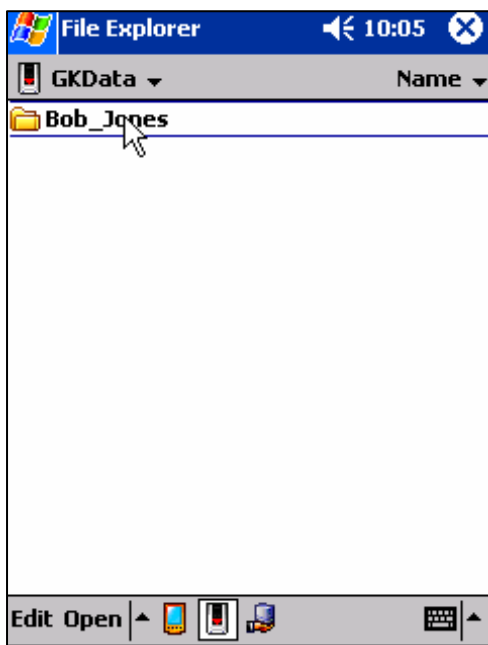
There is a combination box for Grower ID and Field ID. Since this is a fresh install, these will be empty.

To define a new grower, click *File, Create, New Grower*. It will then ask for an ID for your new grower. Here you will enter your grower's name. Then click *Apply*. As an example, Bob Jones is used as a grower. You will now see your grower name in the Grower ID drop down box.

Under each grower are multiple fields. Click on *File, Create, New Field*. Type in your Field ID and click *Apply*. As an example, Back 40 is used at the Field ID. You will now see your grower name and field ID.

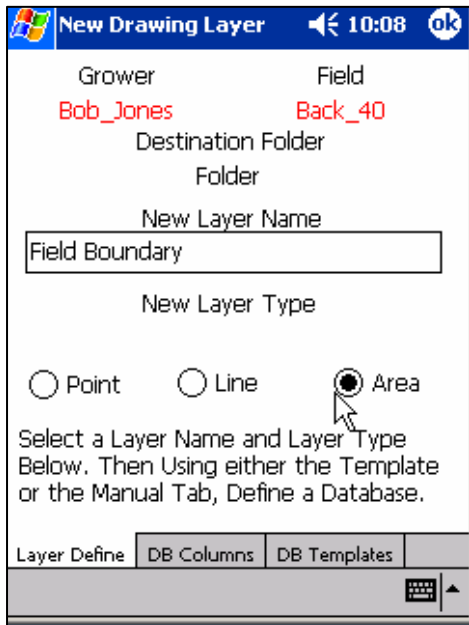


To see how this has been stored, click on the *Window* icon in the upper left corner of the screen, then click on the *Magnifying glass* icon (which is File Explorer) next to Satellite icon (which is the Pocket Field Recs), in the drop down box under the *Window* icon click on *Storage Card*, then click on what you have called your folder to store your data in (as an example we have GKData). There is now a folder for your grower. (Example, Bob Jones) Click on your grower, and there will be a folder for your Field ID. Any data that you want to save for this field can be stored in that field folder.



The data that can be stored in there are; ESRI shape files, GEO JPEGS (JPEGS with world files which would be a jpg and a jgw file combination), GEO BMP (bmp and bpw file combination) and the regular shape files (SHP).

Note: If your shape files are large, you can greatly increase the speed of which they load by saving them in a projected format. Open the shape file in ARCVIEW, set your projection to the proper UTM Zone. Then resave the shape to a new shape file. ARC View will then ask if you want to save in a projected format or change back to geographic coordinates. If you save in a projected format, it will not have to do the latitude and longitude to northing and easting reprojection, which will greatly increase the speed that the shape file loads.



Shape files can also be created right on the project screen. Click on *File, Create, New Drawing Layer*.

Type in the name of your new layer. (Example, Field Boundary) A field boundary is going to be stored as an **Area** so when you are done driving around the field it can calculate the whole area inside the field boundaries and give you acre report.

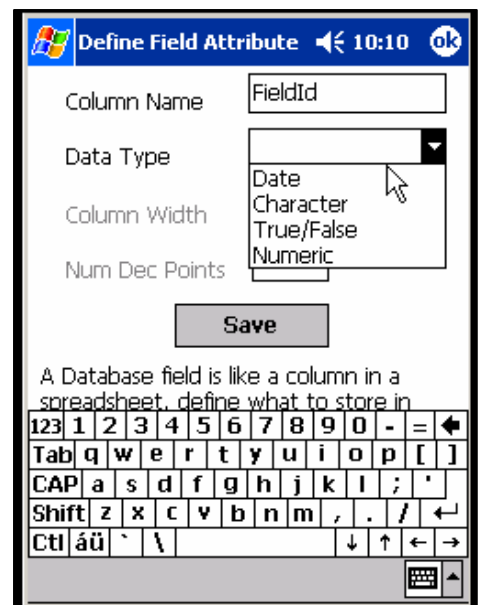
A **Point** has no area; it is an exact location in space.

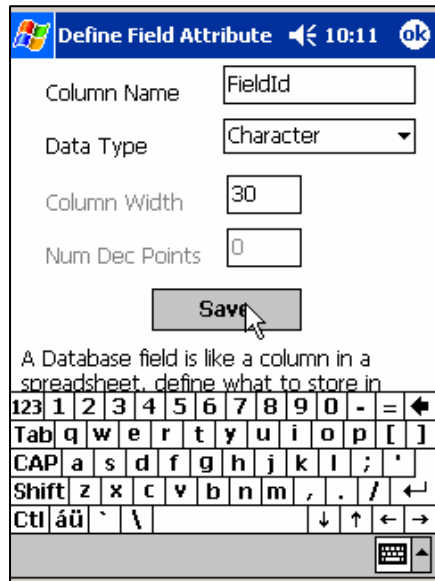
A **Line** is used to define a road. **Note:** At this time, this feature is not complete. Any shape file you try to save as a line will result in an error.

Clicking on *DB Columns* tab will take you to the data base portion on your shape file.

If you hit *Create Layer* right now, you will create a data base with just one entry in it which is an index number called GK Index which will automatically count up as you add objects to it.

When you create a field boundary and you want it to ask for the Field ID, click on *Add Columns* and type in FieldID in the Column Name. For your Field ID there are different data types that your field can be defined as. Date value, character value (an array of characters), true or false answer or a number.





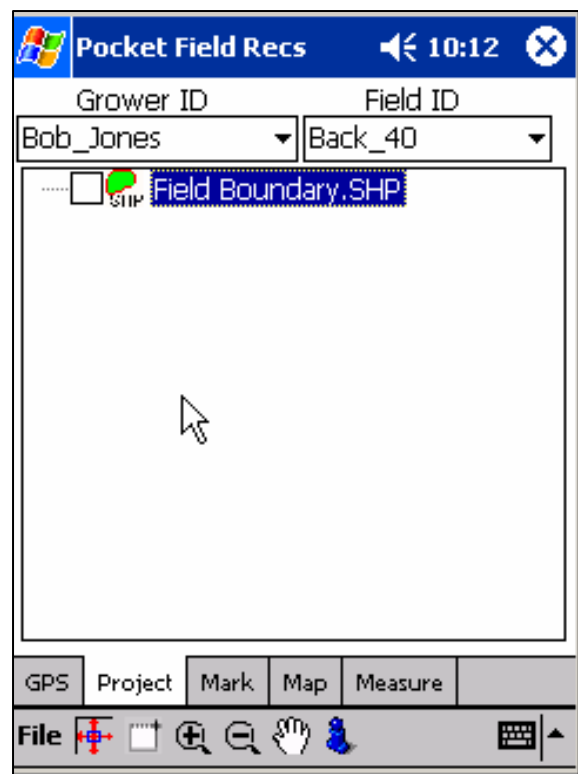
As an example, we will set it to be a character. The column width will be how many characters wide you want allowed to be used to define the Field ID. It is set at default 15; any number up to 255 can be entered. As for this example, 30 characters wide were entered. Anything other than numeric, the decimal points are not relevant.

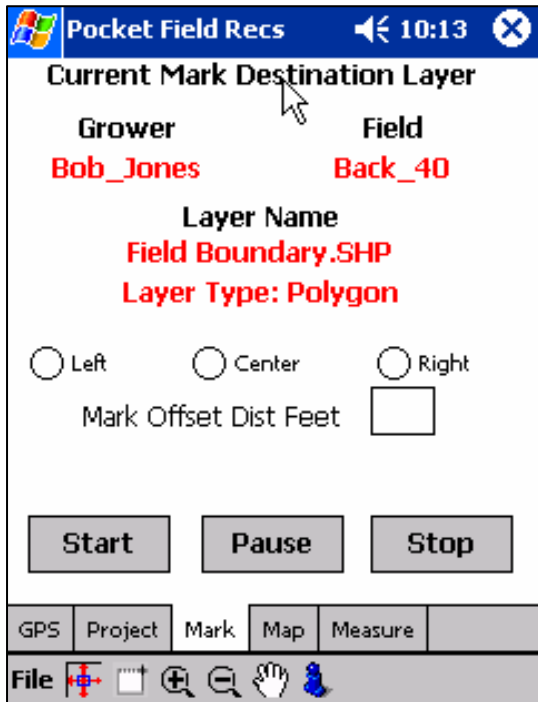
Click *Save* and you now have a field saved. If you wanted to add other fields you could add another column and as an example store crop for 2003, crop for 2002 or the type of herbicide that was used on it for broadleaves in 2003. Any type of information that you would like to be able to pull up about this field boundary you could associate here and it would create a Microsoft Excel spreadsheet of all the information tied to each of the field boundaries that you collect.

When you finish adding columns, click the *Create Layer* button and that will create a shape file and exit you back to the *Project* screen. Now there is a Field Boundary.SHP file.

If you were to make a field boundary, this is where it will be stored. To display the shape, check the box and click on the *Map* tab and you will see you shape file.

To select a layer in which you are going to put a mark, you must highlight it in blue (click on the name once). Now click on the *Mark* tab.



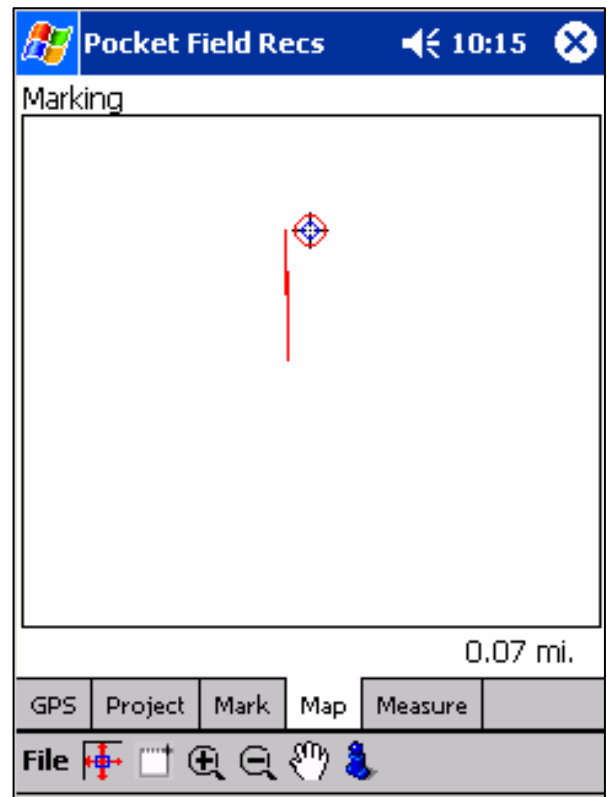


On this screen, you can set offsets. Some cases you may want to set it to center at 0 or, as an example, in some cases you may want it offset to the left 15 feet if you have a very rough field edge that can't be driven.

Now you can start marking a position. First, the GPS must be started. Click on the *GPS* tab and *Start GPS*. Make sure everything is on and running, Satellites and Differential GPS. Go back to the *Mark* tab and click *Start*.

Now click on the *Map* tab and you will see a target in the map window and on the top it says *Marking*. As you drive, you can see the line you are marking being drawn on the screen. It is being offset to the left of the icon on the screen. As the example, the offset is set 15 feet to the left. If it were set to center, the line would be drawing in the center of the icon or if it were offset to the right, it would draw a line to the right of the icon. A double line is being drawn because it is already drawing a polygon.

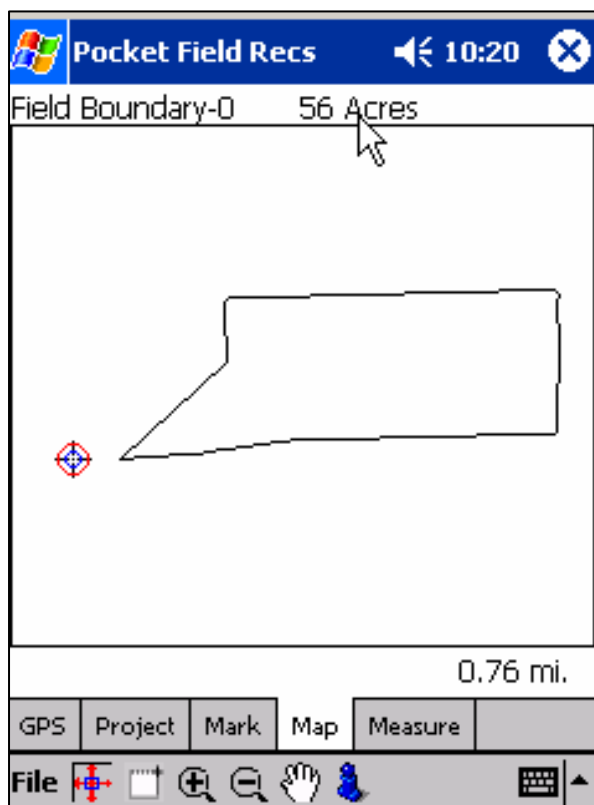
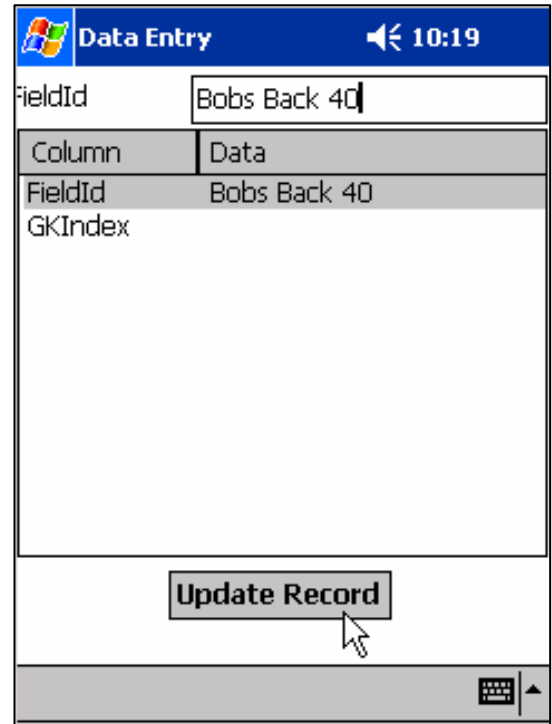
At any time while you are marking your line you can click on any of the tabs to see what it is doing. The only thing different about the *Projects* tab is that once you start marking, it locks the tree of the *Field Boundaries* to prevent an accidental selection of a different file while a mark is in progress.



At any time you can stop or pause a mark in progress. Click on the *Mark* tab and click *Stop* or *Pause*. Or directly on your iPAQ, you can use the large oval button (rocker panel). Pushing to the left will start the mark, pushing it straight down will pause the mark and pushing to the right

will stop the mark. The pause is handy if you come across a ditch or something that is too wet to drive across but would normally farm across and you need to detour around without showing this detour on you mark file. After you have made your detour, click *Continue* in your *Mark* tab or push the large oval button on your iPAQ straight down.

After you have driven your field and stopped you mark, it will come up and ask if you want to “Write this Object to a SHP File?” If you want to save it and click yes, it will come up and ask for a Field ID. Every time an object is collected, it will ask for a Field ID. This example is Bobs Back 40. Then click *Update Record*.



Click on the *Map* tab and click the *Reset* (red cross arrows) button on the bottom on the screen. This will put your whole field in the center of the screen. To find out the acres of this field, click on the *Info* button (blue “i”) at the bottom of the screen, and then click inside the field boundary on the map. In this example, Field Boundary – 0, which is the first field boundary in this file, and 56 acres. For each object you collect, you can click the *Info* button, click inside the field boundary and view the acres. It calculates to the nearest 100th for agricultural purposes.

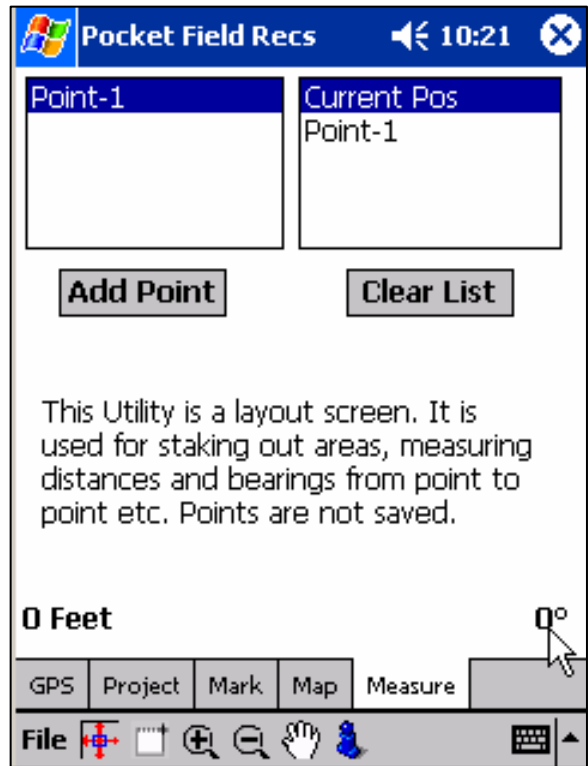
Measure tab

This is a tape measure function for using with GPS.

Turn on GPS and make sure you have Satellites and Differential GPS. Then click on *Add Point* and you can see that point 1 comes up at 0 feet at 0 degrees from Current Position. As you start driving, the feet and degrees change to show how far away and what degrees away you are from point 1. *Add Point* again and the numbers will reflect your position away from your last point or if you have more than 2 points, will reflect from any point you choose.

The degrees numbers are standard bearings; 0 or 360 is north, 90 is east, 180 is south and 270 is west with all the breaks in between at 45, 135, 225 and 335 for northeast, southeast, southwest and northwest respectively.

When you are finished marking your points, click *Clear List* and the points will be erased and you can start marking different points. You cannot save these points.



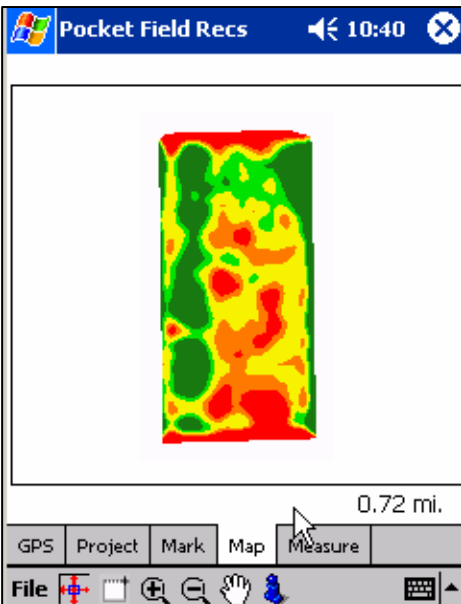
How to bring up an image file for soil sampling



At this time, after you have imported files of fields you have to exit the program to refresh the grower list. *File, Exit* and then restart *Pocket Field Recs*. On the *Project* tab, select *Grower ID*, then *Field ID* and you should see a bmp or jpg file that you have imported. Example here is Jason.

There is an icon that shows a bitmap file; a rainbow color image with a “B” in it for a BMP file. There can also be JPEG files; in that case there would be a rainbow color image with a “J” in it.

Turn on the image by checking the box; you will then see an hourglass. After the image has loaded, go to the *Map* tab and your field will be displayed.



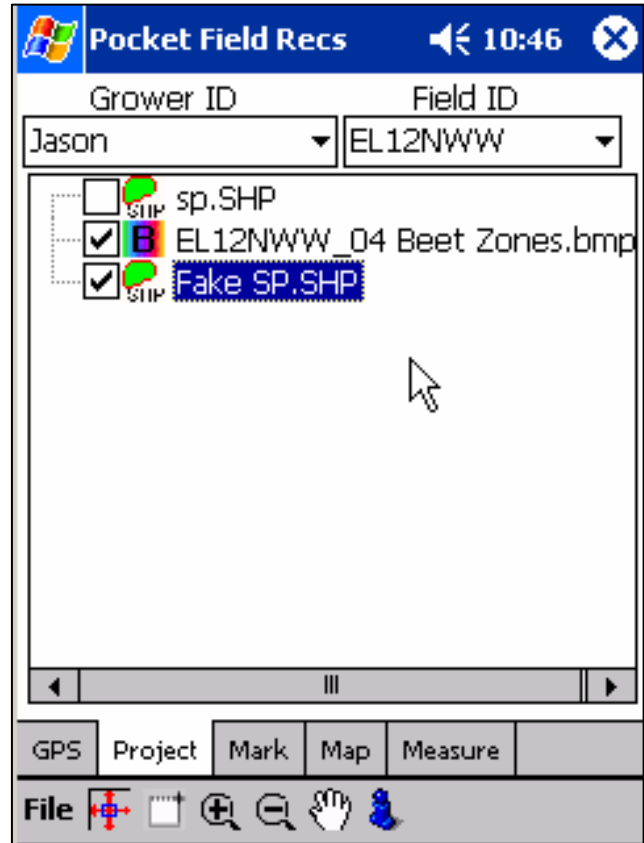
Example here is a 5-zone beet top map that’s been created for sampling. In this case, we wanted to sample the reds, yellows and the dark greens. The oranges and lime greens were left in for higher definition.

To start sampling, click on the *GPS* tab and click *Start GPS*. Make sure you have Satellites and Differential GPS and you are ready to go.

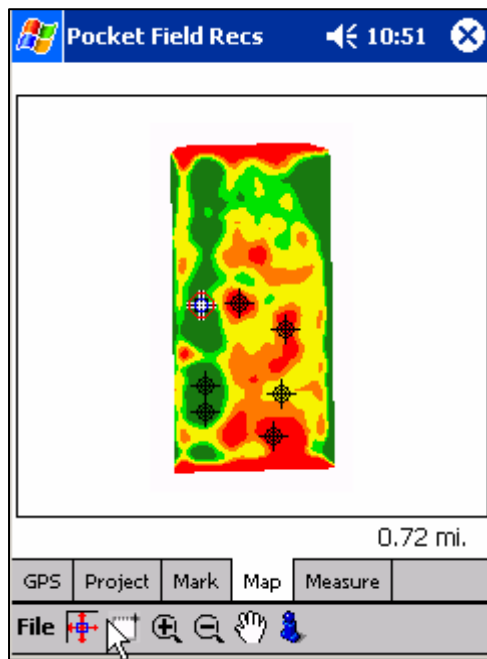
Window in to about $\frac{1}{4}$ of the field. Click on the *Window tool* (white square) and draw your box around the corner of the field you are starting in. You will see your red, white and blue target in the field. As you drive, you will see the target move across the field.

To mark sample points as they are pulled, click on the *Projects* tab, and then click *File, Create, New Drawing Layer*. A New Drawing Layer will then be displayed. Since this will mark sample points, click on *Point* and, in this example, we will call the New File Name **Fake SP**. Now click on the *DB Columns* tab and click *Create Layer*. Now the shape file is displayed in *Projects*. Check the shape file and highlight in blue the file we want to mark into.

Click on the *Mark* tab and click *Start*. You will then be prompted to “Write this Object to a SHP file?” Click yes and your point will be saved. Then you can go on to your next spot you want to mark and either go back to the *Mark* tab and click *Start* or directly on the iPAQ you can click the large oval button to the left. It will then come up and say, “Write this Object to a SHP file?”, click yes and then continue on to the next point.



As you continue on, you will see your points that you have marked on the map as black targets. As the cursor goes off screen, it doesn't zoom out but it slides the map over so the cursor is in the center of the screen.



In this example, we have zoomed out to show the whole field by clicking on the *Reset* button (red cross arrows). You can also see all the sample points have been marked as black targets. If you wanted to come back and pull soil samples from the exact same spots of this field, you would turn on this shape file, zoom in and drive until your red, white and blue target is over the existing target on the map.

The shape file saves automatically as you hit “Write this Object to SHP file?”

To start a different project, click on the *GPS* tab and click *Stop GPS* then *File, Data, Clear Map*. Your map is now cleared out. Click on *Map* tab and it should be empty. To start a new project, click the *Project* tab and select *Grower ID, Field ID* then check your bmp or jpg file and check and highlight in blue your shape file.