Prosurv
Pocket Quads.NET™

Version 1.5

User's Guide

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About Prosurv Pocket Quads.NET™

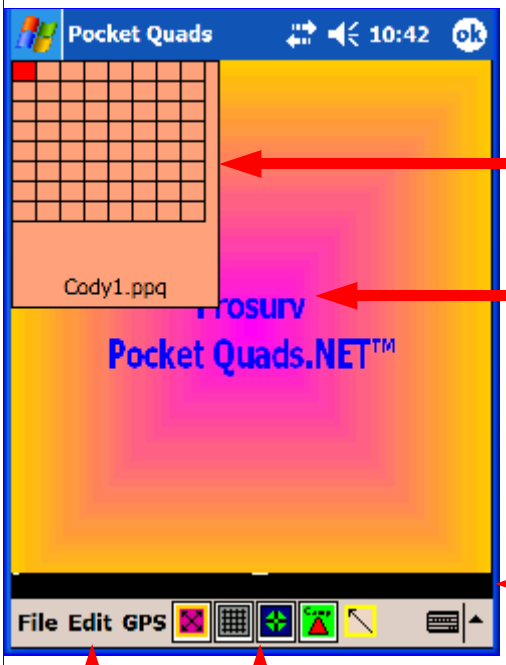
Prosurv Pocket Quads.NET™ comes in two varieties. If purchased as a National Parks Edition, then Pocket Quads.NET is a stand-alone program, and no additional PC software is required to run and use the software. Pocket Quads.NET is software that is designed for use on Pocket PC's, like the HP iPAQ or Dell Axim. The National Parks Editions come complete with all the Topo Maps for that particular National Park, already pre-processed and ready to go.

The "full version" of Pocket Quads.NET includes Prosurv Imaging™ software for your PC. Prosurv Imaging gives you the ability to create processed maps (singly or batch-process) of virtually any geo-referenced .tif Image.

The Pocket Quads.NET software for your Pocket PC is the same for either version.

Using Prosurv Pocket Quads.NET™

Please see the ***Quick Start Guide*** for your version of Prosurv Pocket Quads.NET for easy installation instructions and information on getting started with Pocket Quads.NET. For information on setting up a ***Bluetooth®*** GPS connection with your Pocket PC and Pocket Quads.NET, please see the ***Bluetooth® GPS with Pocket Quads.NET guide.***



Shown here is the normal start-up screen. There are five major parts to the Pocket Quads.NET screen.

The Overview Grid

Image Display Area

Lat/Long Display

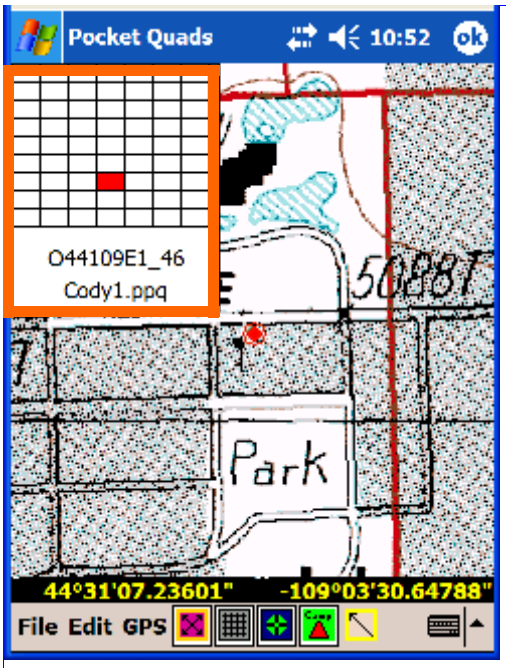
Buttons

Main Menu

IMPORTANT NOTE

Tap the OK button in the upper right corner of the screen to exit most of the screens & windows that pop-up throughout the use of the program.

Tapping the OK button in the Main Menu screen will *not* exit the program. Instead, select File—>Exit to quit the program.

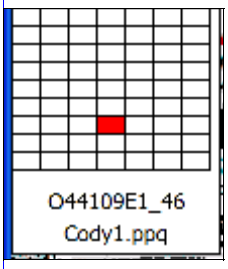


The Overview Grid

Each processed Topo Map is made up of dozens of images, called Slices. Each slice represents a portion of the original image. A full-size topo map is normally 6000 x 8000 pixels or larger and can easily require 20-30MB of RAM to load on a PC. Due to the very limited resources of Pocket PC's (memory), full sized topo maps simply can't be opened as-is on a Pocket PC.

Instead, Prosurv Imaging is used to create dozens of slices of the original image. The image is divided into a number of columns and rows, as shown in the Overview Grid display.

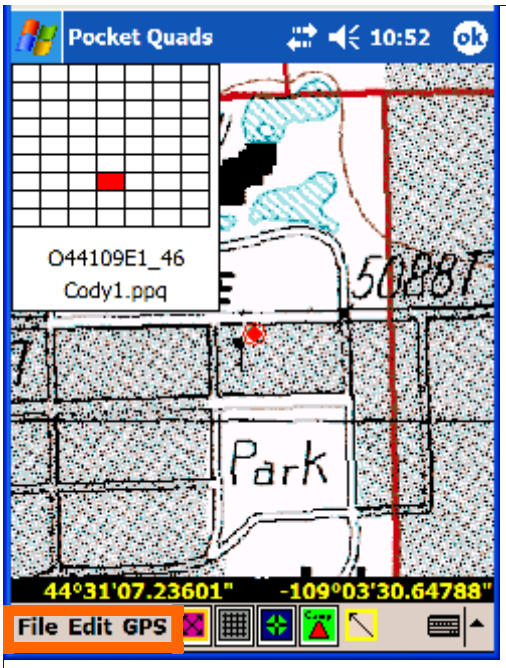
Typically, you don't need to worry about the slices, rows, and columns, since Pocket Quads.NET will automatically load the slice it needs to display based on your GPS position. However, you can easily switch between the different slices, simply by tapping in the grid. You can turn the grid on and off by using the  grid toggle button.



The grid overview display also shows:

- The slice currently loaded, indicated by the red filled rectangle
- The name of the currently loaded slice (file name)
- Your current Job File name

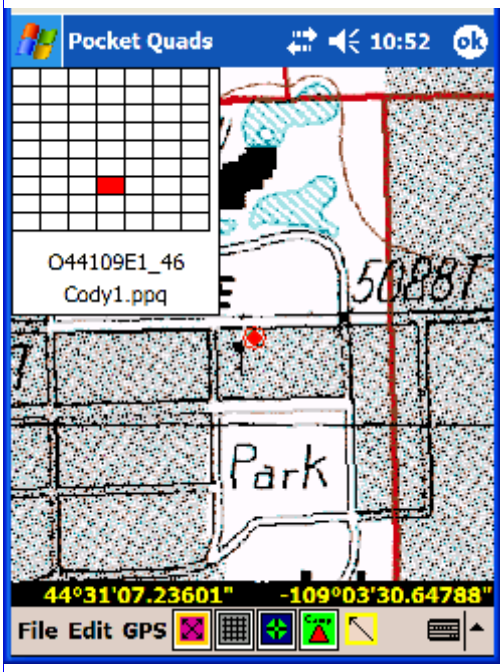
Pocket Quads.NET includes a panning feature, allowing you to scroll up/down/left/right using the 4 direction button on your Pocket PC. You can also pan by dragging the stylus across the screen. Each slice has a "border" or an edge. When scrolling has reached the edge of the slice, two things can happen. First, if the Overview Grid is visible, the next slice is loaded automatically when you pan past the edge of the current slice. If the Overview Grid is not visible, then the panning simply stops (accompanied by beeping).



The Menu

The Menu has three main selections:

- **File**
- **Edit**
- **GPS**

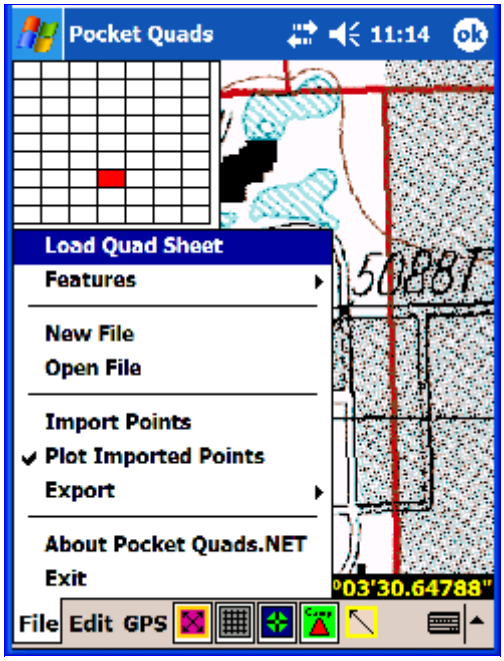


Buttons

The 5 buttons have the following functions:

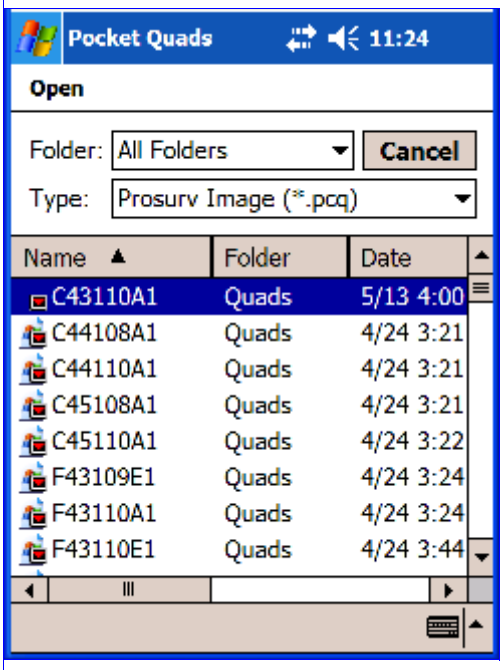
1. **Pan On/Off. Point creation On/Off.**
2. **Grid Overview On/Off.**
3. **Center on GPS On/Off.**
4. **Draw Lines On/Off.**
5. **Navigate (Stakeout) to a point On/Off.**

The File Menu



Load Quad Sheet

This selection allows you to manually load a particular Quad sheet (topo map). It is particularly useful when using a portion of a map that you may have created with other software and processed using Prosurv Imaging™. Tap the **Load Quad Sheet** menu item to begin.



Pocket Quads.NET shows you all of the .pcq files available, whether in main memory or on a card. The .pcq file is created by Prosurv Imaging along with a folder that contains the actual image slices.

Select the desired map by tapping it. The selected map is loaded and displayed. Note that slice #1 is automatically loaded, and that the slice is positioned so that you're looking at the upper left corner of the slice.

If you are using Pocket Quads.NET with your own custom image, you should uncheck the **Auto Quad Loading** check box found in **Edit—>Settings.** This will prevent Pocket Quads.NET from auto-loading topo maps based on your present GPS position. Instead, your custom map will simply display your present position, as long as it falls within the map's boundaries.

Feature Names

Pocket Quads.NET version 1.5 and above contain 3 powerful Feature Name capabilities:

1. **Find a Feature Name**
2. **Radial Feature Search**
3. **Import New Features**

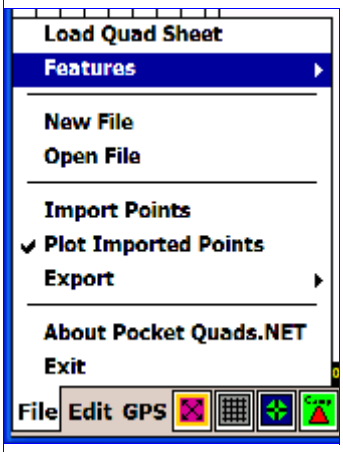
The USGS provides databases, known as the Geographic Names Information System that are available on-line for each State in the US. Each database contains thousands of features, including feature name, type, latitude, longitude and much more. These databases are available as delimited text files. Currently Prosurv has modified the Wyoming GNIS database for use with Pocket Quads.NET. The process for converting the database is fairly straight-forward and consists of:

1. Downloading the GNIS database as a pipe | delimited text file.
2. Opening the text file using Excel.
3. Converting the file from Excel to Microsoft Access Database.
4. Converting the file from Access to Pocket Access.

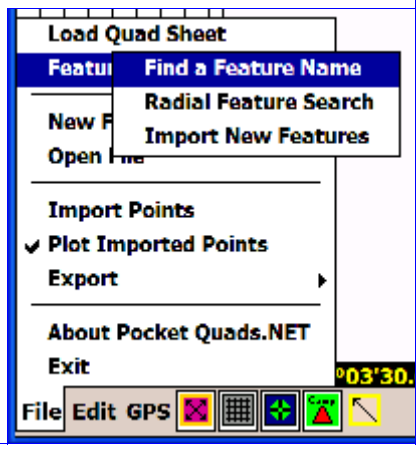
The Wyoming database for use with Pocket Quads.NET is currently available for download at the www.prosurv.com web site, and is included with the Yellowstone National Park Edition of Pocket Quads.NET.

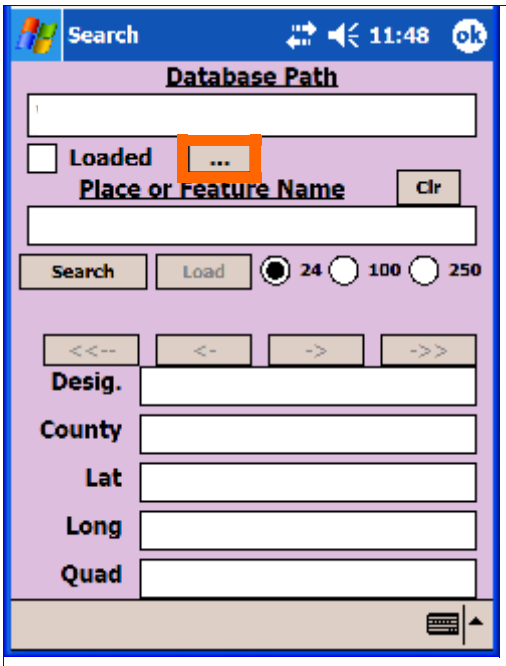
Also, we have added over 1,000 NGS (National Geodetic Survey) monuments to the database, including all of the NGS Horizontal & Vertical monuments (ie Benchmarks) for all of Park and Teton Counties in Wyoming.

In order to use these features, you need to copy the database to the Pocket PC or a CF or SD card. Since the database is rather large (7+MB), we recommend copying it to a flash card rather than to the internal memory of your Pocket PC. ***If you have the Yellowstone National Park Edition*** of Pocket Quads.NET, the ***USGS WY Names.cdb*** database file is copied over to your flash card when you copy the \Quads\ folder, since it is already in the \Quads\ folder on your CD.



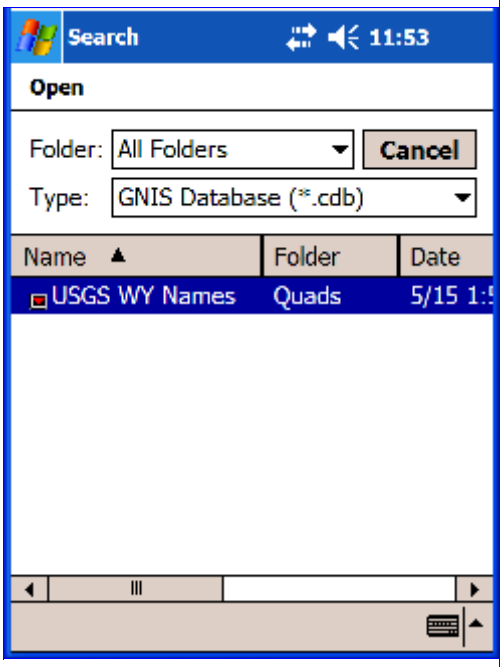
Tap the **Features** item on the File Menu, then tap the **Find a Feature Name** item to begin.





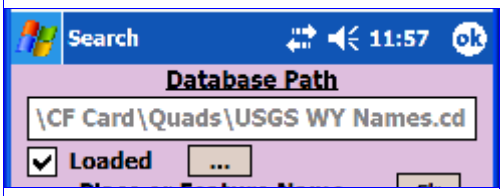
The first time you use the **Features** capabilities, you will need to specify the path to the database. To do this, simply tap the browse button.

Prosurv looks for all .cdb files on your Pocket PC and flash cards. Select the desired database file by tapping the file name.

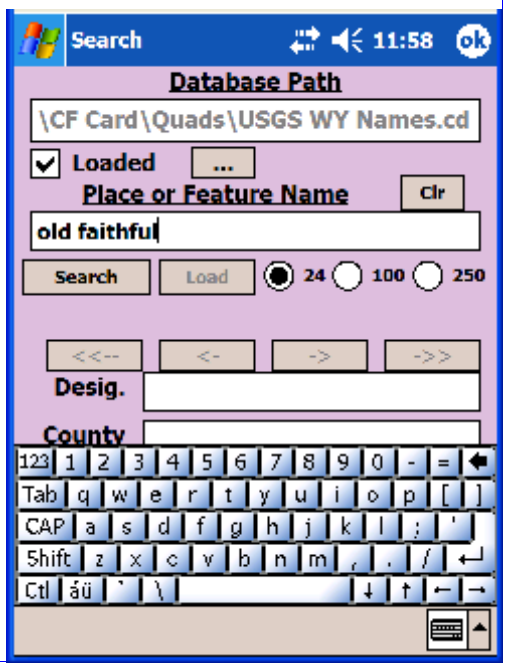


Once you've selected a database, you won't have to select it again. The path to the database is stored in the registry of the Pocket PC. So the next time you run Pocket Quads.NET, it will "remember" where the database is, and automatically "loads" the database file.

The Wyoming GNIS database has over 27,000 records, and so takes a few seconds to load.

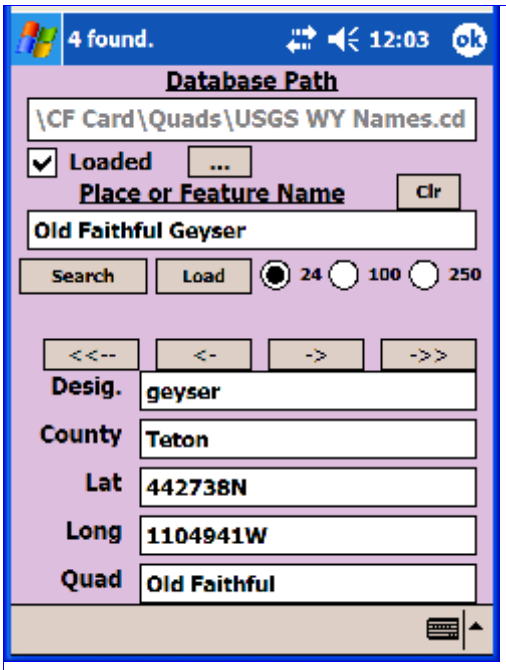


The check box indicates that the database is now loaded.



Searching for a Feature

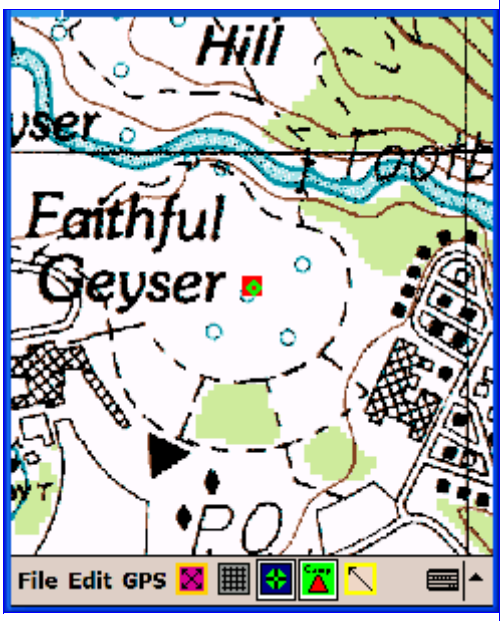
To search for a feature, simply type the feature name in the text box as shown. Use the **Clr** button to clear the text box. After entering the text to search for, tap the **Search** button.



4 Features have been found that contain "Old Faithful" in the Feature Name.

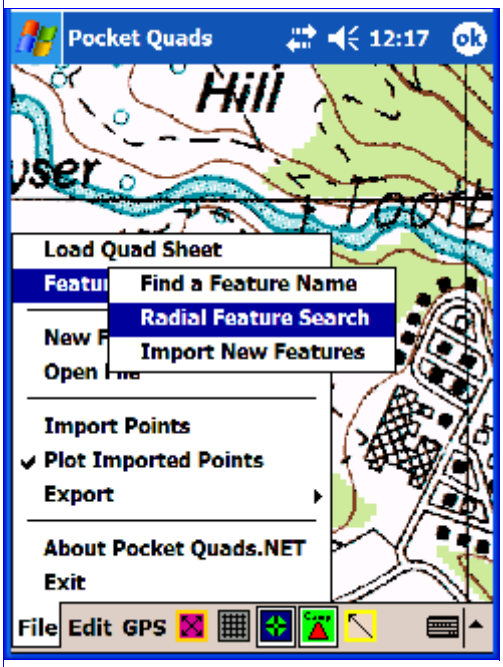
You can use the First, Back, Next, and Last buttons to scroll through the features. Once you've selected which feature you'd like to see, simply tap the **Load** button.

The map containing the feature, if found, is displayed and centered on the location of the feature.



You can select to load the 1:24,000, 1:100,000, or 1:250,000 scale map by tapping the **24, 100, or 250** option buttons. The map shown here is the 1:24,000 scale map.

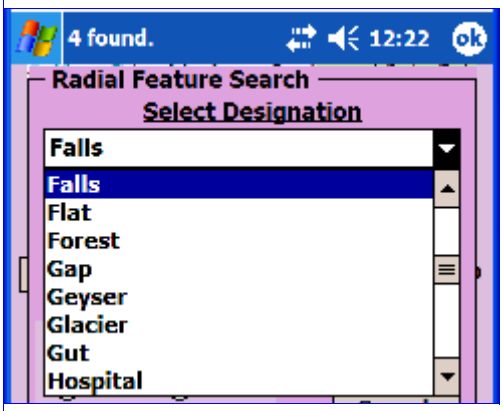
Radial Feature Search



Features are grouped into dozens of **Feature Types** or **Designations.** Feature Types include:

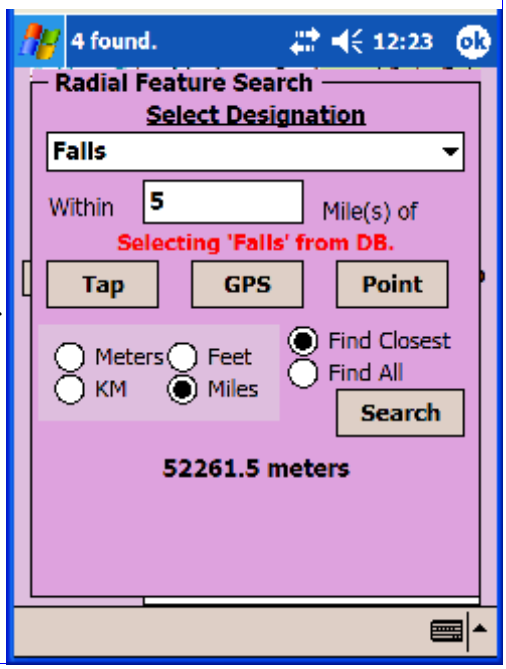
- **Airports**
- **Canals**
- **Lakes**
- **Cemeteries**
- **Mines**
- **Geysers**
- **And many more…**

So, Pocket Quads.NET includes Radial Feature Search capability. This routine lets you search for features that are within a certain distance from a point. So, you could search for all the geysers within 2 miles of your current position.



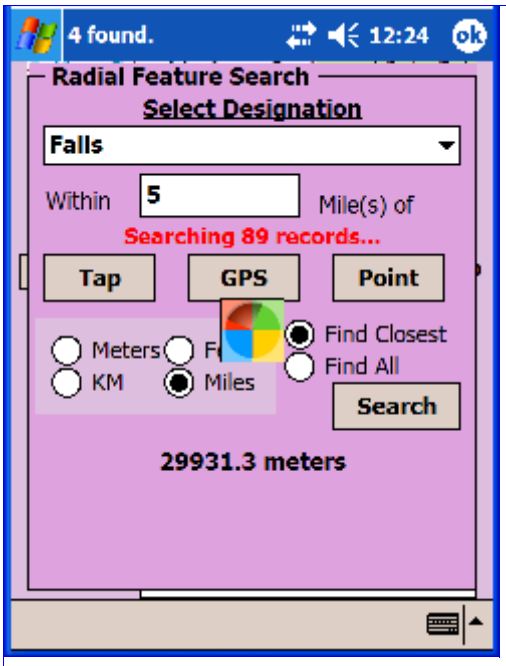
Once you've loaded a Feature Name Database (see the previous section), you can perform Radial Feature Searches.

The drop-down list contains all of the Feature Types, or Designations available in the Database.



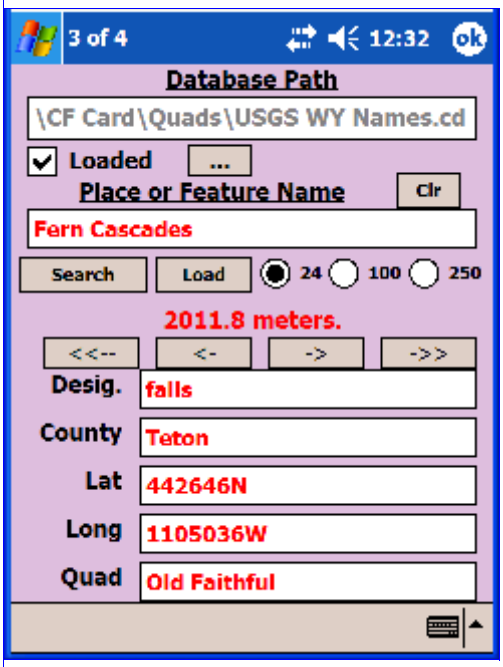
Here, we want to find all the Falls (waterfalls) located within 5 miles of a point. The "center" of the search can be:

- A tapped location on the image. Tap the **Tap** button and the image is displayed. Then tap a location on the image to use as the center of the search.
- Your current GPS position. Tap the **GPS** button and your current GPS position is used as the center of the search.
- A pre-defined point in your job file's database. Tap the **Point** button, then enter the point number (or text name) of the point to use as the center of the search.



Several options are available, including the units used for the search such as Miles, Meters, KM, or Feet. All features found within the given radius are added to a list. If you've selected the "Closest" option, then the closest record is displayed automatically.

Here, 89 features of the type "Falls" have been found. The distances from the "center" point to each feature are computed and compared with the distance (radius) that was given (5 miles). If it falls within that radius, the feature is added to the list.

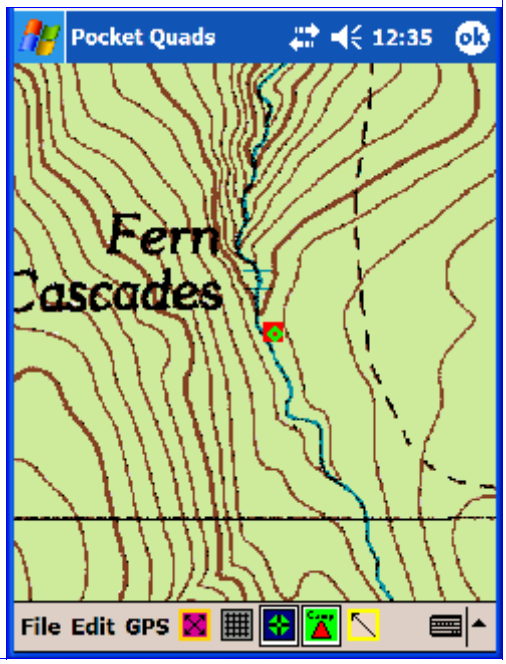


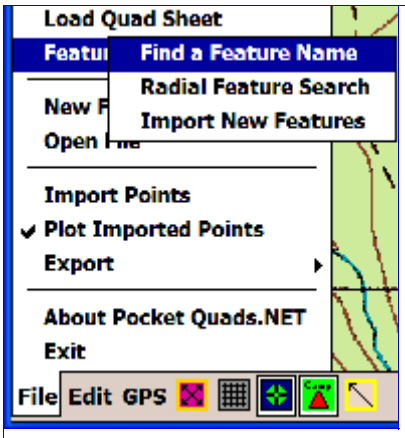
The **Fern Cascades** is found to be the closest **Falls** to the Center point (in this case, the center point was given as Old Faithful). The Cascades are 2011.8 meters from Old Faithful. Note that of the 89 Falls, only 4 fall within 5 miles of Old Faithful.

The closest feature is displayed in red, while the rest are displayed in black.

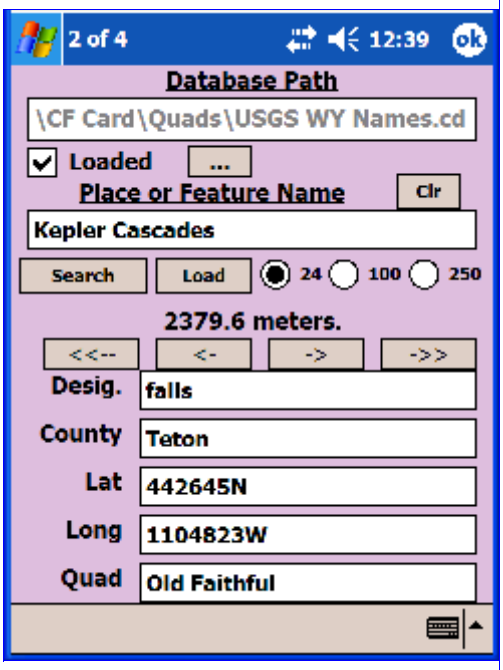
We can now load the image automatically by tapping the **Load** button.

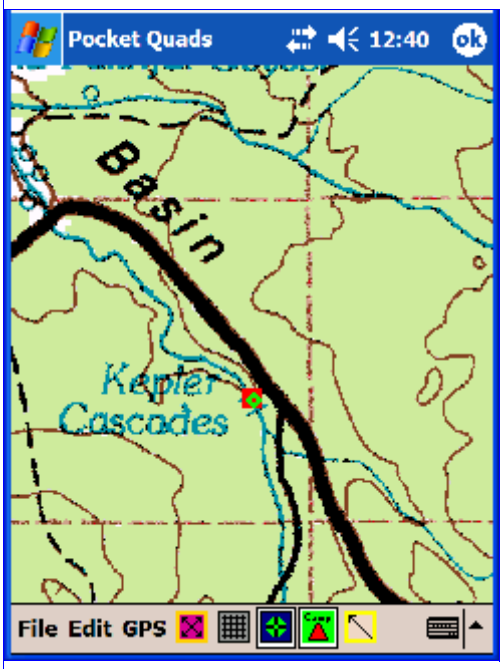
The 1:24,000 scale topo map shows the **Fern Cascades.**





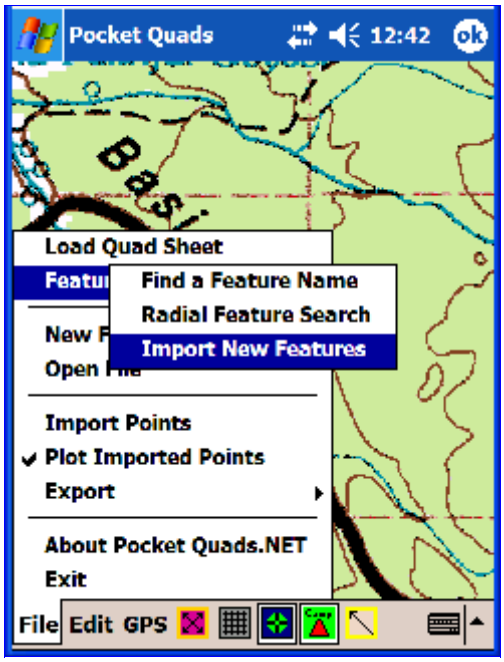
You can go back and select a different feature out of the 4 Falls that were found by going back to the **Find a Feature Name** item in the menu.

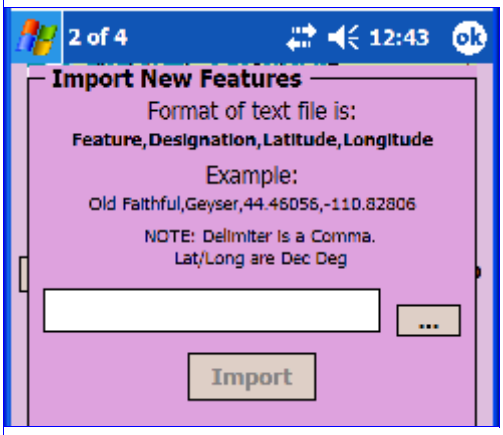




The 1:100,000 scale map shows the **Kepler Cascades**.

Import New Features





The **Import New Features** routine allows you to add new features to the GNIS database. To add features to the database, you need a text file in the following format: **Feature Name,Feature Type,Latitude,Longitude**

The Latitude and Longitude **must** be in Decimal Degrees. The Longitude must be negative if it is a West Longitude. All of the United States is West Longitude.

A Sample File

AMETHYST ET,NGS_Horizontal,44.82831579,-110.2543006
ANTLER,NGS_Horizontal,43.99225984,-108.9800376
ARBEE,NGS_Horizontal,44.6306244,-110.4391669
AVALANCHE,NGS_Horizontal,44.48947879,-110.1400428
BADGER,NGS_Horizontal,44.93058731,-109.1045963
BALD RIDGE,NGS_Horizontal,44.81898941,-109.3224019
BEACH,NGS_Horizontal,44.44074526,-108.6544162
BEARTOOTH,NGS_Horizontal,44.95467952,-109.6098919
BLACK WY,NGS_Horizontal,44.69575005,-109.7607509
BLUFF,NGS_Horizontal,44.87487017,-108.8884094

The file is a simple comma-delimited text file. You could create the file using Microsoft Excel®, saving it as a CSV file (comma separated values). After saving it, rename the file so that it has a .txt extension. Then simply copy the file to your Pocket PC and select the file by tapping the … button. Tap the **Import** button once the filename appears in the text box.

Each feature is added to the GNIS database. Be sure that the Feature Type is one of the types listed in the drop down feature type selection of the **Radial Feature Search** routine.

We have added 4 feature ***types*** to the GNIS database for Wyoming. They are:

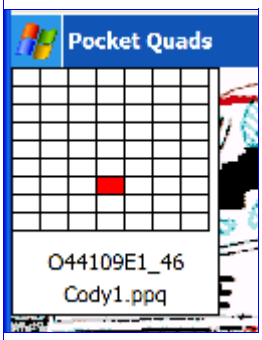
- **NGS_CORS (currently not used)**
- **NGS_Horizontal**
- **NGS_Vertical**
- **NGS_HARN (currently not used)**

These new feature types were added to allow for the addition of NGS monumentation to the database. New Feature Types can be added by modifying the Designations.txt file located in the \Program Files\Pocket Quads.NET\ directory of your Pocket PC.

New File

Tap the **New File** Menu item to create a new Job File. Any points that you record, including GPS points, Tapped points (annotations), lines, and special settings, are stored within a job file. Many functions within Pocket Quads.NET simply won't work until you've created a job file.

Pocket Quads.NET will remember the last job file you used, so that if you quit Pocket Quads. NET, the next time you start the program, your last job is opened automatically. To switch to a different job file, simply use the **Open** routine.



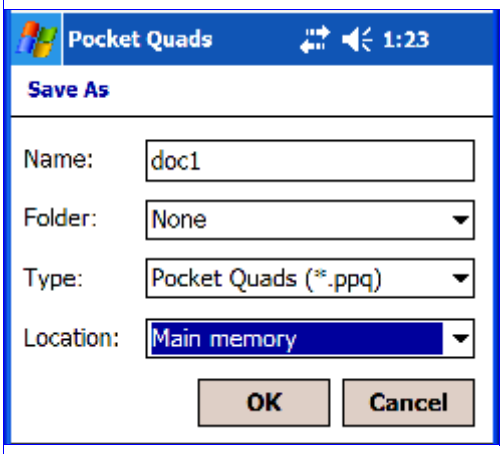
The name of your currently opened job file is displayed in the Grid Overview, and has the .ppq extension (**P**rosurv **P**ocket **Q**uads).

Job files can contain thousands of points. If you were to record a GPS Point every second for two hours, you'd have 7200 points. The bigger the file, the more memory it will take up (7,000 points are about 2.5MB), and the longer it will take to load the job file when opened. Once opened, however, new points are added almost instantly, regardless of the total file size.

When you're done with a job file, or anytime that you want to back up an existing job file, you can easily copy it to your PC using Microsoft ActiveSync®. Just copy the .ppq file.

You can also back up your job file in the field:

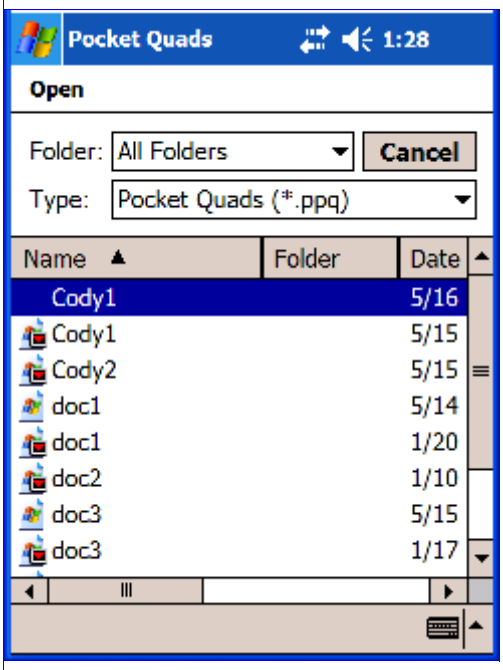
1. Exit Pocket Quads.NET
2. Use **File Explorer** on the Pocket PC to locate your Pocket Quads.NET job file. **Tap and HOLD the file. Then select Copy from the Pop-up Menu.**
3. Use **File Explorer** to navigate to your CF or SD Card. Then tap and hold in the "white space" of the location where you want to copy the file to.



To create a new job file, enter a name to Save As, then tap the OK button. Job files can be stored in main memory or directly to flash cards (SD or CF).

Open File

Tap the **Open File** item to open an existing Job File. See the **New File** routine for information about backing up existing files.



When you Open a file, the current file is closed automatically. If you quit Pocket Quads.NET, your current job is stored in the registry and is opened automatically the next time you start the program.

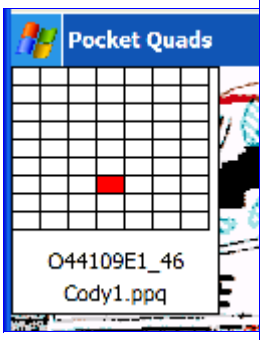
All files from all folders having the .ppq extension are displayed (by default).

Files with a "disk" icon are ones that are located on an SD or CF Card.

Select the file you'd like to open by tapping on the file name.

Large files (containing thousands of points) may take a minute to open. A green screen indicates the file is being opened...please wait.

The Grid Overview displays the name of the currently opened job file.

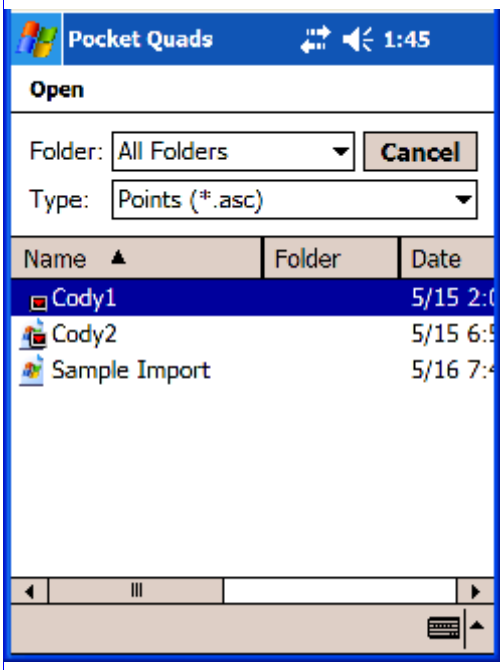


Import Points

The **Import Points** routine will read a text file that contains points in the following format:

- Point (Name or Number),Northing,Easting,Elevation,Feature Code (Description)

Each field must be separated by a comma. The Point # will be stored in the **MyText** field of the database, and each point will be stored as a waypoint. Imported points can then be used to Navigate to. You can use the Prosurv Imaging program to Export Points in this format. Many other programs and CAD software allow you to export points that can be imported into other software, such as Pocket Quads.NET.

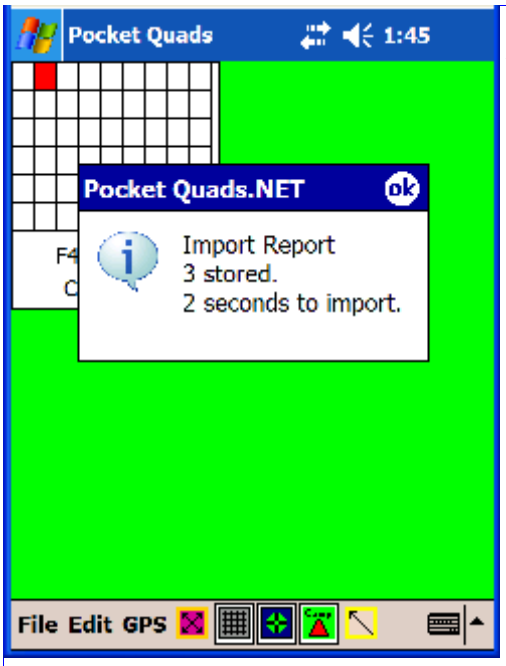


Pocket Quads.NET looks for a .asc extension when searching for available text files to import. Therefore, the extension for the file to be imported should be .asc. To begin importing the points, simply tap the file that you'd like to import.

An example .asc file might contain:

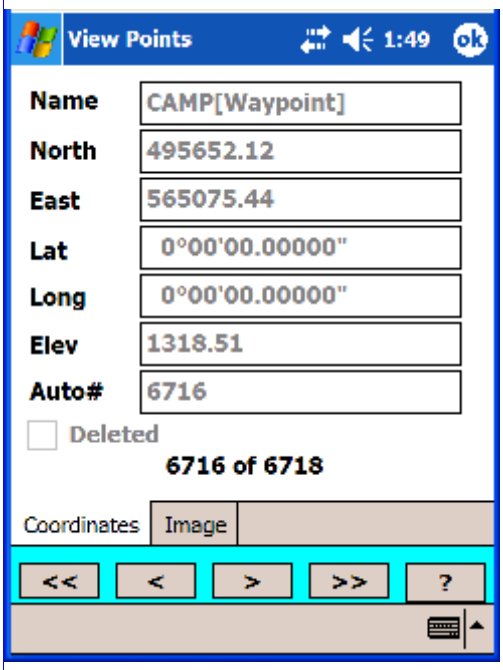
- **CAMP,495652.12,565075.44,1318.51,OUR CAMP SITE**
- **BRIDGE,495712.14,565044.43,1322.15,BRIDGE OVER TROUBLED WATER**
- **LAKE,495999.7,565135.47,1312.0,EAST EDGE OF LAKE**

Points files contain coordinates, rather than Lat and Long. Therefore, it is important that the coordinates being imported into your job file are in the same Zone and Datum of your job file. For Yellowstone National Park, the zone is normally UTM12 and the Datum must be NAD83.



The **Sample Import.asc** file was selected for Importing. Note the number of imported points and time to import are shown.

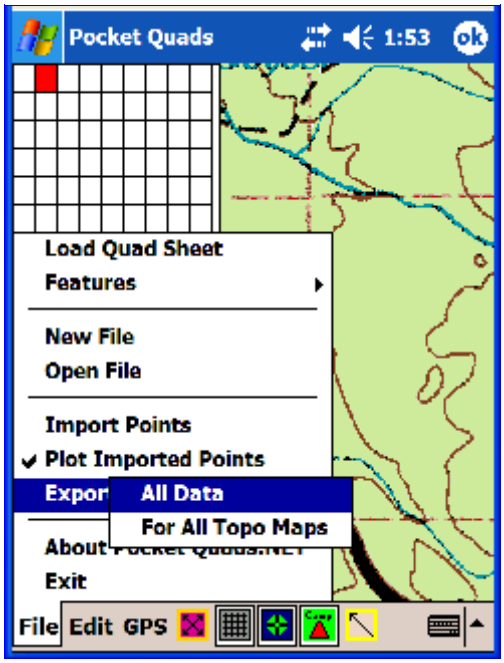
The **Plot Imported Points** menu item determines whether imported points are displayed on the image. If the item is checked, then imported points are displayed on the image as long as the point falls within the boundaries of the current slice.



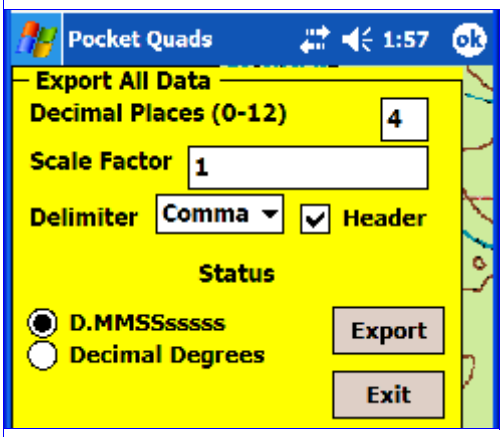
You can view the imported data using the **View Points** routine located in the **Edit** menu.

Note: The Quad Sheet needed for the coordinate is automatically computed and stored with the point. And, a coordinate transformation is performed that changes the imported coordinates into the Image Zone coordinates. These changed coordinates are stored as the "Click North" and "Click East" data. The original Northing and Easting (that were imported) are kept the same and are stored as the Northing and Easting of the point.

Export All Data

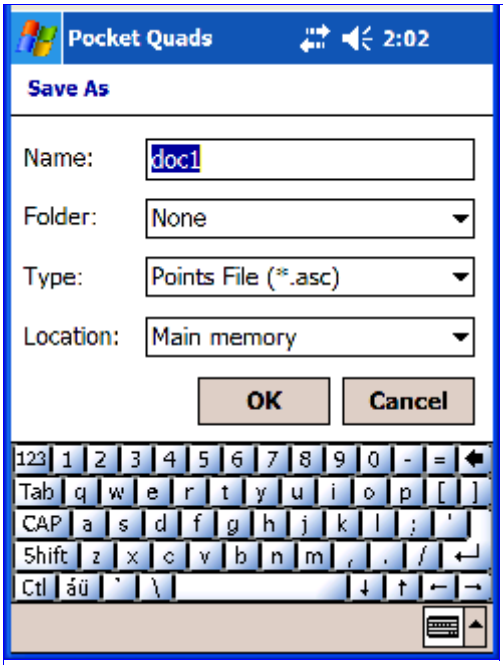


The Export All Data routine will export all of your current job file's data to a text-readable document. The Pocket Quads.NET Database (your job file) contains many fields, or columns, of information. This routine will create a text file containing virtually all of your collected data that can be easily viewed and edited.



Options include

- The number of decimal places for data
- Multiplying the Northings and Eastings of each point by a scale factor to convert your coordinates from State Plane/UTM (projected) to surface coordinates.
- Delimiter to use, such as Comma, Tab, or Space
- Whether to add a Header to the file. The header includes the time and date of the export.
- Output of Latitude & Longitude in D.MMSSssssss or Decimal Degrees format



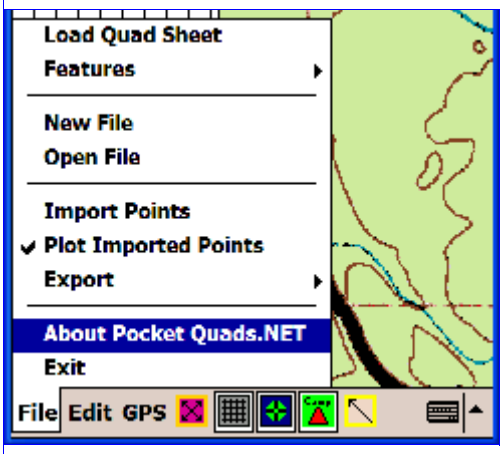
Enter a name to save the file as and a location to store the file, then tap the OK button.

Note: Job files that contain thousands of points can take several minutes to export.

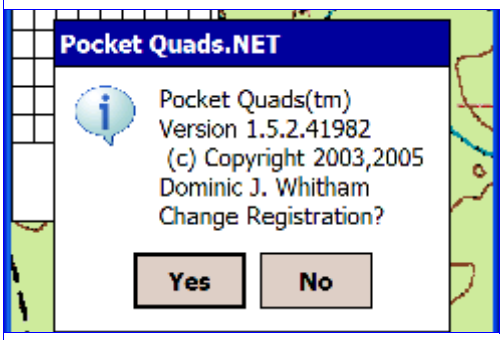
Note: Exported data files are given the .asc extension, however, because they contain many more fields than an imported .asc file allows, they can not be directly imported into a different job file using the Import Points routine at this time.

Once exported, you can copy the file to your PC using Microsoft ActiveSync®. If you exported the file as comma-delimited, you can simply rename the extension of the file from .asc to .csv. Then, simply double-click the file and it will be opened with Microsoft Excel® (if you have Excel installed on your PC), since Excel recognizes a .csv extension as comma separated values.

About Pocket Quads.NET

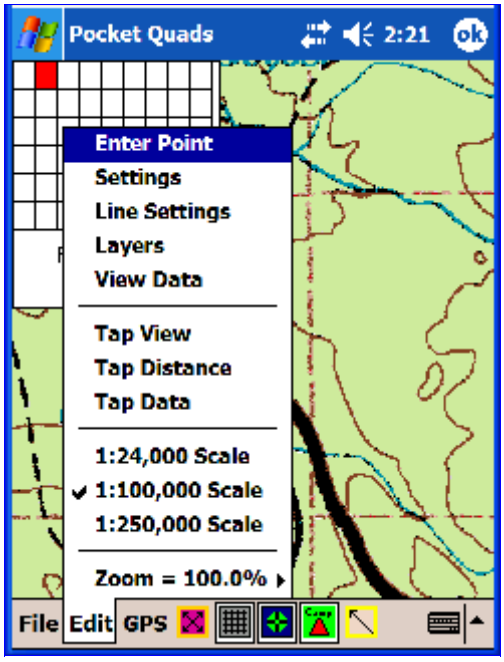


Tap the **About Pocket Quads.NET** item to see the version of Pocket Quads.NET currently installed.



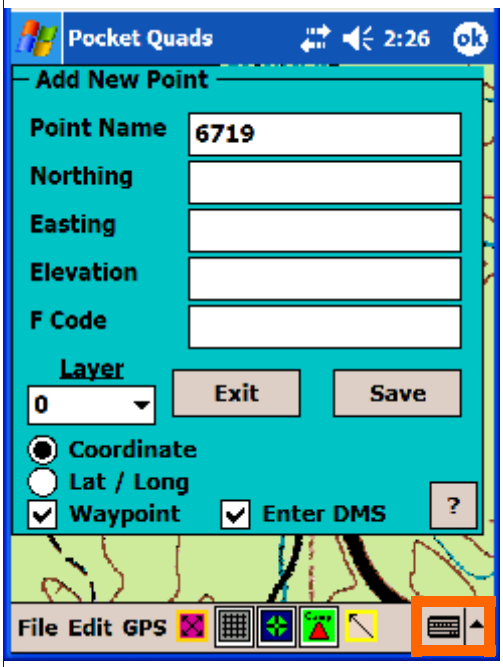
The message asks if you'd like to change your registration key. This allows you to move from a trial version to a full version of Pocket Quads.NET.

Edit Menu



Enter Point

Pocket Quads.NET lets you hand-enter points. You can enter points as Latitude and Longitude or as Northing and Easting.



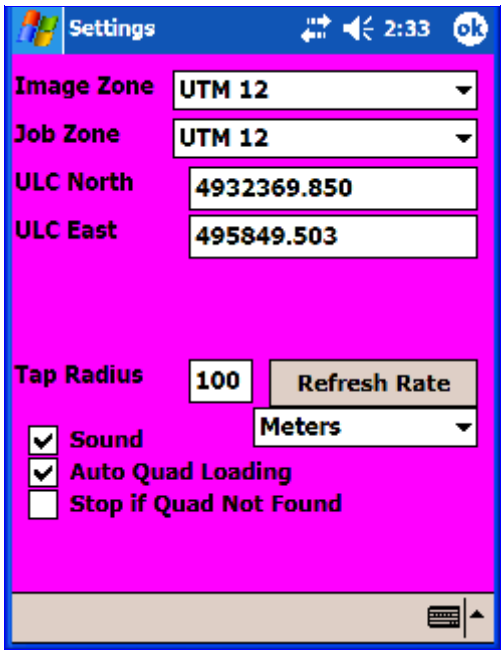
You can make the keyboard appear and disappear by tapping the Keyboard icon at the bottom of the screen.

You can enter a Name for the point, or use the next autonumber. If entering a coordinate, be sure that you've selected **Coordinate**. If entering a Latitude and Longitude, be sure to select **Lat/Long**.

You can enter latitude/longitude as DMS (Degrees, Minutes, and Seconds) or as Decimal Degrees. To enter Lat/Long as DMS, select the **Enter DMS** check box. Otherwise, you will enter the lat/long directly into the text boxes as decimal degrees.

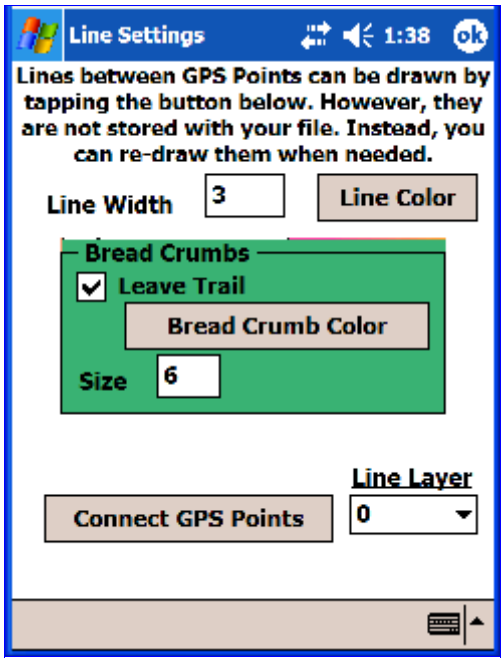
Tap the **?** Button to view information relating to lat/long entry. The **Layer** drop-down allows you to select a layer that the point will be stored on. Layers can be turned on and off. Layers that are on are visible, while layers that are off, are not visible.

Settings



- **Image Zone**—This is the image zone currently being used by Pocket Quads.NET, based on the information contained in the .pcq file for this Quad. This value should not be changed, unless it is known that the Quad sheet's zone is currently incorrect.
- **Job Zone**—Indicates the Zone that yo'd like to use for your job file. If this is different than the Image Zone, Pocket Quads.NET will automatically transform coordinates between the image and job zones when needed. All of your stored points, GPS Recorded points and other data will have coordinates based on this selected Job Zone.
- **ULC North**—Indicates the northing coordinate, in the Image Zone, of the Upper Left Corner of the Quad Sheet being used. Coordinates for the ULC are assumed to be metric, and must be NAD83 datum coordinates.
- **ULC East**—Indicates the easting coordinate, in the Image Zone, of the Upper Left Corner of the Quad Sheet being used. Coordinates for the ULC are assumed to be metric, and must be NAD83 datum coordinates.
- **Refresh Rate** button—Allows you to change the value, in seconds, of the GPS Refresh Rate. Slower processors should use slower refresh rates, such as 2 seconds. Faster processors can use refresh rates of 0.5 or 1 second. The default is 0.5 seconds.
- **Tap Radius**—The tap radius is the search radius used by Pocket Quads.NET when searching for points based on a screen tap. A radius of 10 means all points within 10 meters (or feet if using US Foot units).
- **Units**—Select the units that you'd like to use for the current job file. You can change your units, by default, by editing the Defaults.txt file located in the \Program Files\Pocket Quads.NET\ folder of your Pocket PC.
- **Sound**—Turn sound on/off
- **Auto Quad Loading**—When checked, automatically searches for and loads quads based on your GPS position. Uncheck this if using a custom map image, such as a "Big Topo" map.
- **Stop if Quad Not Found**—When checked, GPS is turned off if a Quad is not found.

Line Settings



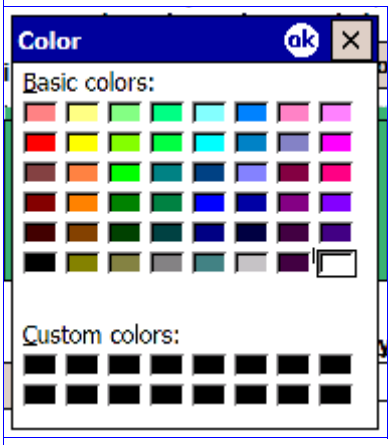
Tap the Line Settings Menu item to see the screen shown above. The Line Settings routine lets you:

- **Enter a Line Width**
- **Select a Line Color**
- **Select a Layer that will contain the lines drawn**
- **Connect GPS Points (Recorded points)**

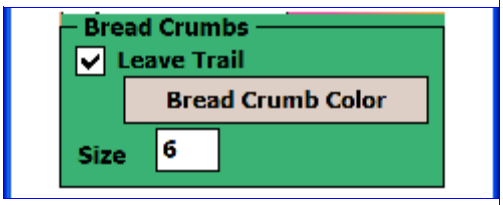
To draw lines on the image, you must:

1. Turn Panning Off
2. Turn the "Camp" (Text vs. Lines) button Off.

The buttons shown above are also set to Grid (off) and Center on GPS (On). You may want to turn GPS Centering Off while drawing lines, if you are currently connected to a GPS Receiver.

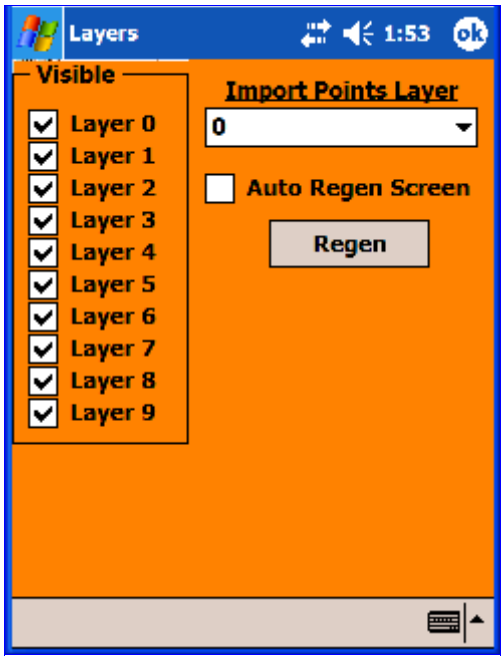


Tap the Line Color button to select a new Line Color.



Bread Crumbs are the "trail left behind" while tracking the GPS on the image. You can set the Bread Crumb Color and Size (Diameter) of the bread crumb trail.

Layers



Layers let you control what points and lines are currently visible on the image. There are 10 layers available, from 0 to 9. When creating Points (by tapping, also called Annotations), or creating Lines, you have the option of selecting which layer the Point or Line will be drawn on.

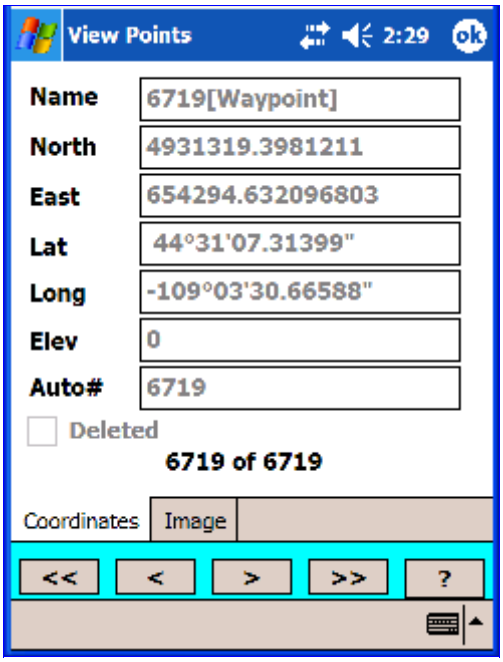
If the layer is not visible then any points and lines on that layer will not be shown on the image.

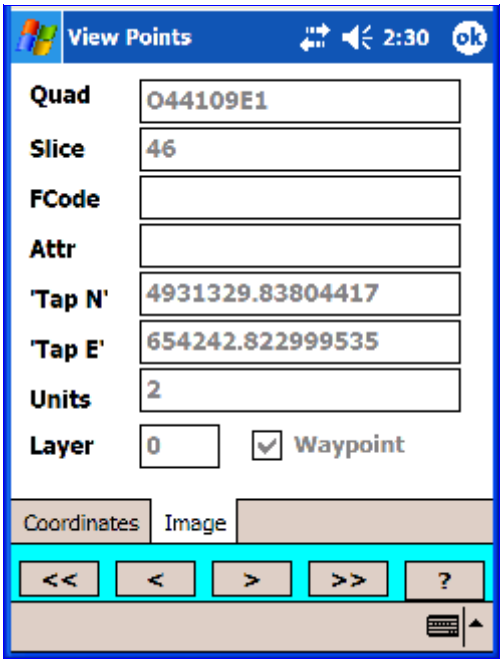
You can also select the layer for Imported Points. Typically, Imported Points are stored as Layer 0. However, you could set the Import Points Layer to 1. Then, if you don't want to see the imported points plotted on the image (slices, when each slice is loaded), simply turn off Layer 1.

The **Auto Regen Screen** check box, when checked, will force Pocket Quads.NET to redraw your lines and points when you tap the **OK** button. Or, tap the **Regen** button to force an immediate re-drawing of your points and lines.

Tip: Pocket Quads.NET searches the entire file for all the lines and points that fall within the current slice ONLY. Lines and Points that are on a layer that has been turned OFF, will NOT be plotted at that time. Each time a Regen is performed (either automatic or manual), Pocket Quads.NET re-loads the current image slice, which effectively wipes the image clean, then re-plots the lines and points.

View Data





Select **View Data** from the **Edit** Menu.

Your job file database contains data for Points, Lines, and Defaults. The **View Data** routine lets you flip through your **Point data**, one record at a time. There are many fields recorded with each point.

Points that are created by tapping and imported points are stored as "waypoints". You can navigate to waypoints (but not to GPS Recorded points, which are not waypoints). The first time you go into **View Data**, you will notice a slight delay while the database is bound to the display (a few seconds). Size of the database doesn't affect this.

Use the Arrows to navigate through your data. The arrows from left to right are:

- **First**
- **Back**
- **Next**
- **Last**

Tap the **?** button to search for a point. You will be prompted to enter the **Name** of the point.

There are two **Tabs** for the data. The **Coordinates Tab** displays the **Name, Northing, Easting, Latitude, Longitude, Elevation, and Auto#** of the point.

*The Northing and Easting in the **Coordinates Tab** are the Imported Northing and Easting (if the point was imported from an .asc file), or they represent the GPS Northing and Easting if the point was created by tapping the screen or if it was recorded using the **GPS Recorder**.*

The screens above represent a point that was created by tapping on the screen. The ***Coordinates Tab shows:***

- **The Name of the Point and the fact that it's a "Waypoint"**
- **The Northing based on the *current GPS position when the point was tapped***
- **The Easting based on the *current GPS position when the point was tapped***
- **The Latitude of the *current GPS position when the point was tapped***
- **The Longitude of the *current GPS position when the point was tapped***
- **The Elevation of the *current GPS position when the point was tapped***
- **The Auto#**

The ***Image Tab shows:***

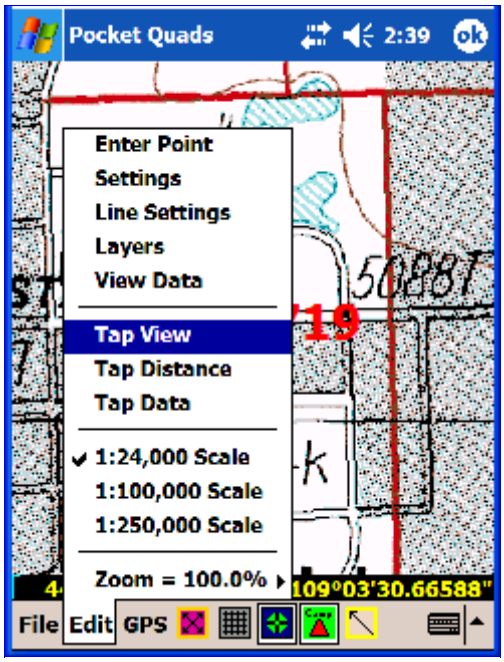
- **The currently loaded Quad**
- **The currently loaded Slice**
- **Feature Code for the point**
- **Attributes for the point**
- **The Tapped Location (Northing) of the point**
- **The Tapped Location (Easting) of the point**
- **The Units of the point (1=International Foot, 2=Meters, 3=US Foot)**
- **The Layer that the point is "ON"**

When navigating to a tapped point, you have the option (in the navigation screen) to navigate to the:

- ***Tapped location***
- ***GPS location when the point was tapped***

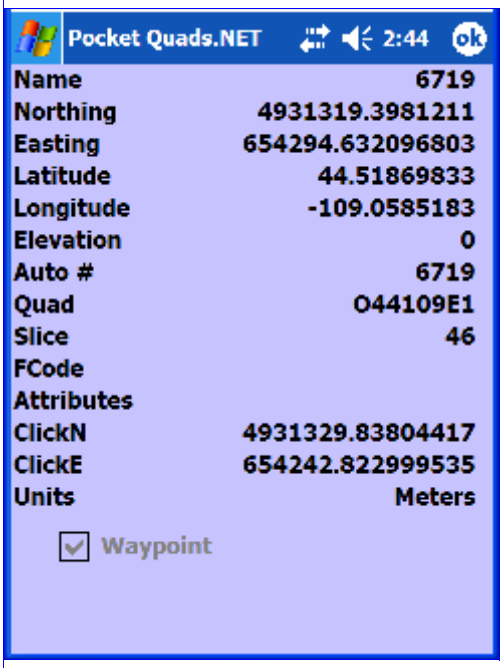
When navigating to an imported point, the imported northing and easting are used to navigate to. These are the Northing and Easting values shown in the Coordinates Tab.

Tap View



The **Tap View** function lets you tap existing points on the screen and view the data for that point. Go to **Settings** to change the search radius for the **Tap View** function.

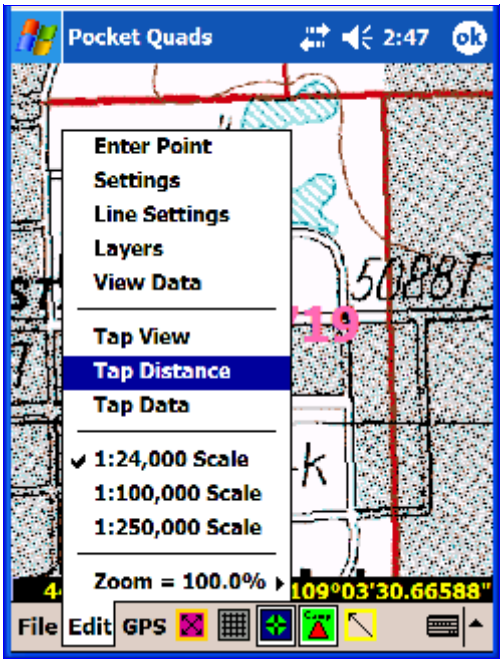
Select **Tap View** from the **Edit** menu. You will notice that the function now has a check mark beside it.

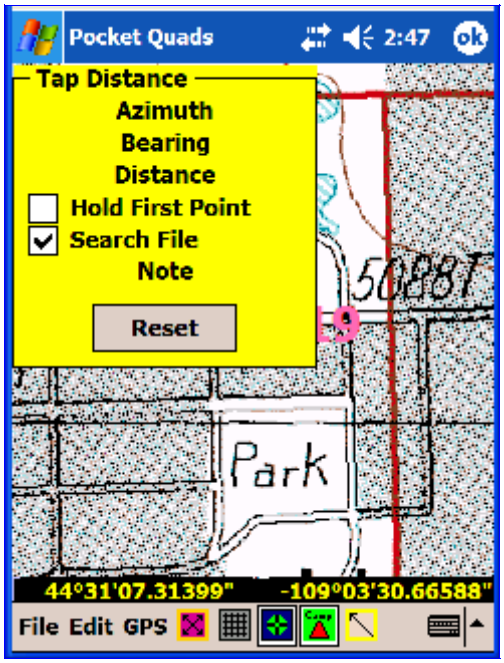


Now, simply tap any point on the screen to view the data for the point. Note that if you've recorded thousands of points, it may take several seconds or longer to search the entire database for the desired point.

The data for the point is now displayed.

Tap Distance





Use the **Tap Distance** function to find the distance between two locations on the image. You can tap any two locations on the image to see a distance. If the **Search File** box is checked, then Prosurv will search your job file database for any points within the Search Radius (go to **Settings** to change the search radius) from the tapped location. The closest point that falls within that radius is then used to compute the distance.

So, when **Search File** is checked, you can:

- Find the distance between two stored points
- Find the distance between a tapped location and a stored point
- Find the distance between two tapped locations

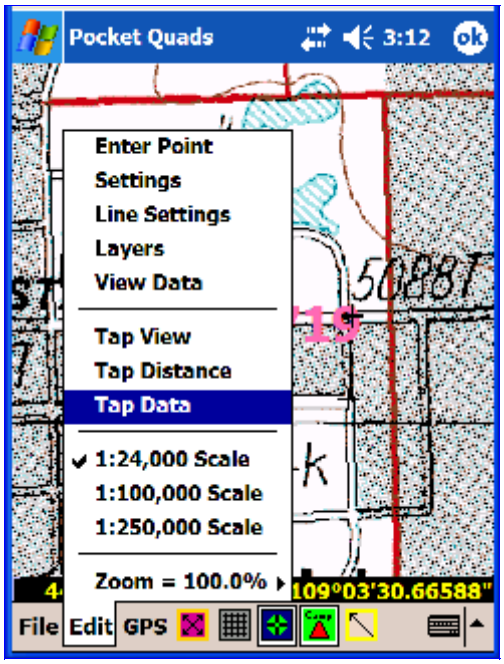
You can drag the Yellow box around (using your stylus), to move it so it's not in the way of where you want to tap. The Azimuth, Bearing, and Distance between the two locations is displayed. Subsequent taps use the last point tapped as the first point for the next distance computation, unless you check the **Hold First Point** box. Then, all computations will be between the **first point tapped and the current tapped point**.

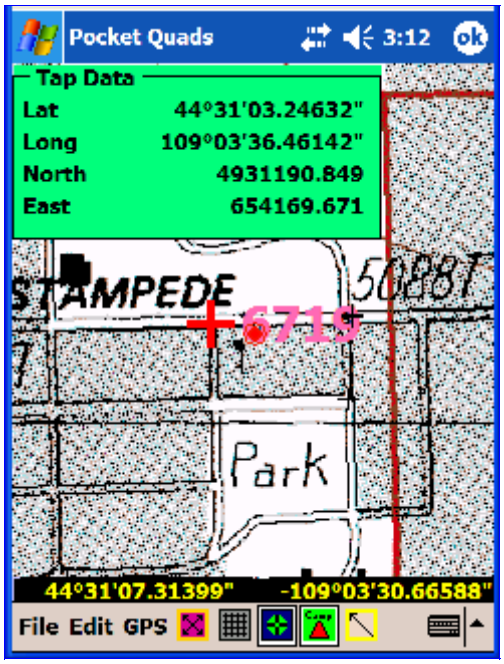
Tap the **Reset** button to 'Start over'.

Important Notes about Tap Distance

- ***Large databases can take a while to search through, if Search File is checked***
- ***Distances shown are in the Units selected in the Settings screen***
- ***A small crosshair is displayed where you tap, if a point is not found within the search radius (or Search File is unchecked). If Search File is ON, and a point is found, the text for the point will turn Lavender.***
- ***The Inverse performed is a Grid Inverse. Pocket Quads.NET always uses a State Plane or UTM coordinate system. These coordinate systems are a Projection, usually Transverse Mercator or Lambert. Projected coordinate systems are a plane representation of the Earth for a given location. What this means is that the distances shown are different than the distances measured on the ground (usually by a small amount, but one that is very relevant to surveyors). Surveyors refer to this as Grid Distances versus Ground (Surface) Distances. At higher elevations, the Scale Factor between ground and grid distances is more pronounced.***
- ***Tapping on an image is like scaling from a map. The more precise your tap or your scaling, the better the results. Using the digital image represents perhaps the absolute best that you could scale using a paper map, by hand. In other words, the digital image is every bit as good, if not better, at determining a position based on a "pinpoint" location on the map. However, due to the map scale, the thickness of your stylus' point, as well as the ability to correctly tap the screen at the desired location, the distances between the points is only as good as these factors allow.***
- ***Though the distances are shown to three decimal places, and the Azimuths and Bearings are shown to the nearest second, the preciseness of the results are ONLY due to the computations. The angles and distances shown are only as good as a digital map and other factors will allow, and may be "OFF" by as much as several meters or more.***

Tap Data



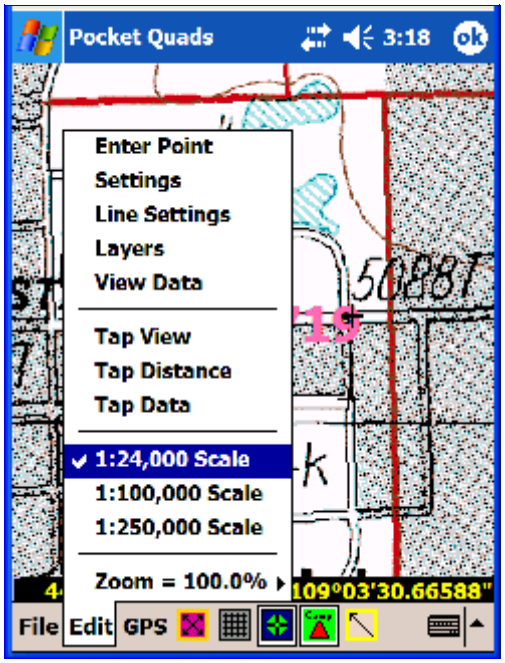


Select the **Tap Data** menu item to view the **Tap Data** screen (shown above). The Tap Data screen lets you see the Latitude and Longitude as well as the Coordinates for any location that you tap on the screen. The coordinates are based on the Job Zone and Units which you can set in the **Settings** screen.

You can move the **Green box** by dragging it with your stylus.

Please note:
Tapping on an image is like scaling from a map. The more precise your tap or your scaling, the better the results. Using the digital image represents perhaps the absolute best that you could scale using a paper map, by hand. In other words, the digital image is every bit as good, if not better, at determining a position based on a "pinpoint" location on the map. However, due to the map scale, the thickness of your stylus' point, as well as the ability to correctly tap the screen at the desired location, the tapped locations are only as good as these factors allow.

Map Scales



Pocket Quads.NET includes the ability to display 3 different scale maps:

- **1:24,000 (7.5' USGS Quadrangle maps)**
- **1:100,000**
- **1:250,000**

You can switch scales "on the fly" as long as you are currently connected to a GPS Receiver. Simply tap a different map scale and, within a few seconds, the new map is displayed (if the map exists at the path you've set for the maps—see Utilities—>Quad Path for more information).

For the Yellowstone National Parks Edition, all 3 scale maps are included and have been pre-processed, ready for use with Pocket Quads.NET.

Trouble-shooting auto map loading

If you're having trouble with the auto-loading of maps or switching between different scales, check the following:

- **Have you correctly set the Path to the Topo Maps in Utilities->Quad Path?**
- **Is Center on GPS On? (The third button. On is when a black rectangle appears around the button).**
- **Are you successfully connected to, and receiving data from, a GPS Receiver?**
- **Are there enough satellites (usually 4 or 5 are required for a fix)**
- **Has the GPS Receiver "fixed" a position, or is it still waiting due to poor satellite coverage, poor PDOP etc?**
- **Does the map for the desired scale exist at the proper location?**

A nice feature of Pocket Quads.NET is the auto-changing of scales if a map scale doesn't exist. For example, let's say you're driving down the highway and all is well. You're currently viewing a 1:24,000 scale map. As you drive North, you leave the current Quad. The next 1:24,000 quad, north of the one you're viewing, is searched for, but not found. **Pocket Quads.NET will then automatically switch to the 1:100,000 scale map.** If that map isn't found, then Pocket Quads.NET **looks for the 1:250,000 scale map automatically, all within 10 seconds.** So, even if you don't have the coverage of an entire State's 1:24,000 scale maps, you *could easily* fit all of the State's 1:250,000 scale maps on a single CF or SD Card.

Then, you'd always be covered, no matter where you go within the State.

USGS Map Names

The file names for each map are very significant. The USGS uses a file name structure that makes it easy to identify the type and location of each map:

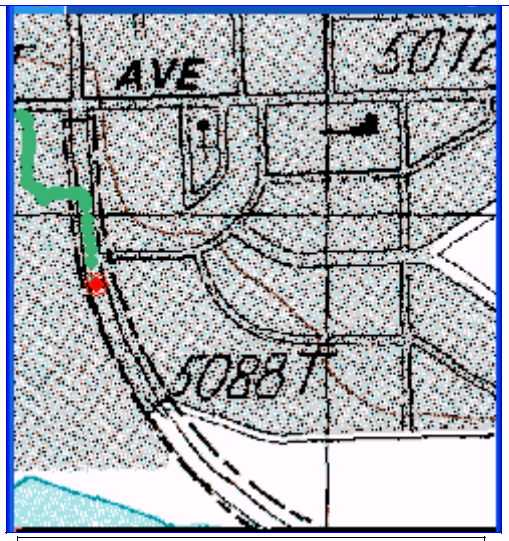
- A **"C"** indicates a **1:250,000** scale map
- An **"F"** indicates a **1:100,000** scale map
- An **"O"** indicates a **1:24,000** (7.5' Quadrangle) map

The first two numbers are the bottom right corner's Latitude. The next three numbers are the bottom right corner's Longitude. From there, the Lat/Long is divided into 8 columns and rows. For 1:24,000 scale maps, the rows are A through H and the columns are 1 through 8, again starting from the lower right hand corner:

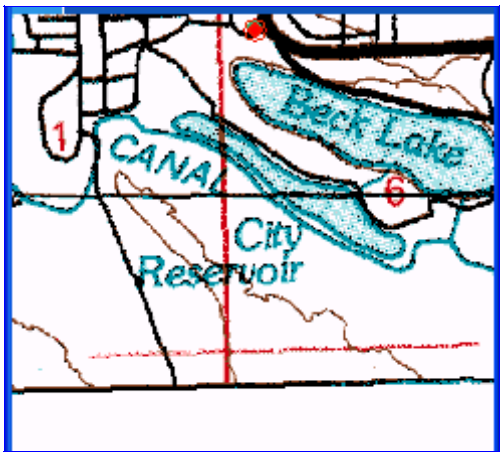
- **A or 1=0'**
- **B or 2=7.5'**
- **C or 3=15'**
- **D or 4=22.5'**
- **E or 5=30'**
- **F or 6=37.5'**
- **G or 7=45'**
- **H or 8=52.5'**

NOTES:

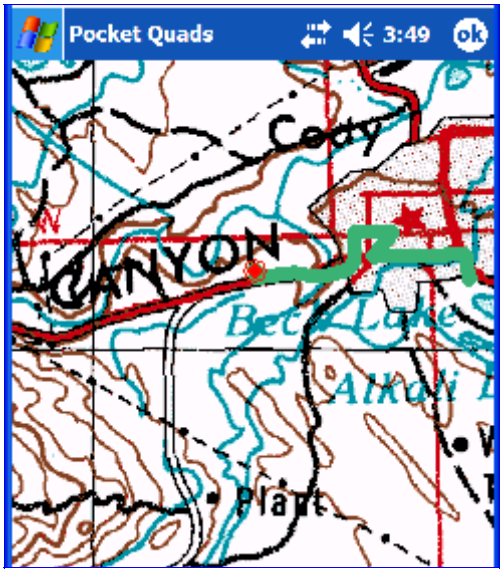
- If the Overview grid is On, it will turn **Blue** when a Quad is not found.
- Points created by tapping store the Quad name as part of the point, so a point appearing on a 1:24,000 scale map ***will not appear*** on the 1:100,000 or 1:250,000 scale map



1:24,000 Scale Map

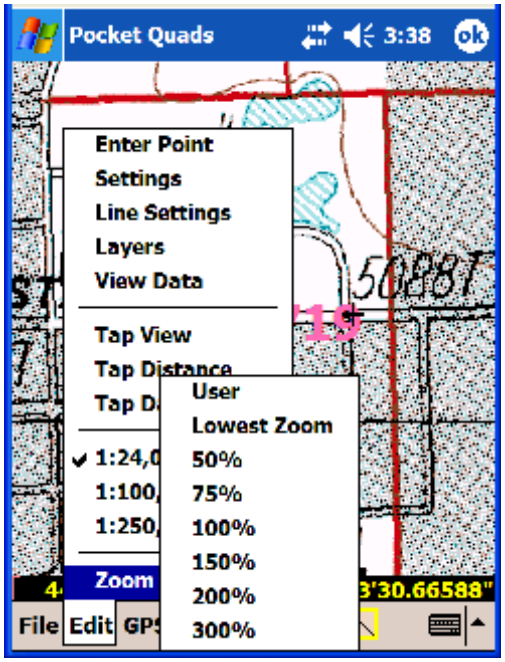


1:100,000 Scale Map



1:250,000 Scale Map

Zoom



Pocket Quads.NET gives you the ability to Zoom in and out of images.

You can zoom anywhere from 39% to over 400% or higher. Several zoom levels are pre-defined, or, you can enter your own zoom percentage.

Each map, when loaded, determines it's own "lowest zoom" percentage. Typically, this is around 35% or 39% depending on the map. The reason for the lowest zoom is that the program determines the smallest zoom amount possible, based on the height or width of the map as compared to the height or width of the image size available on the screen.

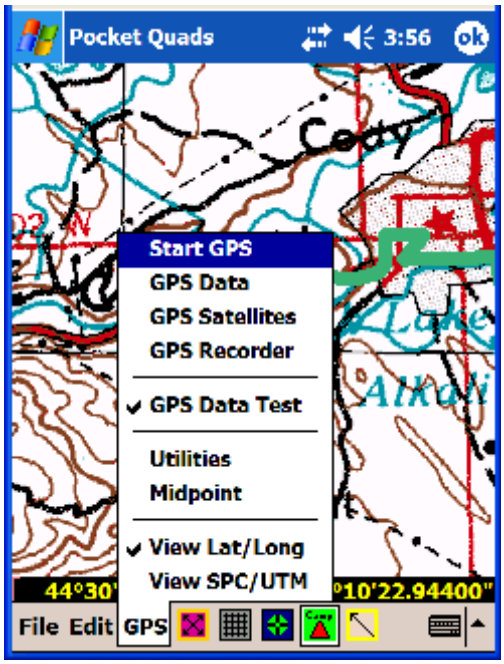
If you change a Zoom amount while Center on GPS is ON, and while connected to a GPS Receiver, the zoomed image is automatically re-positioned based on your current GPS location. Tracking, point taps, point creation, and all other image-related functions operate at all zoom levels.

If you change the Zoom and GPS is OFF, then the image will not be re-positioned automatically.

The GPS Data Test function operates as if connected to a GPS receiver, therefore, all zoom functionality will occur as if connected to a GPS receiver.

Entering a zoom amount less than the Lowest Zoom, results in the lowest zoom being used. You can set the zoom percentage manually by tapping the **User** item in the Zoom menu.

GPS



Start GPS

To use Pocket Quads.NET's GPS functions, you need a GPS Receiver that's capable of NMEA data output. Dozens of GPS Receivers are available. Some require a cable connection, while others allow you to communicate via ***Bluetooth®*** wireless technology.

If your Pocket PC has built-in Bluetooth capability, we recommend using a Bluetooth GPS Receiver. This gives you the freedom of placing the GPS Receiver on your dashboard, letting you or another passenger in your vehicle hold the Pocket PC, while still communicating with the GPS. Additionally, a separate GPS receiver allows you to place the receiver on a hat, while holding and walking with the Pocket PC.

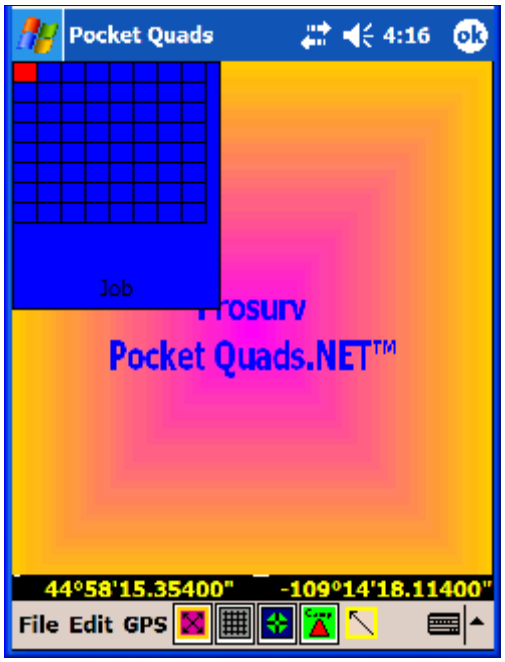
Either way, you can get the most out of the Pocket Quads.NET software by connecting to a GPS Receiver*.

The **Start GPS** function automatically attempts to connect to a GPS Receiver using the serial port of your Pocket PC. The routine automatically configures the correct baud rate and com port to achieve successful communication with the GPS Receiver, whether connected by cable or through a Bluetooth Serial connection.

Please see our ***Bluetooth GPS with Pocket Quads.NET*** documentation for details on setting up a successful communication between your Pocket PC and a Bluetooth GPS Receiver.

If using a cabled GPS connection, there is nothing to setup...just connect, turn the Power on and tap **Start GPS.**

*Pocket Quads.NET uses a control by franson.biz to collect and parse GPS data.

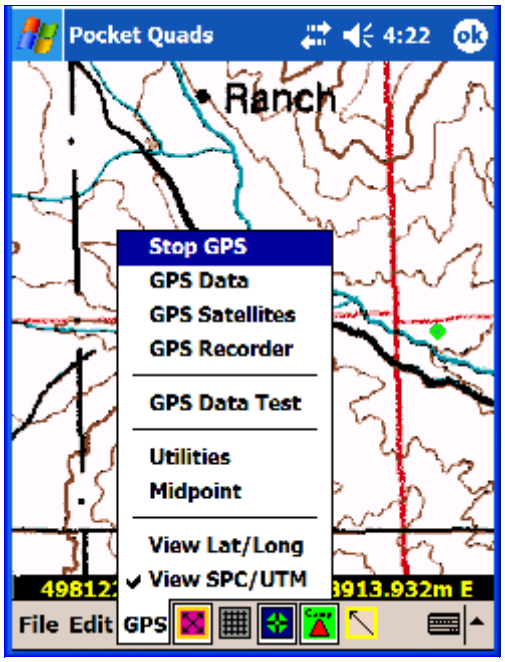


After tapping Start GPS, you will see messages showing the status of the connection:

Connecting…Pocket Quads.NET is attempting to connect to your GPS Device.

Connected!... Pocket Quads.NET has connected to the GPS Receiver, and is waiting for enough Satellites for a "Fix".

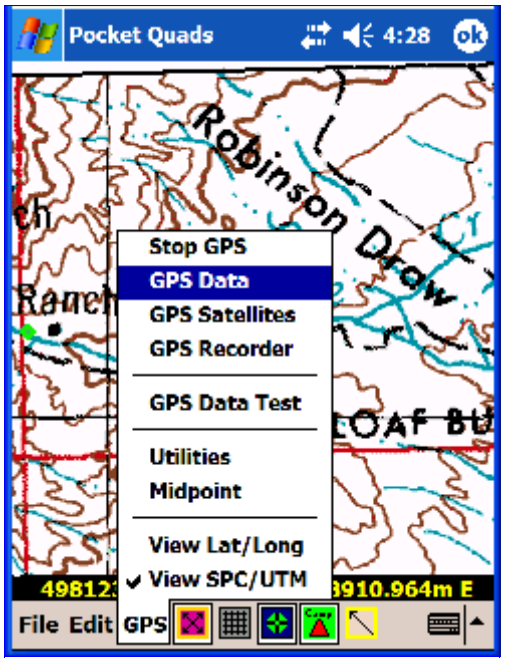
A Blue Grid Overview...Pocket Quads.NET is searching for the correct map to display. If it stays Blue, then no map has been found that matches your current position.



Once connected, the GPS Start function changes to **Stop GPS.** Simply tap this function to Stop the GPS Receiver.

If communication seems unsuccessful, yet the menu item has changed to "Stop GPS", go to the **GPS Data** screen and tap the Stop GPS button to re-initiate the display.

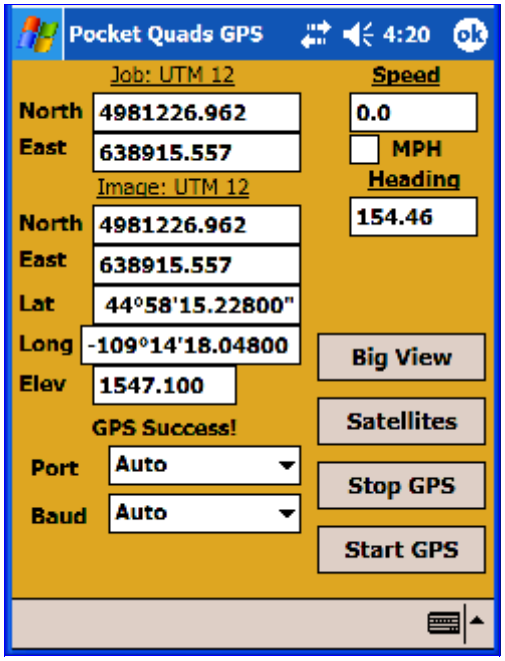
GPS Data



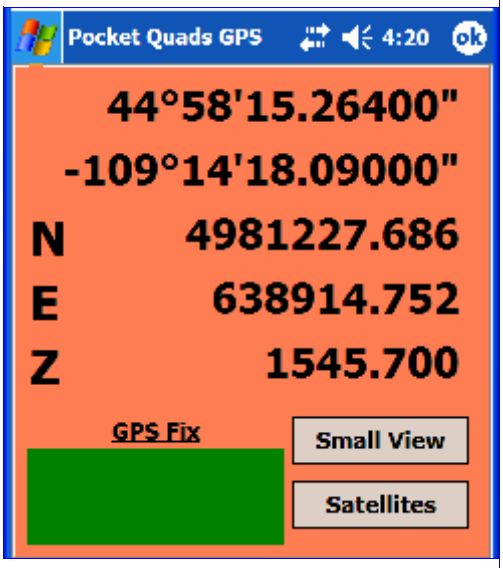
Select **GPS Data** from the GPS Menu.

Use this function to:

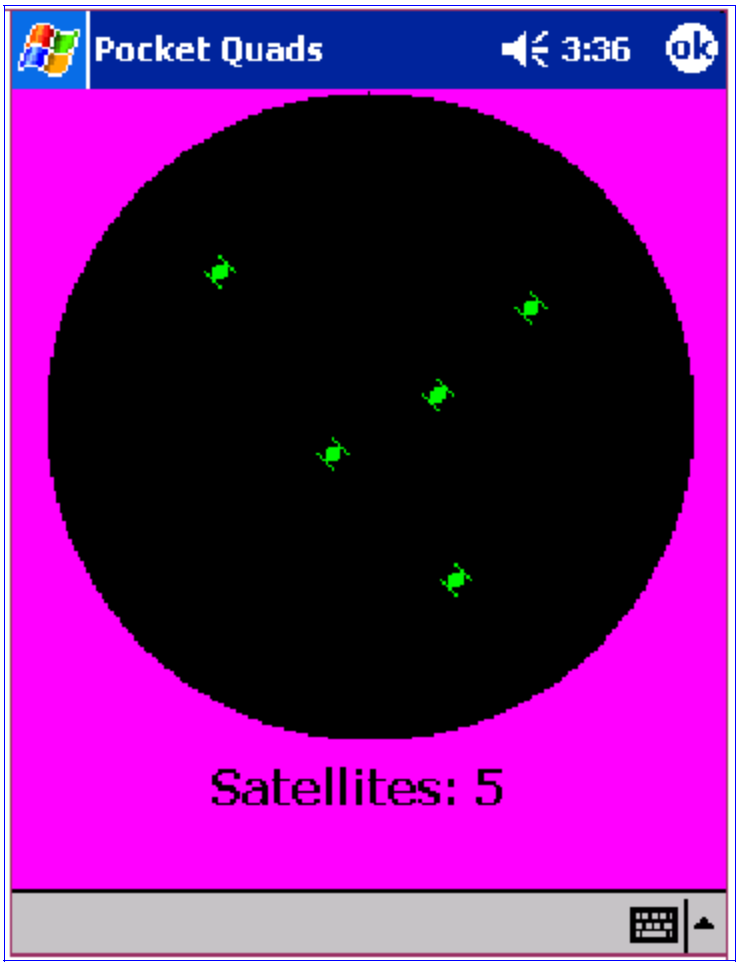
- View the coordinates based on the Job Zone
- View the coordinates based on the Image Zone
- View the Latitude and Longitude given by the GPS Receiver
- View the Elevation given by the GPS Receiver
- View your current Speed in KM/hr or MPH
- View your current Heading (Azimuth)
- Set a custom Port and Baud Rate



Tap the **Big View** button to switch to a **Large View** of the coordinate and lat/long data.

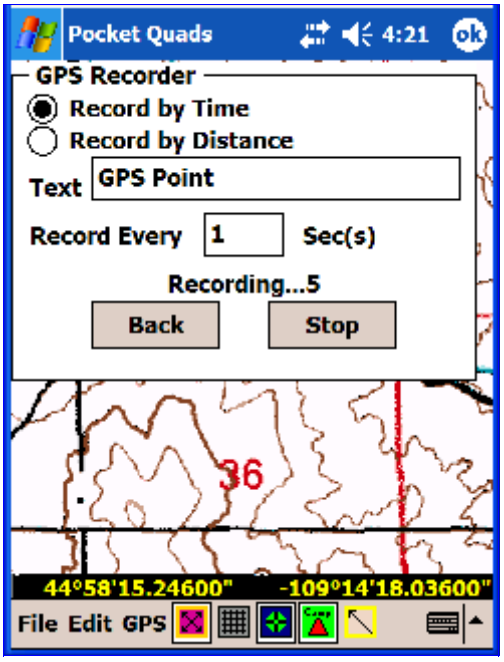


GPS Satellites



Tap the **GPS Satellites** Menu item to display the current satellite configuration.

GPS Recorder



Select the **GPS Recorder** function from the GPS Menu.

This function lets you record GPS Points by time or distance intervals:

- Record points every 1 second, 2 seconds, or more.
- Record points every x feet or meters, such as every 50' or every 20 meters.

Tap the **Start button to Start recording. The button changes to "Stop" once recording has started.**

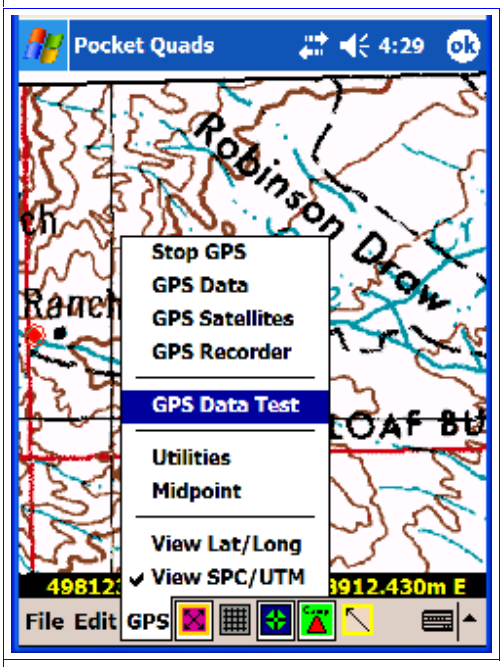
Tap the Back button to exit the recorder screen without stopping.

If you want to record a point manually, by tapping the screen, you should Stop the GPS Recorder first.

You can enter some text that's stored as the "Attribute" for each recorded point. The default text is "GPS Point".

GPS Data Test

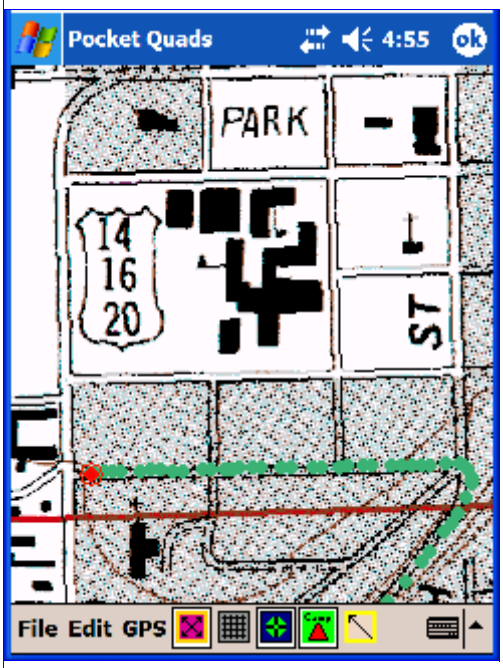
You can see Pocket Quads.NET in action by running the included GPSTest.txt file. This file contains Latitudes and Longitudes that were actually recorded by Pocket Quads.NET using a Bluetooth GPS Receiver and a Dell Axim X50v Pocket PC.



The *GPS Data Test* function will read a Lat/Long text file and simulate using a GPS Receiver. It simply reads the text file and then operates as if connected to a GPS Receiver.

To see this working, tap the GPS Data Test function. *Tap Yes to continue.*

This *GPSTest.txt* file contains about 2 hours of data and was created using Pocket Quads.NET by recording one point per second. The Pocket Quads.NET file was then Exported using the Export—>All Data function. There are over 6700 recorded 'points' in the file.



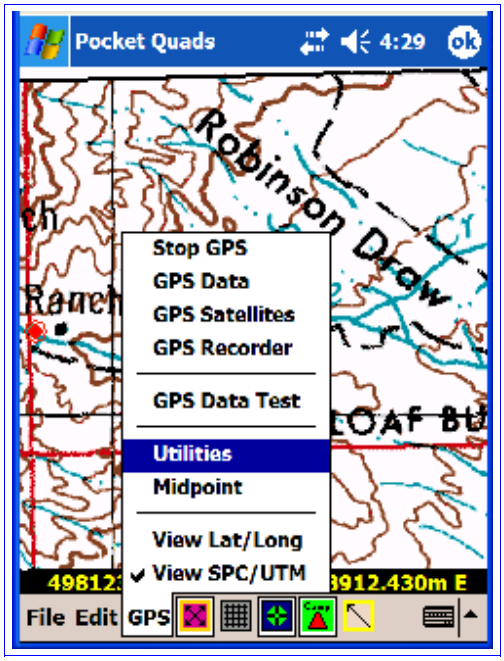
The GPS Test file (included in the Yellowstone National Park Edition) starts out at the Prosurv LLC Cody Office, then heads East, pulling in to the Albertson's parking lot. From there, we head south to McDonald's (to grab a bite to eat).

Next, the GPS tracks us heading West on our way to the North Fork (road leading to the East Entrance of Yellowstone National Park). While still in Cody, we stop at Walmart for some supplies, and fill up the tank at the Cenex gas station.

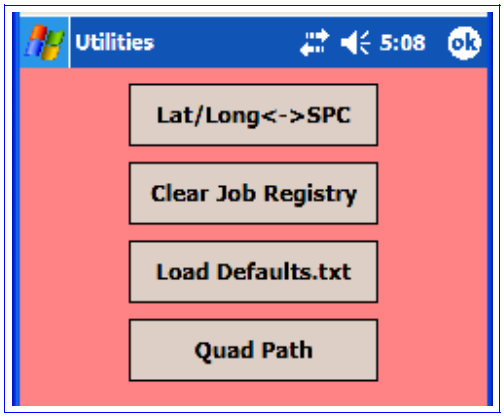
Finally, we're on our way!

Note that you can zoom and change map scales just like when using your GPS Receiver.

Utilities



Use the Utilities function to



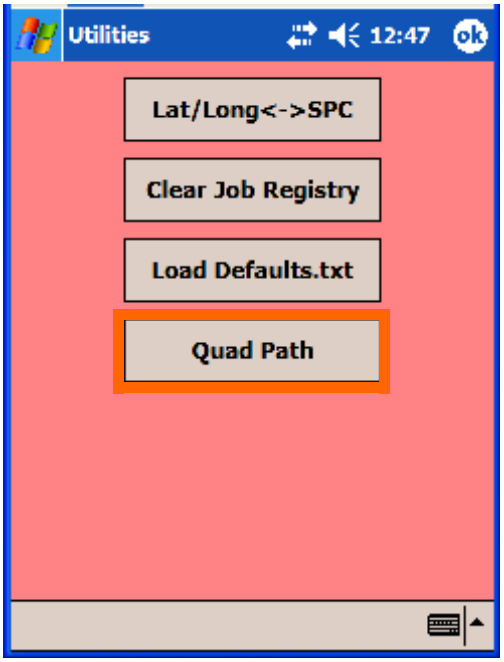
- Convert between Latitude/Longitude and State Plane or UTM coordinates
- Clear the Job Registry
- Re-Load the Defaults.txt file
- Change/Edit the Path used to search for Quads (Topo Maps)

The **Clear Job Registry** function clears the place in the Pocket PC registry where the "last job file name" is stored. Once cleared, then the next time Pocket Quads.NET is started, it won't load a job automatically.

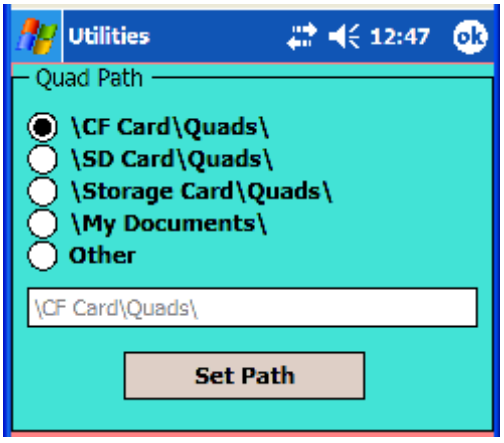
The **Load Defaults.txt** button reloads the Defaults.txt file, located in the \Program Files\Pocket Quads.NET\ folder of your Pocket PC.

Setting the Path to the Topo Maps

Pocket Quads.NET needs to know the path to the topo maps. The easiest way to set the path is to use the Utilities function located in the GPS Menu.



Tap the Quad Path button.

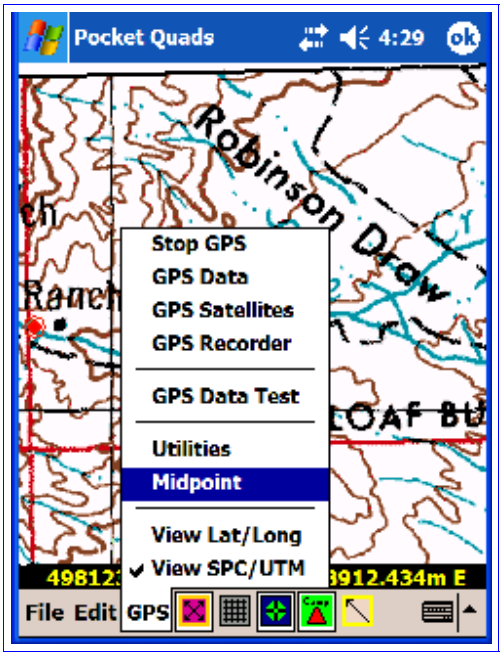


You can select a 'standard path', or set the path manually by tapping 'Other'. If you're unsure about the name of the path to use, you can use ActiveSync® to see the name given to your flash card (such as CF Card or SD Card or Storage Card). Each device or Pocket PC may be different.

Due to the very limited memory capacity of Pocket PC's, storing and using maps within the devices' *My Documents* folder is not recommended (or anywhere on the device itself).

Simply tap the *Set Path* button, and the path to your maps is recorded. This path will remain unchanged until the next time you change it here (the path is stored within the Pocket PC's registry).

Midpoint

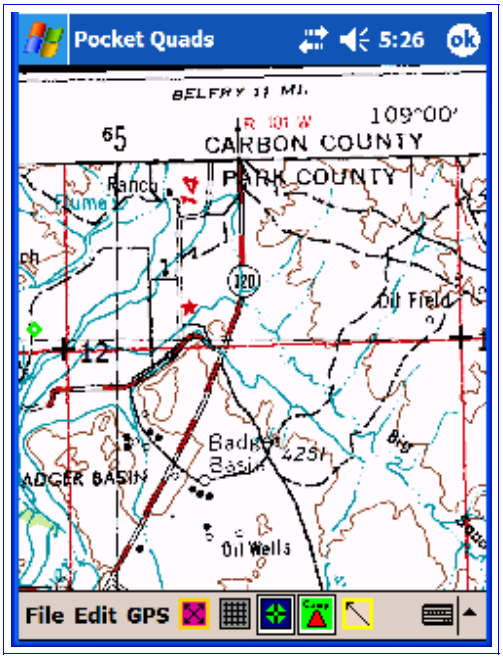


The Midpoint function is especially useful for surveyors performing recon (looking for section corners). This routine will compute the distance between two points and create a new point half-way between the two given points.

Surveyors can use this routine to create a search point for "1/4 corners" between two section corners.

Many topo maps show the location of section lines (red lines on the image). The intersection of the red lines indicates a section corner. A "plus" + sign is an indication that the actual section corner monument was found by the USGS at the time of the survey.

However, it is more difficult to "see" on the image where a 1/4 corner might lie. So, we created a way to create a point that's mid-way between two section corners—a good start for searching for the 1/4 corner.

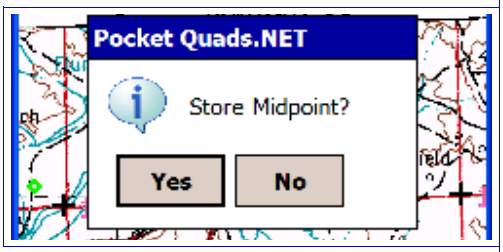


The 1:250,000 image shown here, reduced to 50% zoom, shows a clear view of a section line and two section corners.

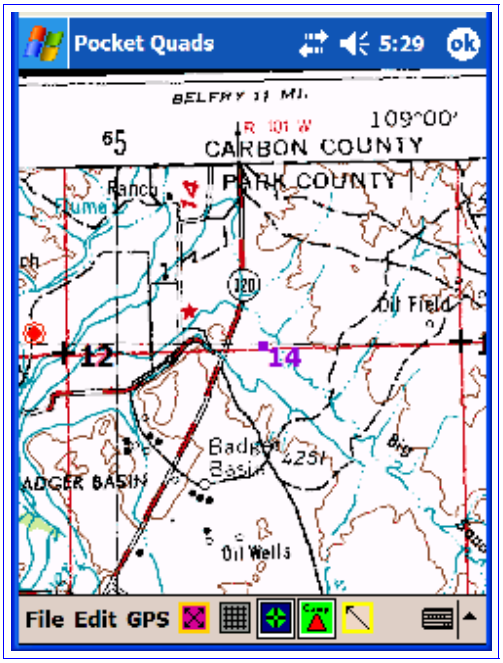
To create the section corners, first, turn Panning OFF. Then, tap the two locations of the section corners, storing points 12 and 13.

Then, select the **Midpoint** function from the GPS Menu.

Tap the two points, 12 and 13



You're now asked if you'd like to store the midpoint.

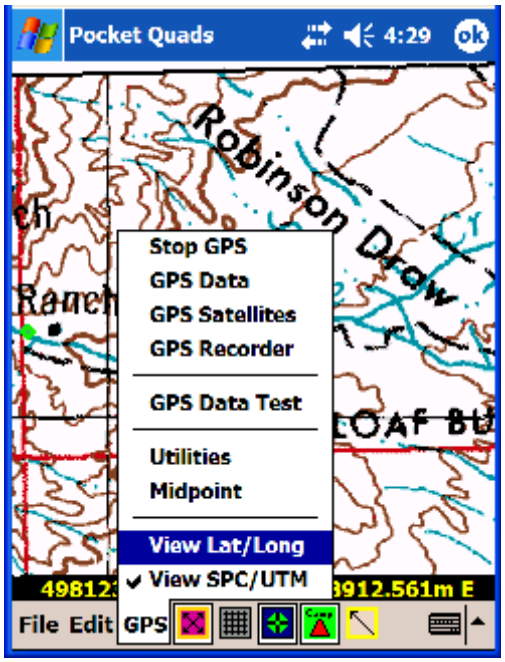


The midpoint is now computed and stored. It appears as point number 14, half-way between 12 & 13.

You can navigate (stakeout) to midpoints, just like any other created or imported point.

Be sure to uncheck the **Midpoint** function when you're done using it.

View Lat/Long & SPC/UTM



The black rectangle at the bottom of the screen displays the current GPS Latitude and Longitude or State Plane or UTM Coordinates when connected to a GPS Receiver.

You can switch between viewing the Latitude/ Longitude or your Coordinates using the **View Lat/ Long** and **View SPC/UTM** menu items.

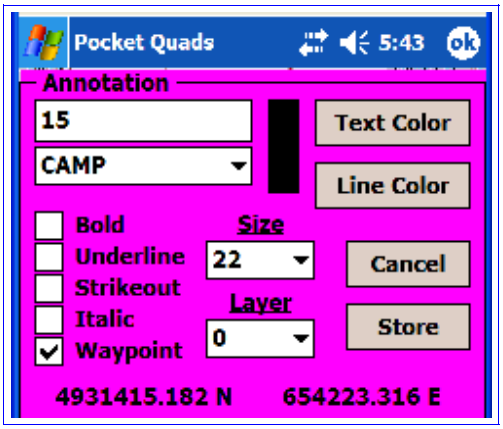
Sometimes, it may appear that the current tracking of the GPS position is not visible on the screen. It is probably due to the tracking being at the very edge of the screen image, and it may actually be behind the black bar displaying the lat/long or coordinates.

Simply uncheck the **View Lat/Long** and **View SPC/UTM** menu items to make the black bar go away, allowing you to view the full screen.

Screen Functions

To create points and lines on the image, you must first turn the Panning feature OFF. To do this, simply tap the **Pan** button, which is the first button on the left.

Tapping the Screen with the "Camp" button ON

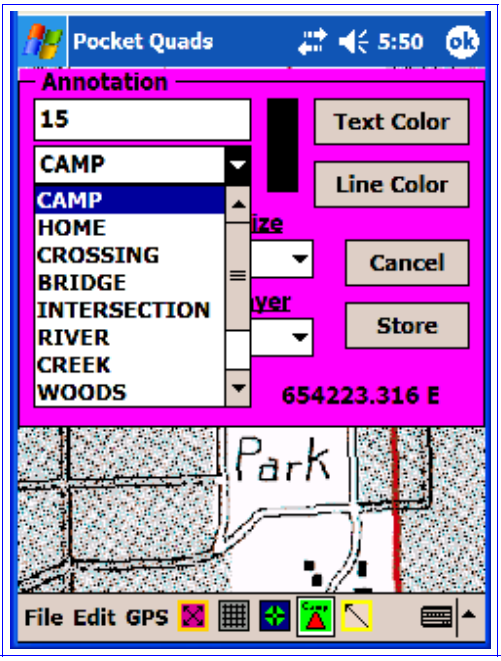


The tapped screen location is recorded immediately, and the screen shown (above) is displayed. This is the "Annotation" screen, which lets you define the point that you've just created. In this screen you can:

- Select from many font options
- Set the font size
- Set the Layer that the point will be stored on
- Select a color for the text and lines of the point
- Enter any text as the Name for the point

The coordinates of the tapped location, in the Job Zone's coordinate system, are displayed. When you tap and create a point, the current **GPS Position** is ***also stored with the point.*** This position is shown in the **Coordinates Tab of the View Data screen. The tapped location is stored as the "Click N" and "Click E" fields, and is seen in the Image Tab of the View Data screen.** So, in essence, two locations are stored for the same point. One is the tapped location, and the other is the actual GPS position when the screen was tapped.

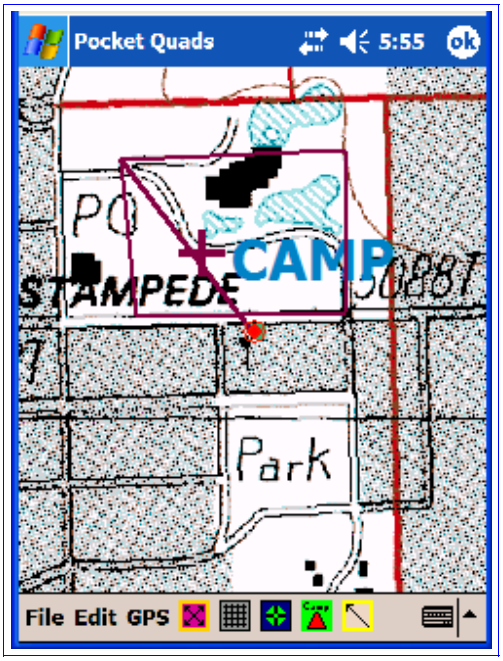
When you navigate to a point, you have the choice of navigating to the ***tapped location or the GPS location of the point.***



You can select from a pre-defined list of "names". When you tap on a pre-defined name, it will appear in the text box above the list. This list can be changed by editing the **Codes.txt** file located in the \Program Files \Pocket Quads.NET\ folder of your Pocket PC.

To load the edited list, quit and re-start Prosurv Pocket Quads.NET.

Tapping the Screen with the "Camp" button OFF

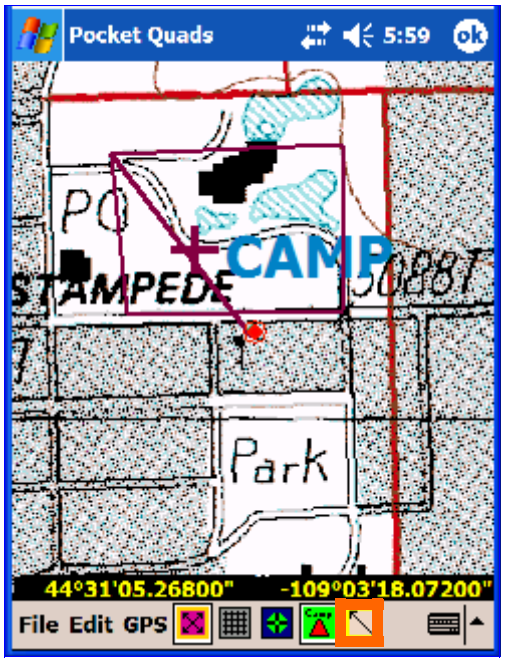


The first tapped point will be the start of a new line. Subsequent taps will create successive end points of new lines.

You can change the Line Color, Width, and Layer using the Line Settings function.

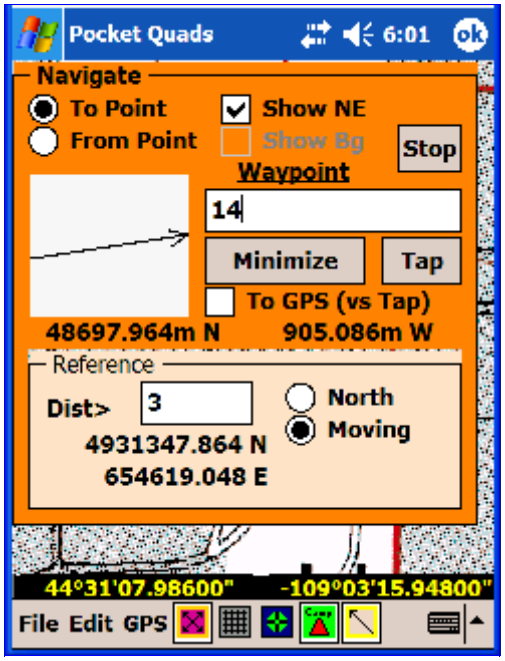
Remember, each line is also stored with your job file, and lines are redrawn (just like points) when you load a new slice or Quad, depending on your current Layer settings. Of course, lines and points are only redrawn on the Quads and Slices that they "belong to". In other words, shown here is the 1:24,000 scale map with the lines drawn. If the 1:100,000 scale map is loaded, you will not see the lines drawn.

Navigate to a Point (Stakeout)



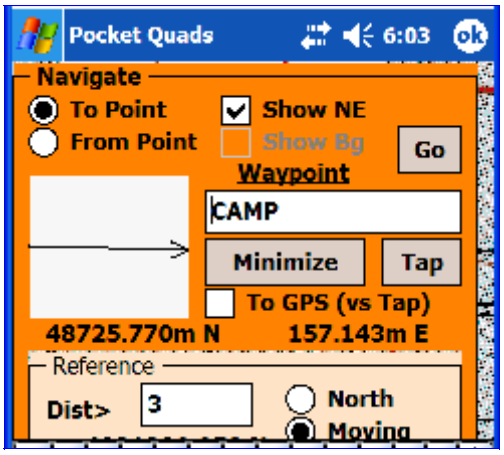
Pocket Quads.NET can navigate to points, showing you direction and distance to the point as you walk or drive.

Tap the **Navigate** button to activate the Navigation screen.

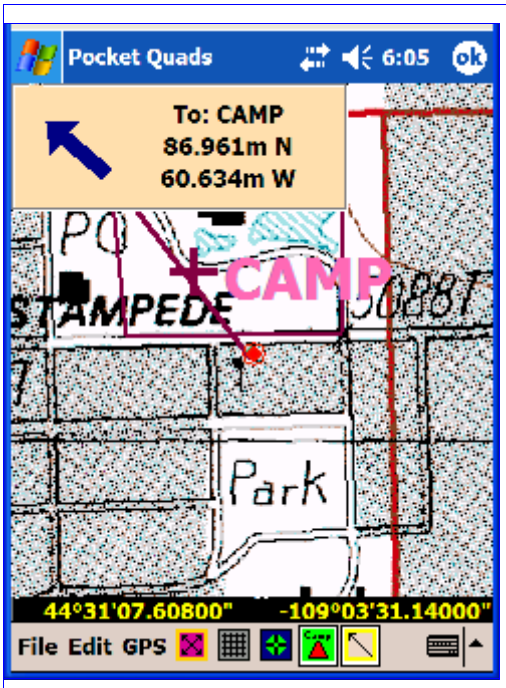


Currently, we're navigating to point #14. To navigate to a different point, such as the **CAMP** point created above, simply tap the **Stop** button (the button will change to **Go**).

Tap the **Tap** button so that you can simply tap the **Camp** point shown on the image. Notice that the text box changes to "CAMP".



Tap the **Go** button to begin Navigating to the point.



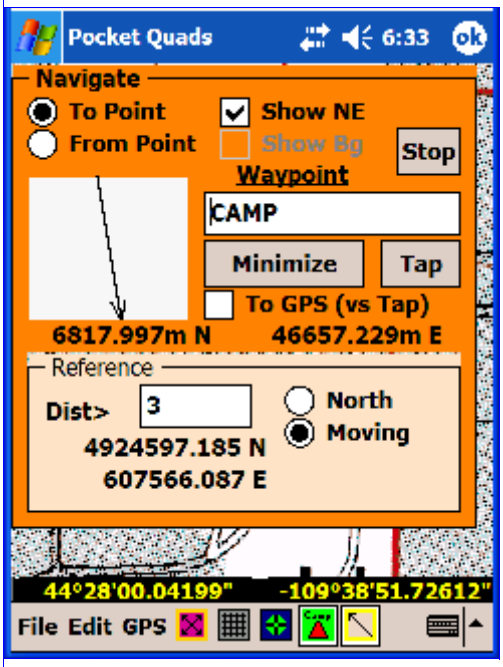
The large navigation screen is replaced by a smaller window with a large **Blue Arrow**. The window also displays:

- The point being navigated to
- The amount to go North & West to get to the point

The arrow changes direction as you walk or drive, ***based on your movement.*** If you're heading directly towards the point, then the Arrow will point straight up. If you're heading away from the point, then the Arrow will point straight down. This is called ***movement-based*** navigation.

Tap the **Navigation** button to make the navigation window disappear. Tap it once more to see the full navigation screen.

If part of the screen is hidden by the keyboard, simply tap the keyboard icon to make it go away (or reappear as needed).



Options for Navigating to a point include:

- **Navigate from or to the point**
- **Show North & East or Bearing/Distance**
- **Navigate to the GPS position that was recorded when the screen was tapped (tapped point), OR navigate to the Tapped location**
- **Use North or Movement-based navigation**

Note that the arrow in the full navigation screen is North-only (not movement based).

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