DGPS and MapInfo

how the Suquamish Tribe
is making them work together

What's involved?

MapInfo running on a laptop
Blue Marble's GeoTracker.mbx
GPS receiver (with NMEA-0183 output)
Differential Beacon Receiver (DBR)
12-volt power supply
something to contain it all

$$?

MapInfo running on a laptop ($1300 + $1500)
Blue Marble's GeoTracker.mbx ($0)
GPS receiver (with NMEA-0183 output) ($300+)
Differential Beacon Receiver (DBR) ($500)
12-volt power supply ($50)
something to contain it all (0$ - $150)

This is really a BUDGET setup. To get the same accuracy with a more deluxe DGPS setup from Trimble or Ashtech, etc. would range from $5,000 to $9,000 and up.

Why use GPS?

To accurately locate features in "real life" for input into your GIS. You could on-screen digitize from 1m+ orthophotos or other high-accuracy sources, but for smaller features it just isn't practical because you can't see the features on the photo. Some projects are only possible with GPS, like our geoduck surveying with the Shellfish Biologist.

"Easy and accurate field data collection."

Why not use GPS alone?

Handheld GPS receivers are wonderfully portable, but they are often limited in how many datapoints they can capture - often 100 to 250 which is not enough. Downloading, then parsing out in a spreadsheet back in the office (without annotation since it's too difficult on the dinky GPS) then importing into MapInfo ... it's a pain.

Post-processing is a bigger pain.

Also, without the DBR accuracy is within about a 300' circle most of the time - not so good.

With MapInfo you build your table in real-time (!) and you can QC as you go. Wow!

DBR? DGPS?

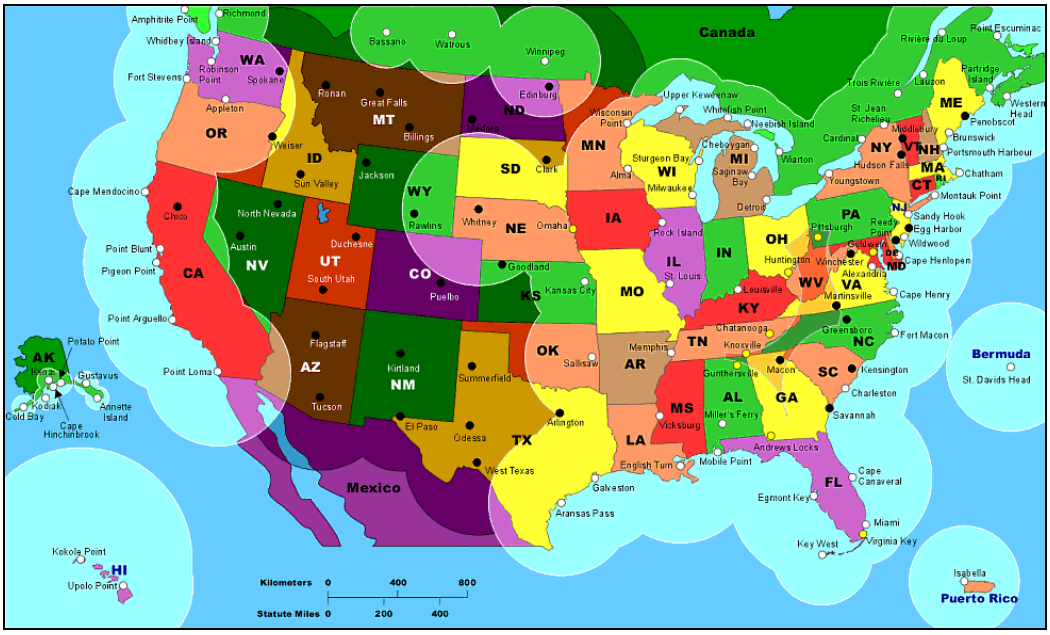
The DBR is a radio receiver that feeds a signal, broadcast by the Coast Guard for mariners, into the GPS to improve your accuracy to a circle of about 15', most of the time, in real-time. That's good!

The result is DGPS, or differentially-corrected GPS.

But the DBR needs a 12-volt power source and uses an antenna (it's a device designed for boat use) which adds complication, and the need for a pack upon which to mount the antenna. If you're going out in the field with all that stuff, adding a laptop isn't too much more.

OK, it's a lot of junk to be dragging around.

Differential Beacon Coverage



Maps courtesy CSI, Inc.

Sounds too easy.

Well, yes.

The most difficult part was soldering the DINKY wires that connected the battery to the GPS, which connected to the DBR, which connected to the thigh bone ...

A few swear words later, and some help from the Magellan aviation specialist in Redmond, and it all worked. Homemade, but functional.

Lessons learned:

Trees block GPS signals.

Buildings block GPS signals.

Canyons block GPS signals.

Laptops are fragile.

12-volt batteries are heavy.

Advertised laptop battery life is a lie.

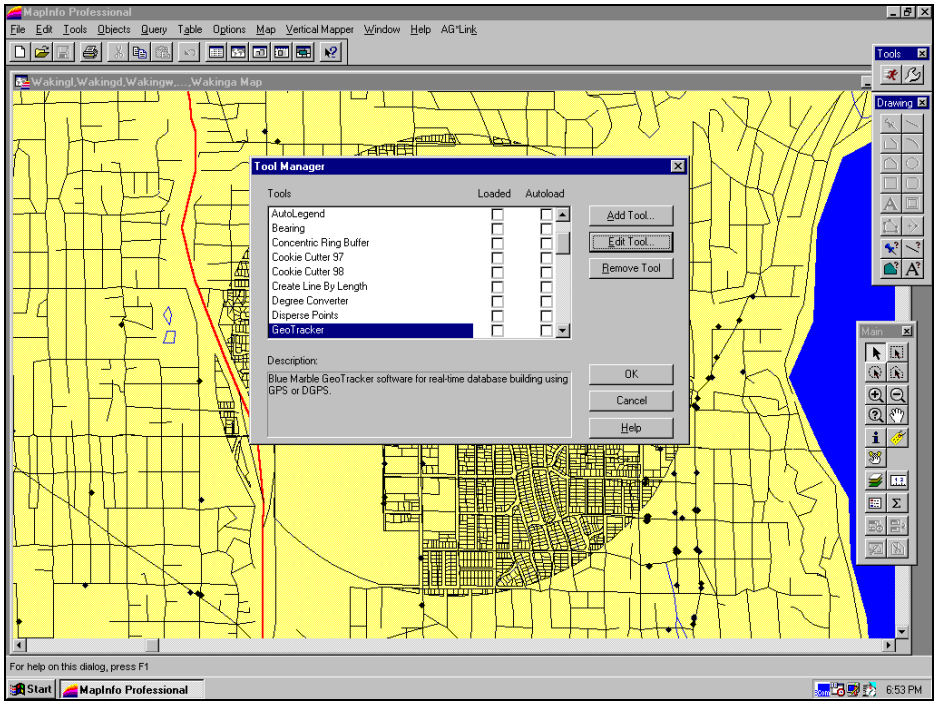
GPS ease-of-use does not mean fewer buttons.

Waterproof may not be.

Hardware works.

Next?

Start MapInfo.
Run geotracker.mbx from Tool Manager
(you may have to install it from the MapInfo CD).

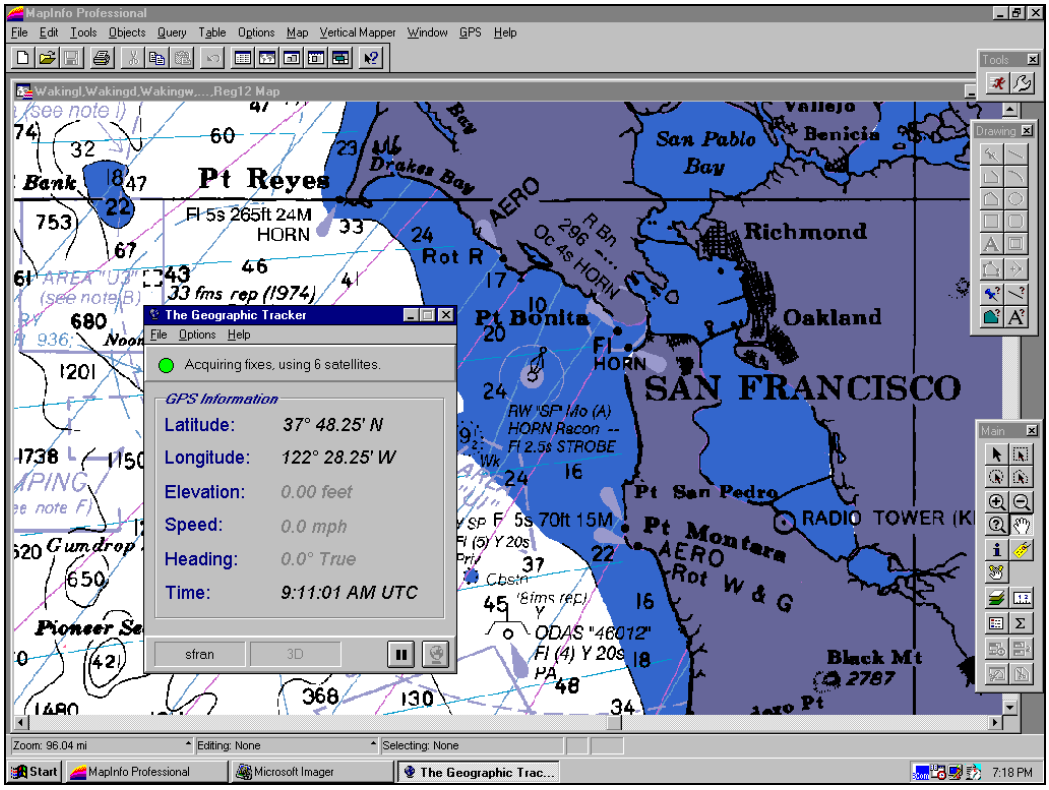


Then?

Turn on your GPS.
Turn on the DGPS (recent ones autotune).
Plug the GPS cord into the laptop.

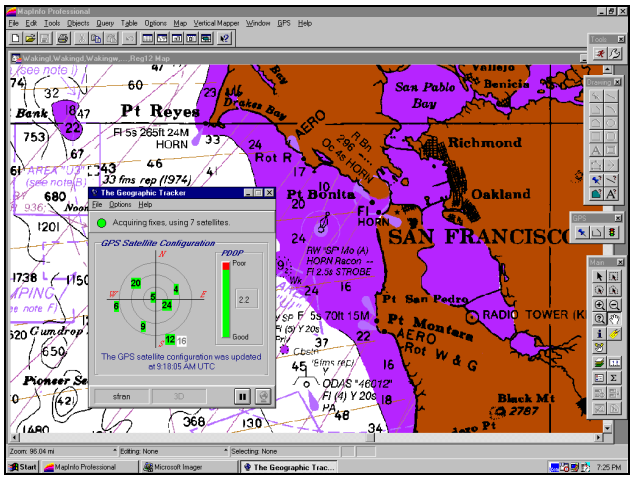
It should work.

If not, check baud rate and receiver type under OPTIONS/SET RECEIVER OPTIONS (geotracker).

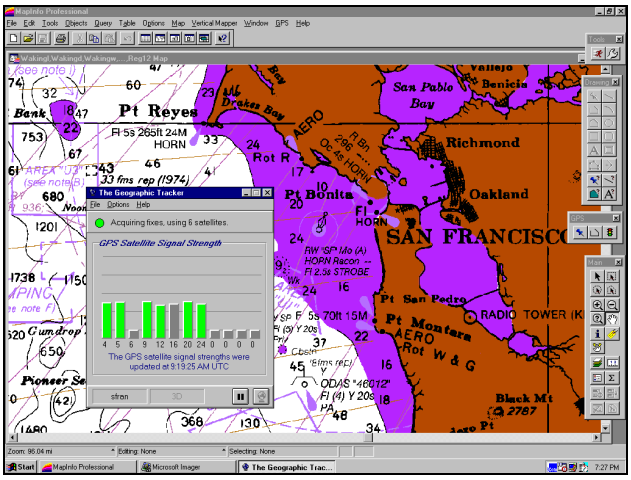


Are we ready yet?

Not quite. Make sure your GPS is receiving correctly, fixes are good, and connections established with GeoTracker.



Satellite locations and PDOP (OPTIONS/VIEW SATELLITE CONFIGURATION)



Satellite Signal Strengths (OPTIONS/VIEW SATELLITE SIGNAL STRENGHTS)

Geez! What next?

Create a layer into which your data will download. Define linetypes or point styles, projections, etc., then make it the active layer at the top of the list. Go to GPS/SETUP GPS TRACKING and tell geo-tracker.mbx to use your new layer into which data will be added.

You're now building an MI database, in real time, to about 15' accuracy, with annotation. *Wow!*