

Appendix E – Using an XRF and Exporting Data

NOTE: Be sure to charge both XRF batteries AND the iPAQ before taking the XRF into the field to do analysis. When not using the XRF, turn it off, disconnect the iPAQ, and make sure the iPAQ is also turned off.

Using the XRF to analyze soil:

1. Before using the XRF, you must receive training in the safe operation of the equipment. Using the XRF incorrectly can be dangerous, and proper safety precautions are required.
2. Place a battery in the XRF unit by releasing the rubber guard at the front of the base of the handle.
3. Place the iPAQ into the XRF unit by first placing the top of the iPAQ into the slot near the “Innov-X-Systems” logo.
4. Push the iPAQ up to slide the plastic with “Innov-X-Systems” logo forward. This creates a space to drop the bottom of the iPAQ into the cradle where it connects to the XRF unit. Slide the iPAQ down to connect the two devices.
5. Turn on iPAQ by pushing the button on the top right, and turn on the XRF by pushing the power button on the back of the machine (the part facing you).
6. You may want to change the date and time in the iPAQ to reflect your current location, date and time.
7. Click the Windows button in the top left of the iPAQ screen.
8. Select InnovX.
9. When you see the radiation notice, click “start”.
10. Select “soil”.
11. The analyzer will undergo a 60 second hardware initialization. Wait.
12. When you see the sign reading “standardization required...” place the metal clip from the XRF case over the front (analyzer end) of the XRF and click the message on the screen.
13. When the standardization is complete, click “ok”.
14. Remove the metal clip and place it back in the case. **DO NOT LOSE THE CLIP.** If you lose the clip, go to a metal shop and get #316 stainless steel and use that to standardize.
15. You are now ready to analyze soils.
16. Test the Pb standard to verify instrument performance.
17. To begin analyzing, hold the trigger down for the desired duration (10 seconds or more) or until the XRF automatically stops the analysis (you will hear a click)

18. All data is saved automatically, BUT when collecting XRF data, always record the sample number, the sample number on the XRF, the latitude, longitude, contamination level, and any comments on paper in addition to storing that information in the XRF and GPS devices.
19. To begin a second analysis, simply pull and hold the trigger again.
20. Before turning the iPAQ and XRF off, back out of all programs in the iPAQ.

Trouble Shooting:

1. Low PDA power causes problems. Even when it's 50% full, recharge the PDA and try again.
2. A soft reset (using a paper clip) often fixes problems.
3. Do a hard reset if that fails.
4. This machine does not like high temperatures. Cool the machine then restart. Shut it off if traveling to distant sites.
5. Sometimes the SD card is corrupted. Remove it and try it again with no card in slot.
6. RELOAD the XRF software - take out CF card and install new software from website (contact Pure Earth staff).

Exporting XRF data using Bluetooth:

1. Before exporting data from the iPAQ, you first must export the data from the Innov-x software to the iPAQ.
2. Go the screen that lists the choices "Analytical, Soil, Process Analytical" (to find this screen, select "file" and "exit" until you reach this home screen.
3. Select the "view" option at the bottom, and then select "results".
4. Select "file" at the bottom, and then "export results".
5. Select the dates of the reading you want to export.
6. Select the analytical mode you want to export (probably "soil").
7. Click "ok".
8. Name your results folder or use the default name.
9. Go down to "location" and select "main memory".
10. Then go up to "folder" and select "Innovx".
11. Click "save" and then "ok".
12. Now your file of results is in the "main memory" of the iPAQ in the InnovX folder.
13. To connect the iPAQ to a computer using Bluetooth, back out of the Innov-X software by clicking "file" and "exit" until you are at the iPAQ home screen.

14. Click the Windows button in the top left of the iPAQ screen and select “settings”.
15. Located at the bottom of the screen, choose “connections”.
16. Click the “Bluetooth” icon.
17. Click the “turn on” button.
18. On your computer, open the Bluetooth icon or Bluetooth preferences and look for “pocket PC”.
19. Click “pair”.
20. The iPAQ will make a noise and your computer will generate a numeric code
21. Enter the code into the iPAQ and click “ok”.
22. On your computer, try to open the “Pocket PC” or select “browse files on device”.
23. The iPAQ will make another sound and ask you if you want to allow the computer to browse its files. Select “yes”.
24. Your computer should open a window showing the iPAQ files.
25. Open “InnovX”.
26. You should see your results file.
27. Drag it onto your desktop.

Recording GPS Data on a Garmin Etrex:

1. Before starting your field trip, turn on the GPS unit so it can begin finding satellites, otherwise you might have to wait at the site while the GPS finds satellites.
2. Once you arrive at your sampling location, use the joystick to move to the “map” option. Select “map” by pressing the joystick in. The map will display your current location. Make sure the GPS unit is displaying the correct location. If there is a flashing question mark (“?”) in the middle of the map, the GPS unit has not yet found a satellite and will not record accurate GPS readings. Keep waiting.
3. If the map location is correct, click “back” to go to the main menu.
4. Click on “mark waypoint”.
5. The next screen will show you the coordinates for your waypoint and allow you to edit the icon, name, number, GPS coordinates or elevation for your waypoint.
6. Record GPS coordinates manually on your paper sample log along with the sample number, contaminate concentration and any other necessary notes. Note: If you are collecting a composite sample, please take the GPS coordinates for the area most center of your collecting points.
7. Make any necessary changes and then click “done”.

8. Move to your next sampling location and repeat steps 4-6.

Exporting GPS Data from a Garmin:

1. Download and install the free Garmin software called Garmin Basecamp on your computer.
2. Open Garmin Basecamp software.
3. Plug in your Garmin GPS unit using the USB cable.
4. After the computer finds the GPS unit (automatic) you will see the GPS unit in the top left of the Basecamp screen. Click on the GPS unit to show your waypoints in the section called “eTrex...” below in the same left-hand column.
5. Highlight the waypoint you want to export.
6. At the top of the computer screen (if using a Mac) select the “file” option from the menu across the top, then select a complete export of all waypoints, or an export of the waypoints you have highlighted.
7. Export data as a .CSV file.