



**Integrated Sensor System™
(ISS)**

Gateway and Soil Manager™ v.1.1
Installation Procedure

Thank you for purchasing your new Rain Bird Integrated Sensor System™ (ISS). In this manual you will learn how to install the ISG-2400 Wireless Gateway and Soil Manager™. In a separate manual, Integrated Sensor System Installation - Programming and Operation Guide, you will find the instructions to install the soil sensors as well as the wireless network field devices, data loggers and repeaters.

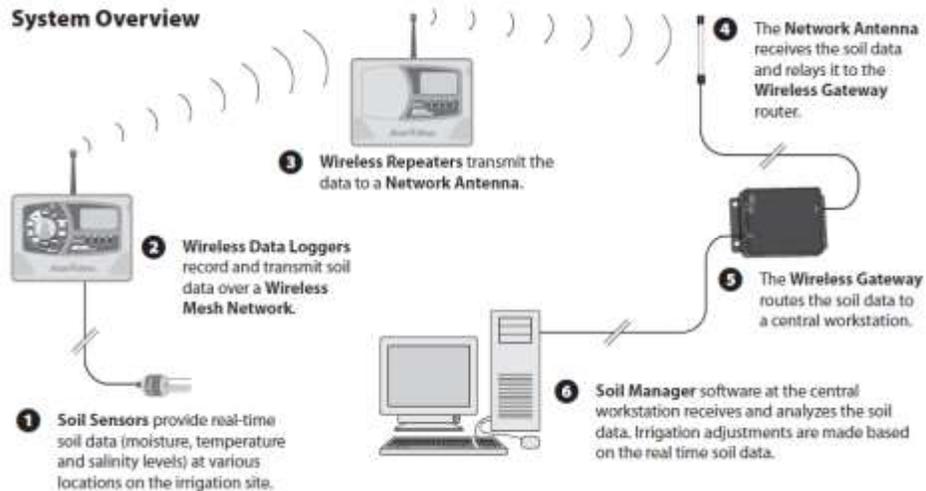


Figure 1

The Wireless Gateway is item 5 in Figure 1. It is the device, connected to the central PC that receives and passes the data from the wireless network to Soil Manager.

Soil Manager is the software application at the central workstation (item 6) that analyzes the soil data, monitors and controls the ISS wireless network. It displays soil data from individual sensors in the system (item 1) and can make water budget recommendations to adjust station run times based on soil conditions. In an integrated mode Soil Manager will also interface with the central irrigation software (Stratus LT, Stratus II, Nimbus II and Cirrus version 7.1 or newer) to automatically adjust the station run times based on soil conditions.

You must first install the ISG-2400 Wireless Gateway, then Soil Manager. The sequence of events is as follows:

- Gateway PC connection and software Installation
 - o Drivers installation
- External antenna installation
- Soil Manager software Installation
 - o Soil Manager software Installation
 - o Workstation COM Port selection

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ISG-2400 Wireless Gateway Installation

1. Open the outer carton containing the ISG-2400 Gateway and accessories. It should contain the following components. In the event of a missing or damaged component, contact your Rain Bird distributor.
 - a. ISG-2400 Gateway carton
 - b. 670620 - 2.4 GHz 8 dBi Omni-directional Antenna
 - c. 670621 - N-MALE TO RP-SMA 10ft cable (this cable has large connector on 1 end and small connector on the other).
 - d. 670622 – Surge protector
 - e. 670623 - N-MALE to N-MALE 25ft cable (this cable has large connectors on both ends)
2. Open the box containing the ISG-2400 Gateway and verify that it contains the following items.
 - a. ISG-2400 Gateway,
 - b. USB cable,
 - c. Antenna
 - d. Hardware & Software Setup CD

The Gateway is a “plug-and-play” device that should be detected by the PC automatically. To interface between the gateway and a PC, two drivers must be installed: a USB driver and a virtual serial port driver that makes the USB port look and perform like a physical serial (COM) port.

3. Disconnect any USB/Serial devices connected to the PC. In particular, disconnect any Rain Bird IC System interface (ICI) devices. The driver installation process may upgrade drivers also associated with these devices, a process made easier if they are not connected during installation.
4. Turn PC ON and connect the Gateway to the PC using the provided USB cable. Make note of the USB port so the same is used if the Gateway USB cable was disconnected.

Warning: *It is important to connect the Gateway to a USB port that will be dedicated to the Gateway. If you unplug the Gateway at any time communication with Soil Manager will stop and no sensor data will be recorded. The Wireless Gateway will also be powered off and will not communicate with the field devices. Data loggers and repeaters will enter a gateway search mode. Their battery life will be reduced as they attempt to re-establish communication.*

The first time a Gateway is connected to a PC's USB Port it will be associated with a virtual serial port (COM port). Disconnecting then reconnecting the Gateway to the same USB Port will not change the COM Port. However if the Gateway is connected to a different USB Port, a new serial port will be assigned and the Gateway installation procedure below must be repeated. It is also important to ensure that the COM Port value assigned to the Gateway is correctly entered in Soil Manager (see Soil Manager Installation Procedure) so they can communicate. Step 11 below shows how to find the COM Port value assigned to the Gateway, and step 15 in Soil Manager Installation Procedure describes changing the COM Port value in Soil Manager.

5. If the Gateway drivers have been previously installed on this PC, proceed directly to step 11. Otherwise, continue below.

6. After the Gateway is connected, the **Update Driver Software** dialog box will load.

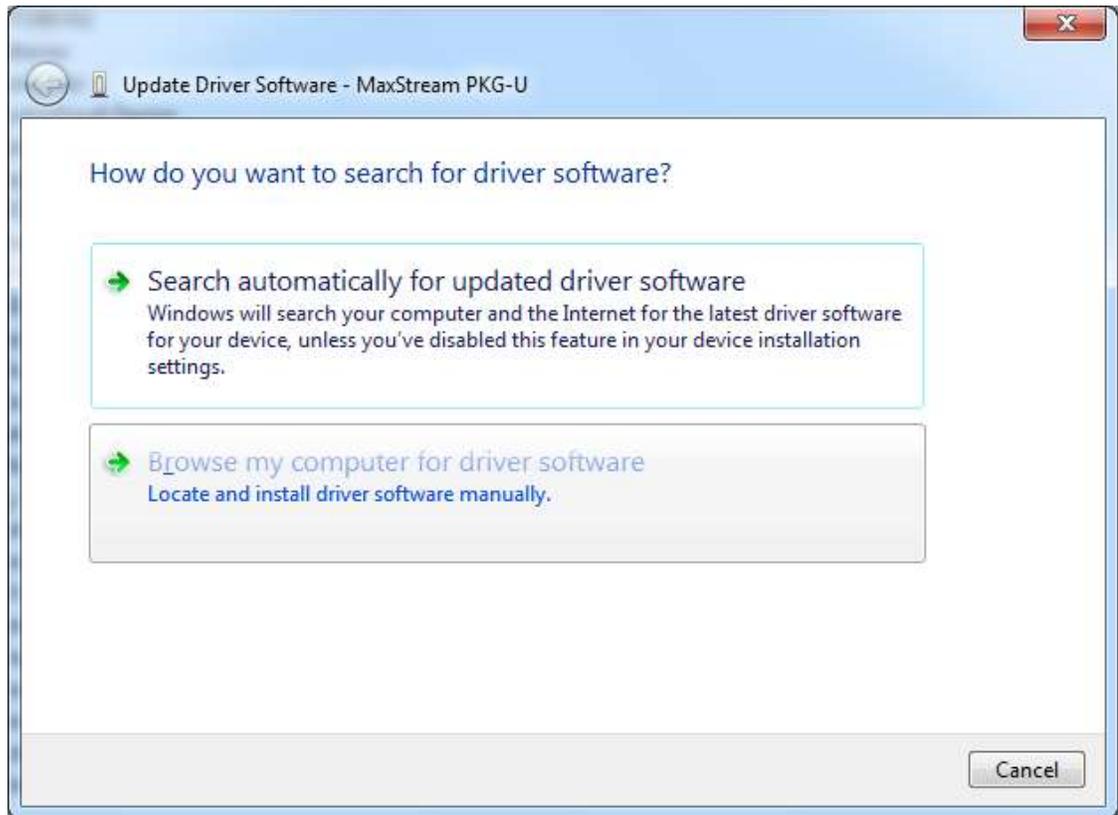


Figure 2

7. Select **Browse my computer for driver software**; then click **Next**.



Figure 3

8. Select the path where the Windows 7 drivers are found using the **Search for driver software in this location:** edit field or the **Browse...** button. Click **Next**. A Hardware Installation Windows Logo Testing alert box is displayed.

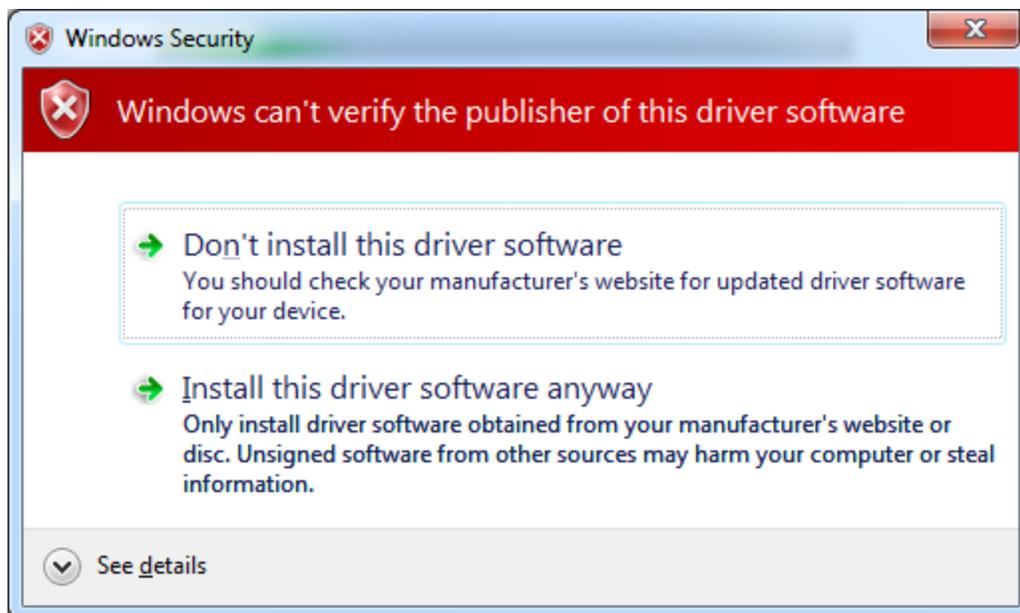


Figure 4

9. Click **Install this driver software anyway**.
10. Click **Finish/Close**. You will be prompted to install another driver, the virtual COM port driver. Repeat steps 6 through 9 to install this driver.
11. Next determine which serial (COM) port was assigned to the gateway device. Open the Windows start menu and type “device” in the Run field:

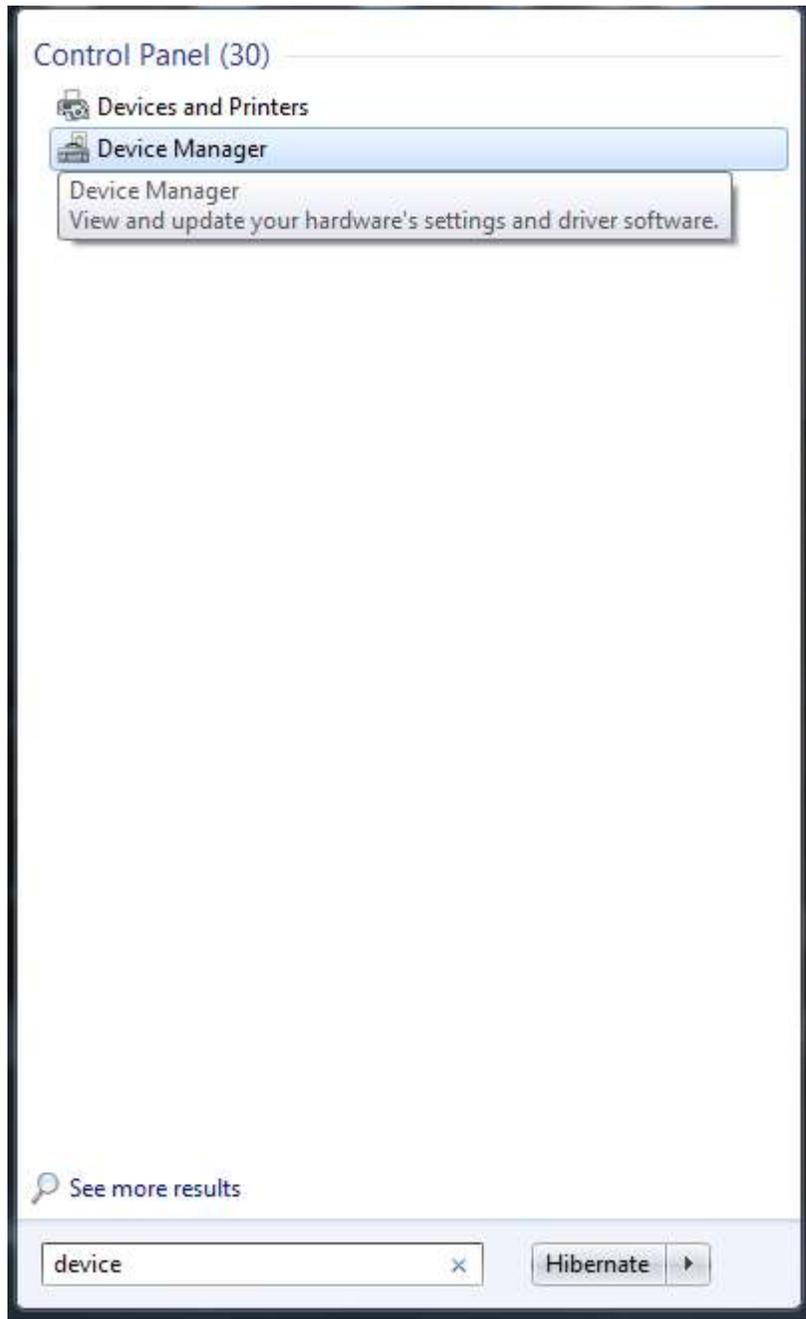


Figure 5

12. Click Device Manager from the menu.

13. In Device Manager, double-click “Ports (COM & LPT)” in the list to show the serial and parallel ports defined:

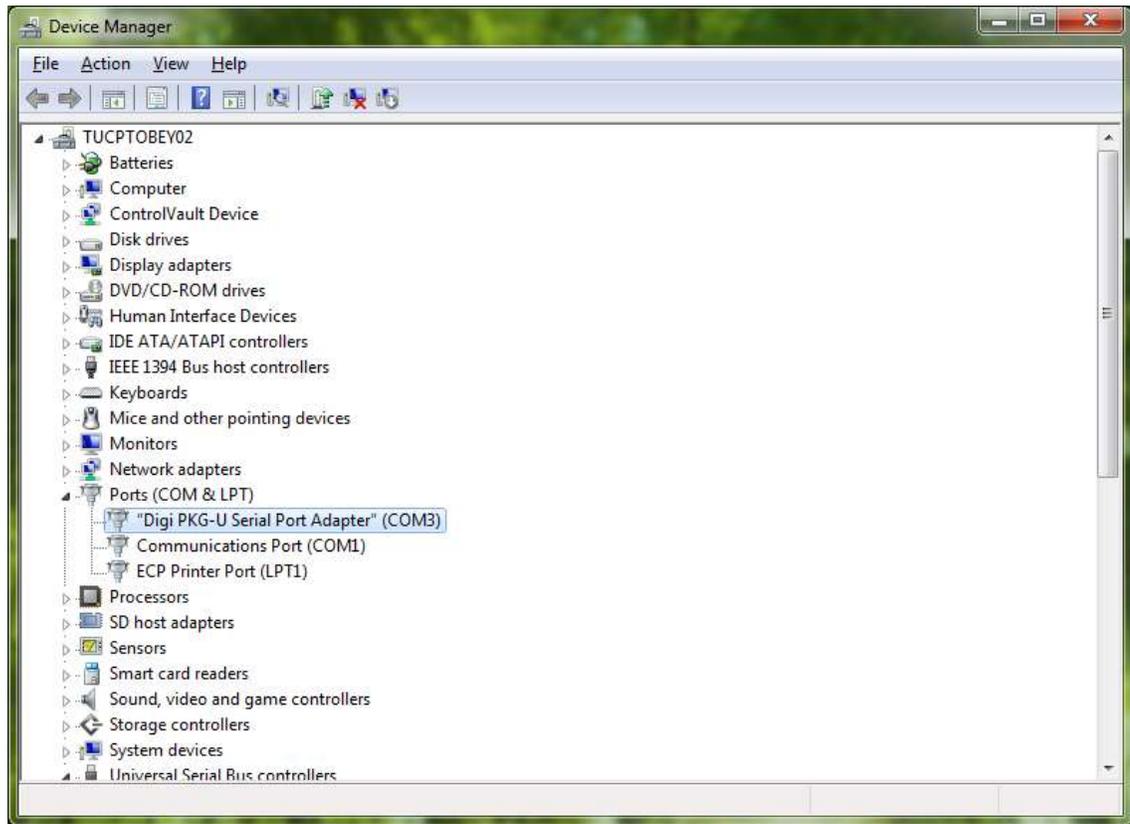


Figure 6

14. Identify the COM number shown in parentheses after “Digi PKG-U Serial Port Adapter” in the list (in Figure 6 above, the value would be “3”). Write this number in the table below and keep it for later as it will be needed during the Soil Manager installation.

My Gateway Virtual Serial Port (COM Port) is:

Figure 7

15. The ISG-2400 Gateway is now ready to communicate with Soil Manager. Proceed to External Antenna Installation.

External Antenna Installation

You **will need** supplies **not included** with your ISG-2400 gateway:

- Antenna mast and mounting supplies. Extendable mast components made from coated steel are widely available. The outdoor antenna (670620) includes its own mounting hardware for connecting to a mast with maximum diameter of 2.375 inches (6.03cm).
- Grounding rods/plates suitable for discharging lightning surge from the surge protector (670622) to earth ground.

You **may need** additional supplies depending on the relative locations of antenna (670620), surge protector (670622) and ISG-2400 gateway:

- Radio cable reaching from the outdoor antenna (670620) to the surge protector device (670622). A 25 foot (7.62m) cable is provided (670623). If the length is insufficient, you should replace this cable with an **N-Male to N-Male 400 Series** cable of the correct length for your installation. Do not splice or adapt multiple cables; use a single cable of the proper length. However, the cable should not be longer than 50 feet (15.2m) assuring good signal quality.
- Radio cable sufficient to reach from surge protector (670622) to within 10 feet (3.05m) of the installed ISG-2400 gateway. This cable will connect to the surge protector, transit building wall(s), and connect to the adapter cable (670621). This cable should be of type **N-Male to N-Female 400 Series**. You will not need additional cable if the 670621 adapter cable is long enough to reach from surge device to gateway itself.

The diagram below shows the general connections completing your outdoor antenna installation:

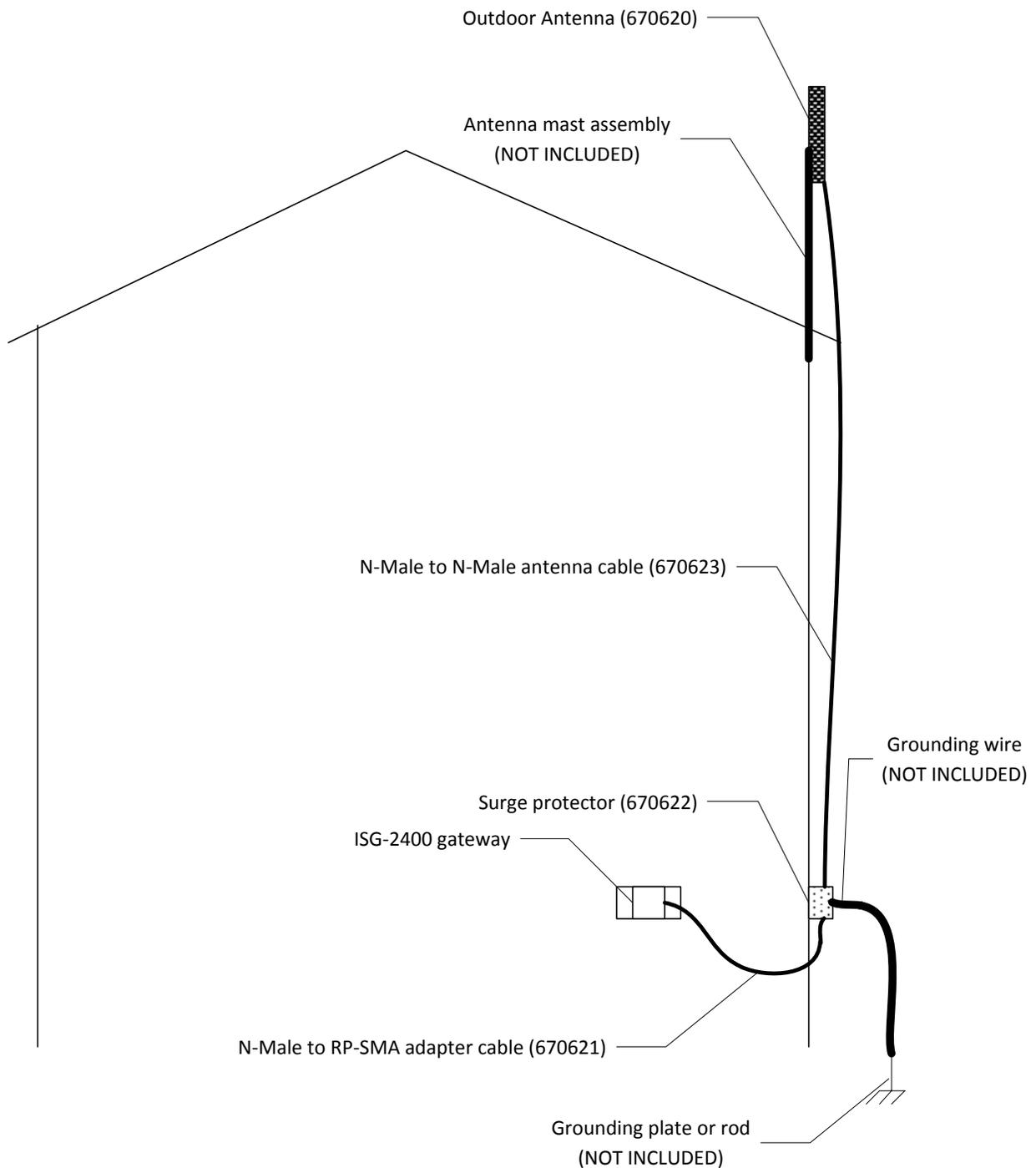


Figure 8

To complete the installation:

1. Unpack outdoor antenna (670620), surge protector (670622), adapter cable (670621), and antenna cable (670623).

2. Create a grounding location with ground rod/plate. The location should be convenient to suitable mounting location for surge protector (670622) and cable from outdoor antenna location to surge protector (670623 or your alternate antenna cable).
3. Mount the surge protector (670622) to a wall, post, or other suitable substrate in a location accessible with the antenna cable and near the grounding location.
4. Connect the surge protector's ground lug to the ground rod/plate using 12ga (3.0-4.0 mm²) copper wire. Connection can be made using an acorn clamp or a CADWELD™.
5. Mount the outdoor antenna (670620) to radio mast using provided hardware. The antenna **must be mounted vertically**. Mounting horizontally will cause signaling problems.
6. Install the radio mast/outdoor antenna assembly appropriately for your site using suitable hardware. The antenna should have clear line of sight to all data loggers and repeaters that will communicate directly to the central according to your site survey. Generally a high mounting location away from large trees and other buildings is best. Line of sight can be disturbed during windy conditions if the antenna is too near to trees. Avoid mounting near electrical wires and other radio sources.
7. Connect the N-Male to N-Male 400 Series cable (670623 or your alternate) to the antenna's coaxial lead.
8. Route the cable along the mast/building/pole to the surge protector. Secure the cable carefully assuring that the insulation is not compromised.
9. Connect antenna cable to surge protector.
10. Depending on distance from surge protector to ISG-2400 location, choose appropriate steps:
 - a. If necessary, install N-Male to N-Female 400 Series cable to surge protector. Route cable through wall(s) as needed. Attach adapter cable (670621) to female end of extension cable.
 - b. Or, attach adapter cable (670621) directly to surge protector and route through wall(s) as needed.
11. Connect adapter cable (670621) to ISG-2400 antenna connector securely.
12. Proceed to Soil Manager Installation.

Soil Manager™ Installation

1. Locate the Soil Manager installation file on your local hard disk.
2. Double-click on **SoilManagerSetup.exe** to launch the installation.
3. Answer **Yes** when asked whether to install Soil Manager:



Figure 9

4. If the PC does not already have Microsoft .NET Framework 4.0 installed, accept the license terms and click **Install** to install it (Figure 10). Your computer may be re-started during the installation procedure.

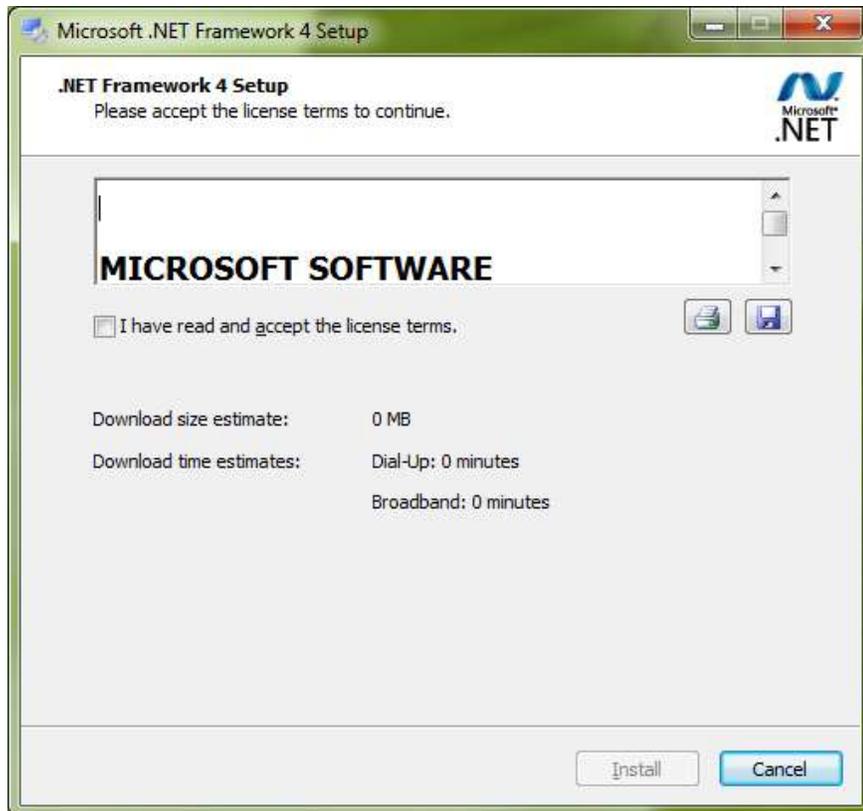
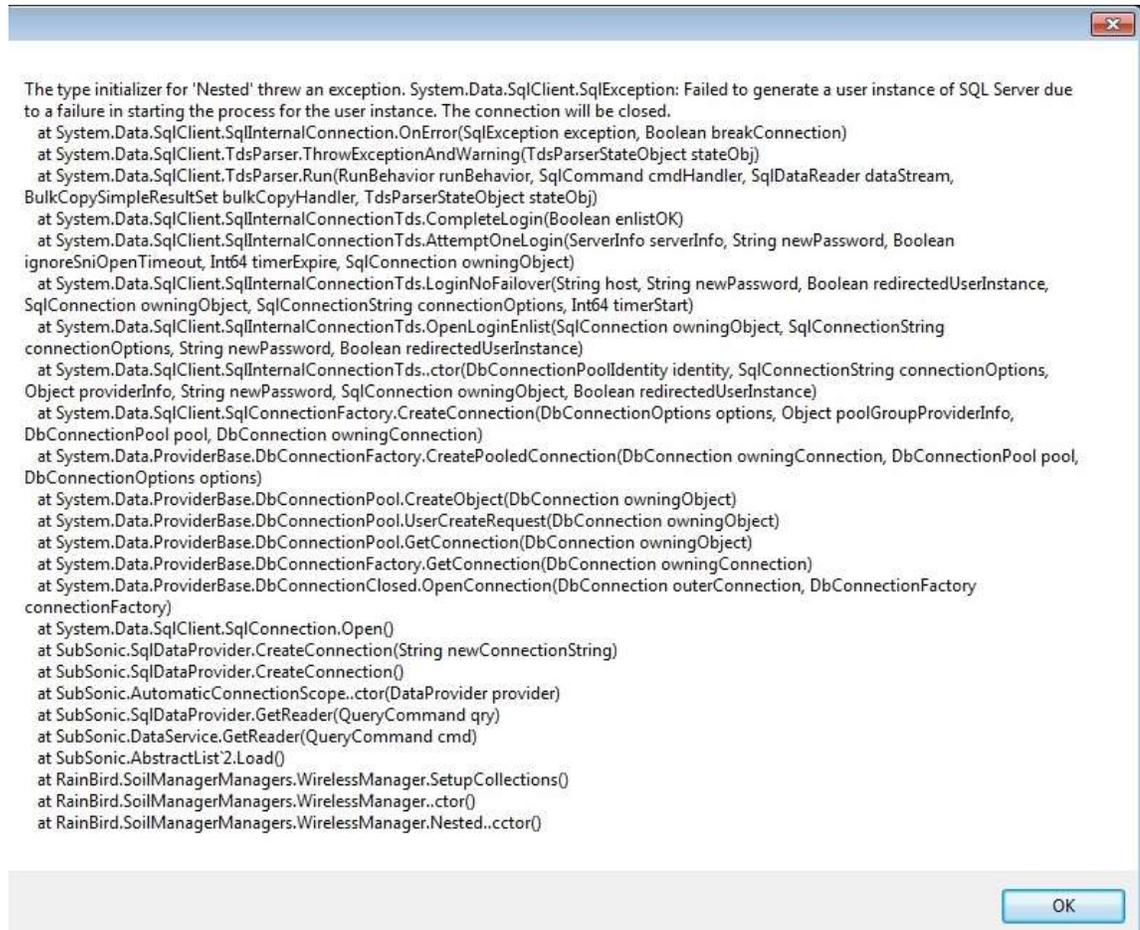


Figure 10

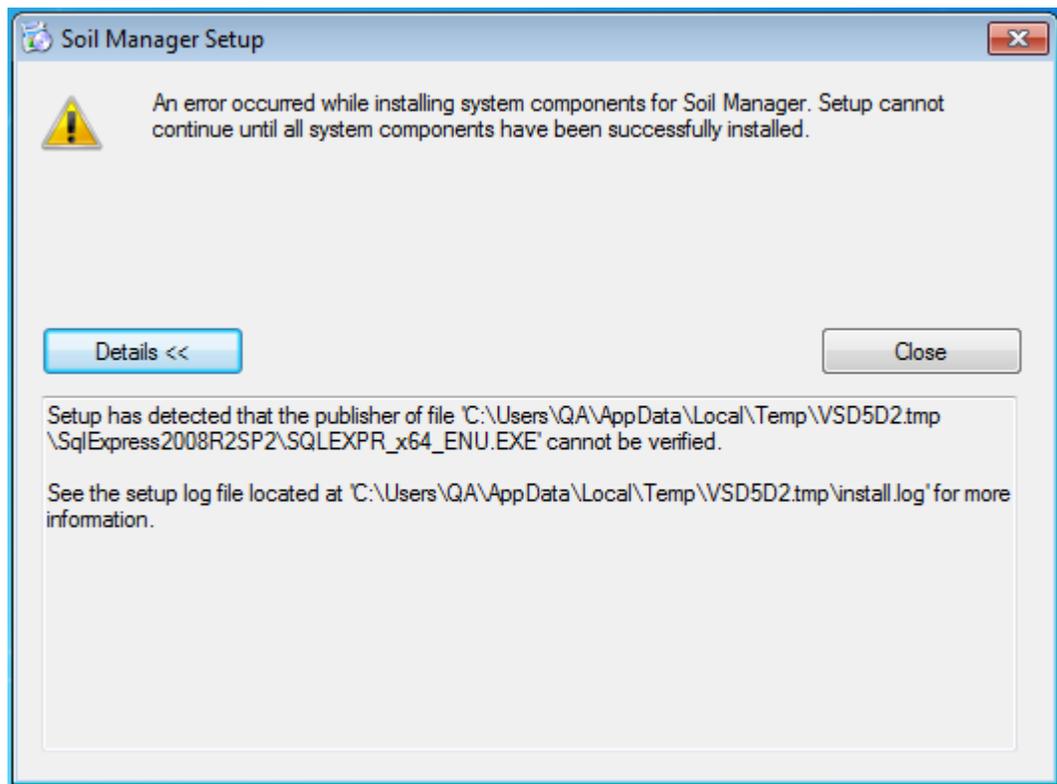
5. If the PC does not already have Microsoft SQL Server Express installed, click **Accept** when prompted. The computer may be restarted during the installation process.

NOTE: If Soil Manager 1.0 is upgraded by the install, Soil Manager 1.0 will start automatically when the system is rebooted. Since a new version of SQL Server is present, you may encounter the error below:



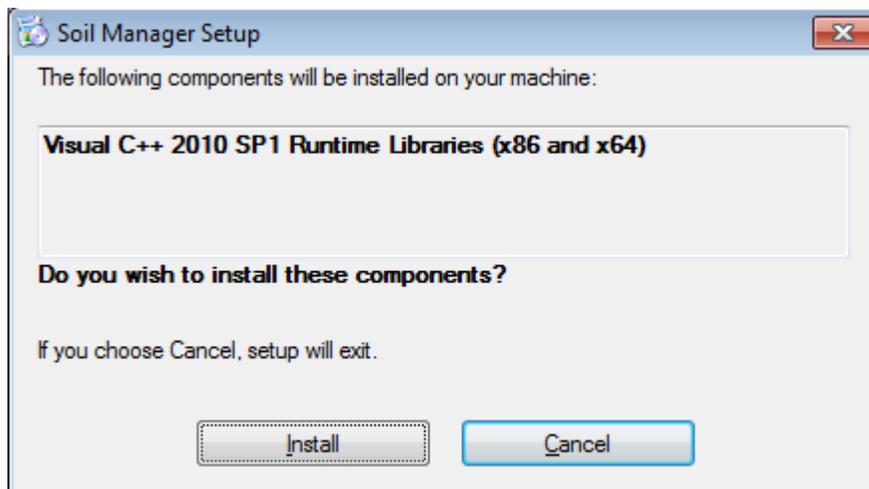
If this error is encountered, click OK, allowing Soil Manager 1.0 to exit and continue with the Soil Manager 1.1 installation.

On some machines, the error below will be generated during SQL Server Express installation:

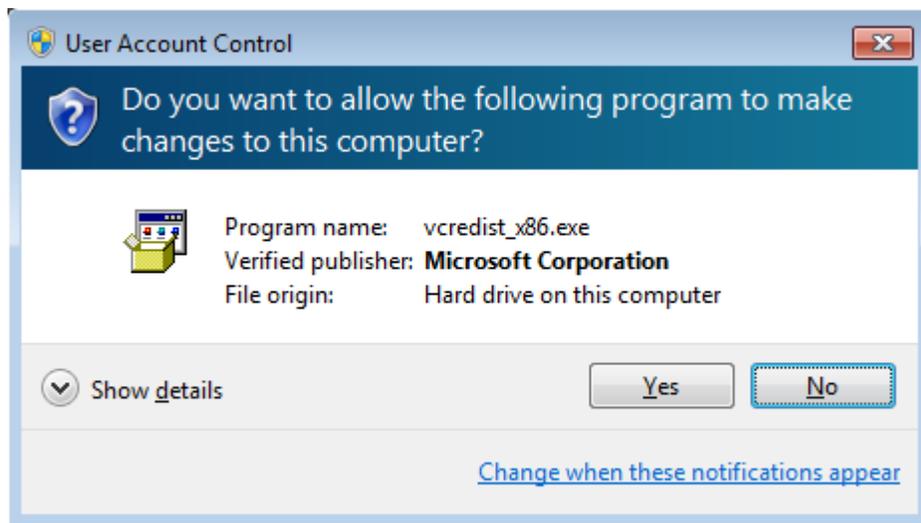


This error can be corrected by choosing Close, establishing an Internet connection, and restarting the Soil Manager install.

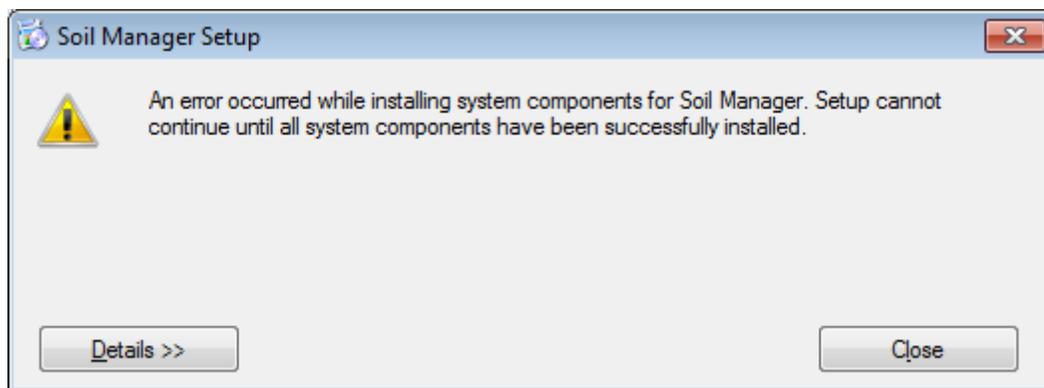
6. If the computer does not have certain Visual C++ run-time components you may also see the following prompt:



7. During the Visual C++ run-time install you may be prompted with this dialog:



You must respond Yes in order for the installation to be completed. Note that, if you do not reply within 3 minutes, the system will time-out and display the following error:



If you encounter this error, you must choose Close and restart the installation process, responding to the User Account Control dialog correctly within the time allowed by Windows.

- Once installation of .NET Framework, SQL Server Express and Visual C++ 2010 SP1 Runtime is complete, Soil Manager install will begin. Click **Next** in **Welcome to the Soil Manager Setup Wizard**.



Figure 11

- Use the default **Installation Folder**, clicking **Next**

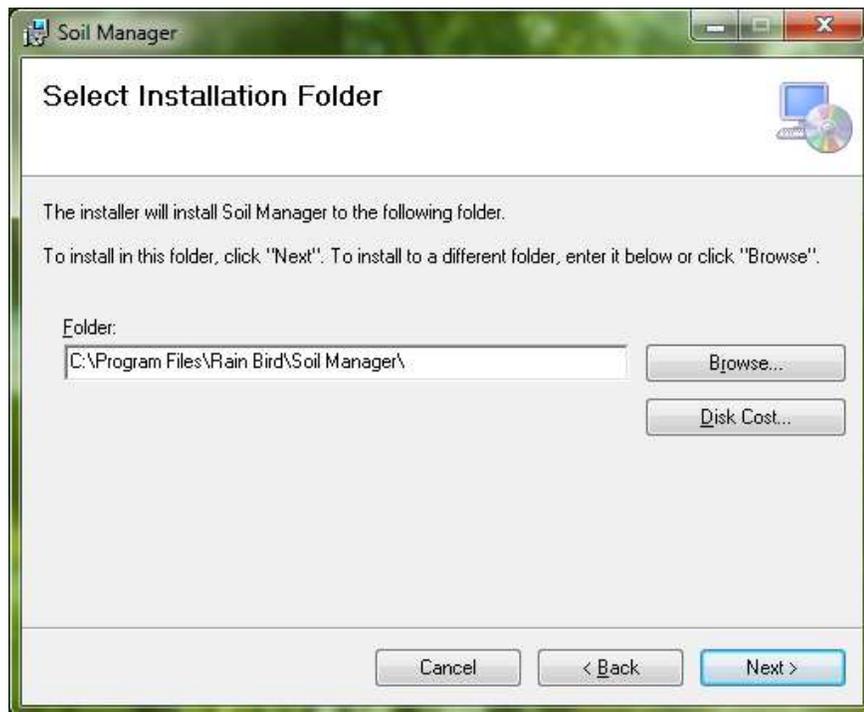


Figure 12

10. Click **Next** to start the installation following on-screen directions.

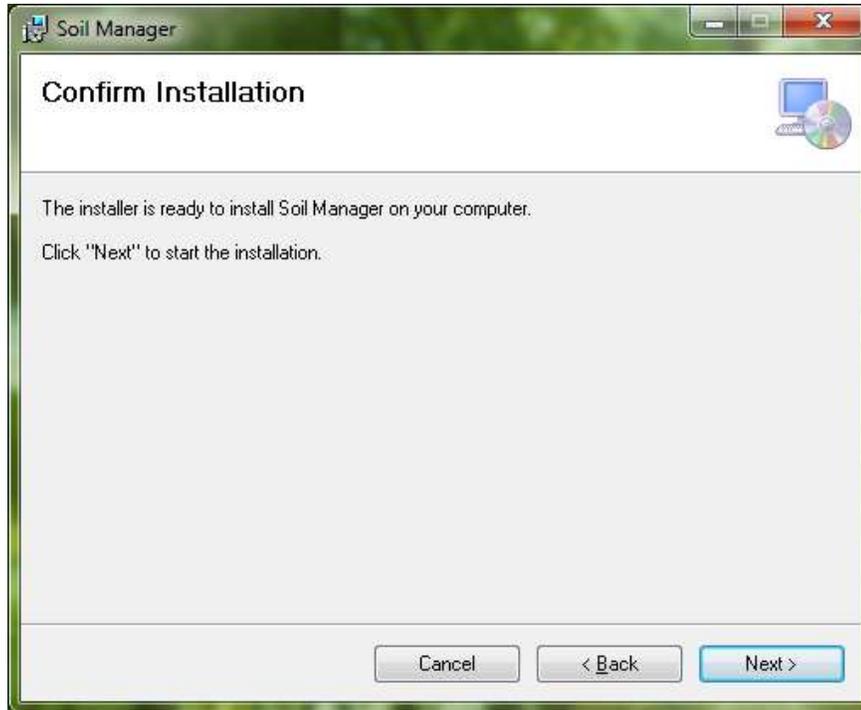


Figure 13

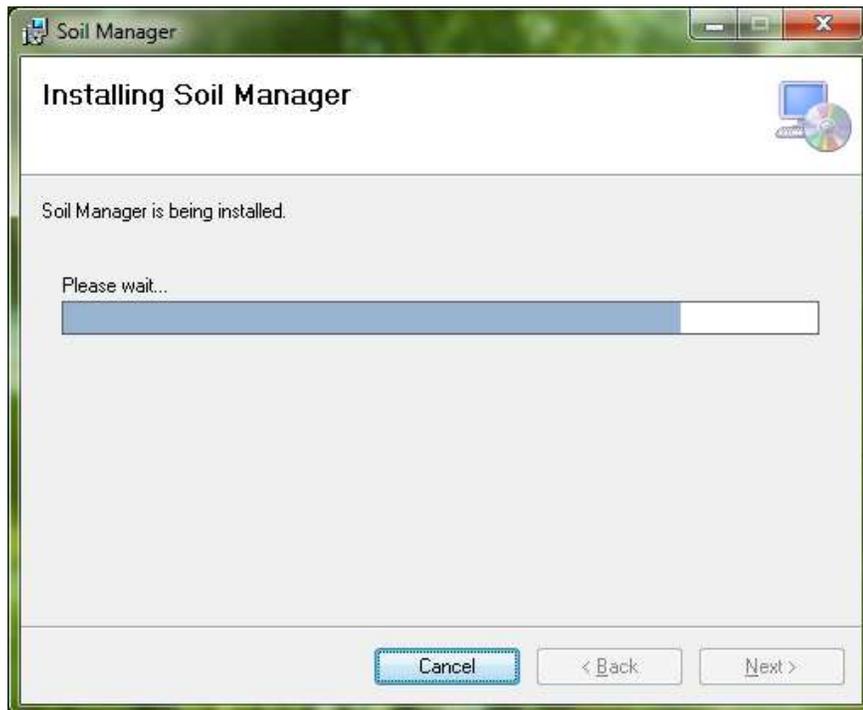


Figure 14

11. When the **Installation Complete** window is displayed, click **Close**.

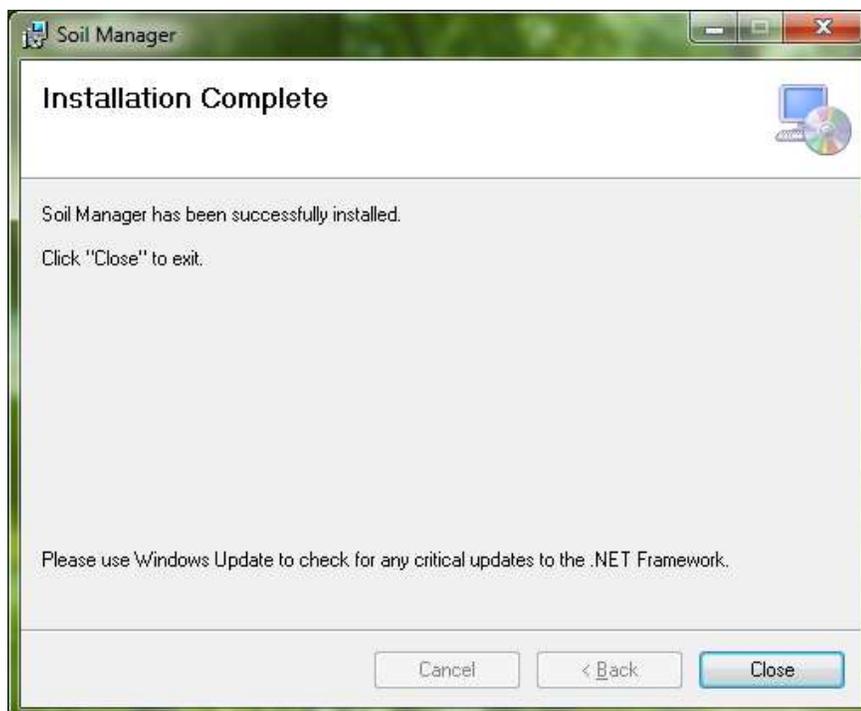


Figure 15

12. For Windows XP, SQL Server 2008 requires .NET Framework 3.5 Service Pack 1. Prior to starting Soil Manager you must download and install .NET 3.5 SP1:

<http://download.microsoft.com/download/2/0/e/20e90413-712f-438c-988e-fdaa79a8ac3d/dotnetfx35.exe>

For Windows 7 and later, .NET Framework 3.5 Service Pack 1 is pre-installed.

13. Start Soil Manager from the Windows Start menu.



Figure 16

14. If this is a new installation, enter the **Golf Course Name**. To activate Soil Manager, you must contact Rain Bird GSP, delivering the **ID** value (shown below the Golf Course Name). You may use the **Save ID** button to write the **ID** value and **Golf Course Name** to a text file which can be emailed or FAX-ed to GSP.

GSP will return your **Activation Key** for the computer. Enter this Activation Key in the

appropriate field and press **OK**. Once a valid key is entered, Soil Manager's main window title will indicate the license type.

While waiting for GSP to deliver your **Activation Key** for a **new** Soil Manager installation, you can run Soil Manager in trial mode. Simply click the **OK** button leaving the **Activation Key** field blank. This will start a trial period lasting 30 days. While executing in trial mode, control of Rain Bird central control programs/integrated operation is disabled but all other capabilities function normally.



Figure 17

15. The next step is to update the Gateway COM Port information in the **Wireless Properties** window of Soil Manager to ensure successful communication. With Soil Manager Dashboard open, click on the **Diagnostics** tab (Figure 18) on the top right corner, then right click on **Wireless Network** (Figure 19), then click on **Properties** (Figure 20).

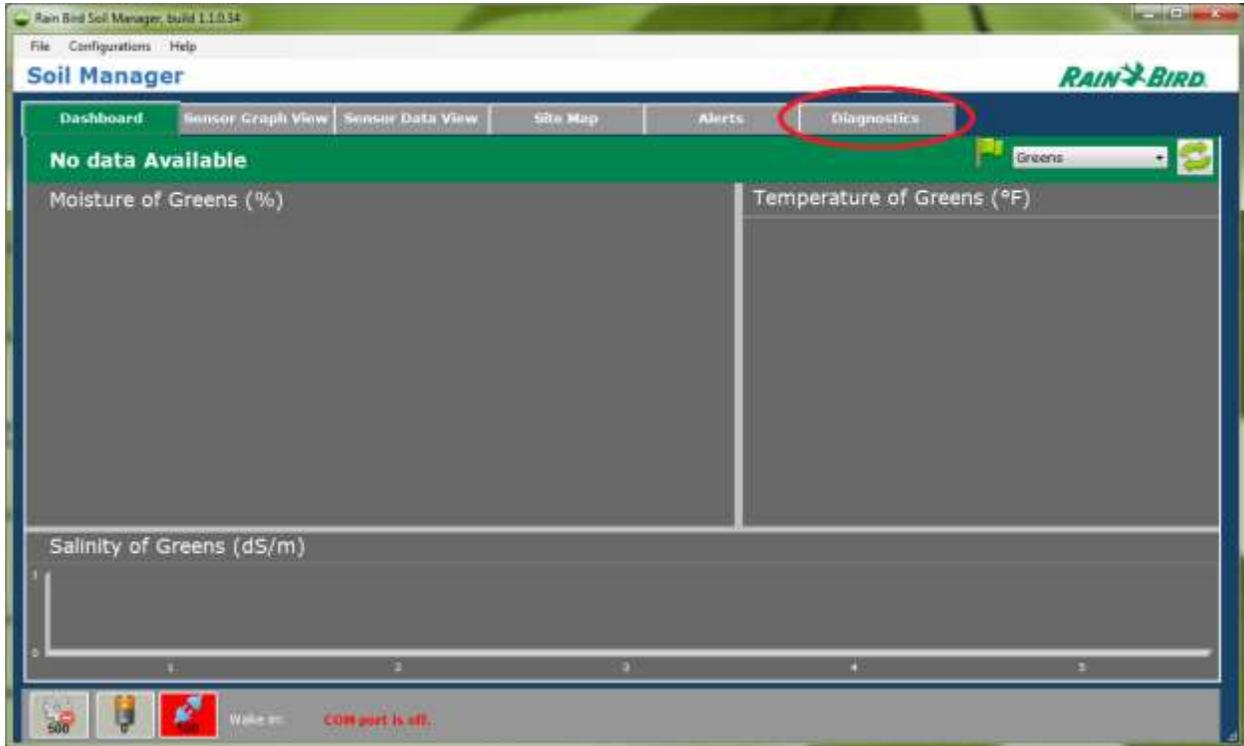


Figure 18

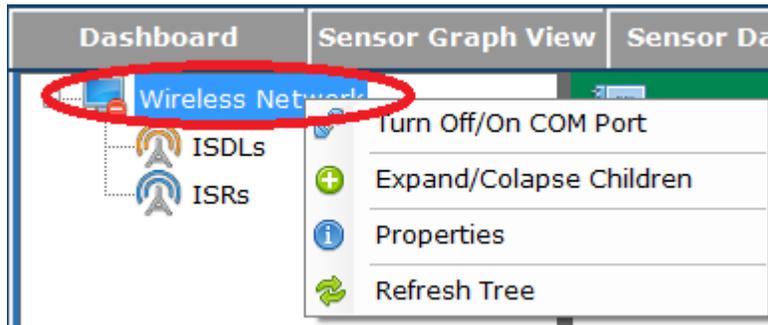


Figure 19

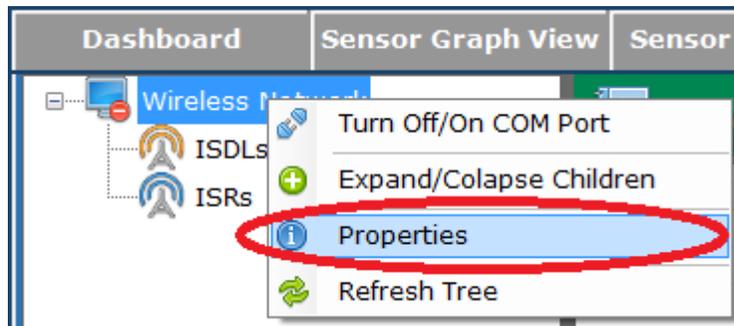


Figure 20

16. The **Wireless Network Information** window is now opened. The first time Soil Manager is executed the COM Port will be turned OFF and the COM Port list (Figure 21) will be active. If this is an upgrade install and Communication Status is ON, click **Turn On/Off COM Port** to switch it OFF. Using the **COM Port** drop down list select the COM Port number recorded in *ISG-2400 Wireless Gateway Installation* step 8 (Figure 7).

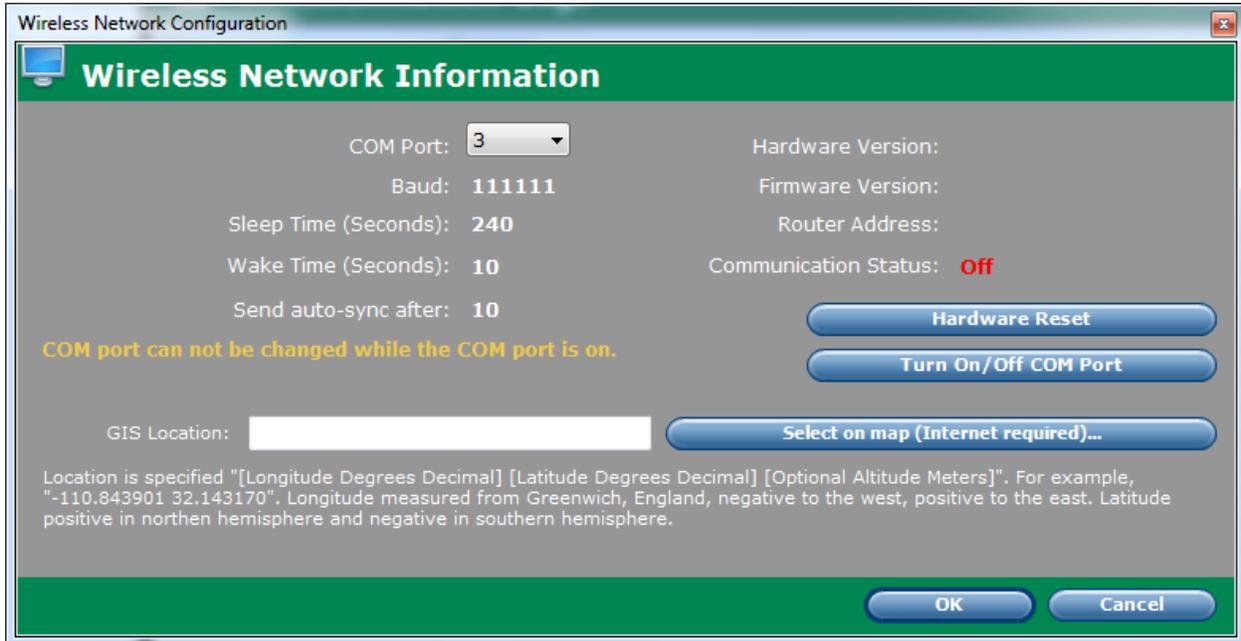


Figure 21

17. Click **Turn On/Off COM Port** to turn COM Port on. After approximately 10 seconds the Communication Status indicator should change to On.

18. Close **Wireless Network Configuration** by pressing OK.

Warning: Do not Cancel the window as this will discard the COM Port value; Gateway will not communicate with Soil Manager.

19. Soil Manager installation is now complete and Soil Manager will identify each radio device on the network, adding it to the Wireless Network tree on the Diagnostics tab. Refer to the Soil Manager User Guide for further operating instructions.