Site Characterization Worksheet

1. Name and geographic location of site (latitude, longitude)

   _____
   _____
   _____

2. Description of reasons that this site was picked as representative site

   _____
   _____
   _____
   _____
   _____

3. Soil types (include variability at depths if applicable)

   _____
   _____
   _____

4. Samples taken for soil density?   Yes   No
5. Samples taken for additional soil analysis and type of soil analysis?

   _____
   _____

6. Type of sensor and depth each sensor installed

   _____
   _____
   _____
   _____

7. Are sensor cables labeled with appropriate depth?   Yes   No
8. Initial readings of each sensor after installation

   _____
   _____
   _____

9. Are any additional soil or environmental measurements being taken?

   _____
   _____
   _____

10. Are there any upcoming events that may affect data collection? Who is the contact person to learn more about the timing of these events?

    _____
    _____

Installing Onset Soil Moisture Sensors

## Best practices to obtain accurate measurements

Onset's soil moisture smart sensors use Decagons' EC-5 and 10HS sensors which are known for providing accurate and reliable results. However, a bad installation can still lead to bad data. While good installation techniques are not hard or time consuming, taking the time to learn correct practices and precautions will lead to less time later trying to figure out data that don't make sense. Common installation problems are:

- Air gaps
- Cable damage during installation or after installation
- Preferential flow paths down cable

Required tools

We have found the following tools useful during a sensor installation, but do not limit yourself to this list:

- Shovel or bucket auger
- HOBO Shuttle or laptop with HOBOware
- Installation tool
- Data logger
- Mounting pole
- Electrical conduit or PVC pipe to protect aboveground cables
- Medical tape for labeling cables
- Site characterization worksheet
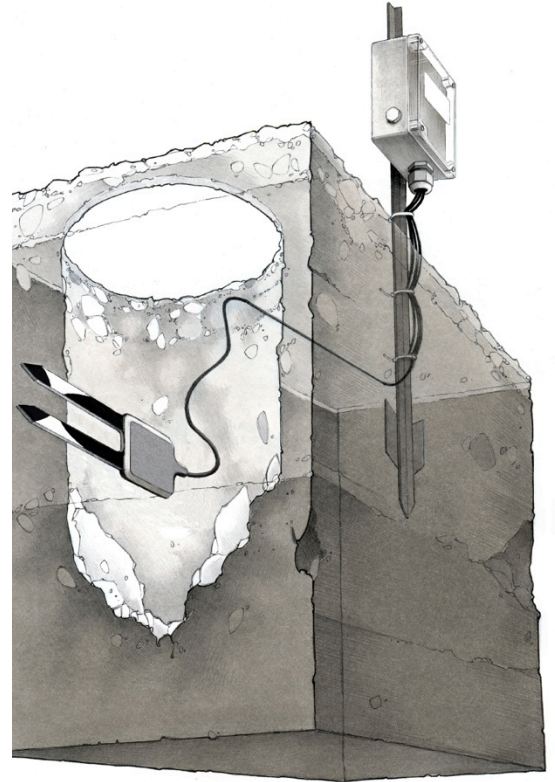
Steps to a good installation

1. Familiarize yourself with all instrumentation and software *before* you go out into the field. If you have the time, calibrating your own sensors will teach you how they work.
2. Dig a trench or auger a flat-bottomed hole to the desired depth.
3. Push the sensor (using your hands or the installation tool) into undisturbed soil. Make sure that the sensor is pushed straight in, leaving no air gaps.
4. Using the HOBO Shuttle or a laptop with HOBOware, check the current sensor reading. Is the reading reasonable for this soil type?
5. Carefully backfill around the sensor and cable to the approximate bulk density of the surrounding soil. Continue to check the readings of the sensor using the Shuttle or HOBOware.
6. For any cables that are above ground use PVC pipe or conduit to protect against rodent damage.
7. Plug your sensor into the data logger and configure your data logger.

Onset®

HOBO®**Data Loggers**

Tools and resources for sensor installations

Make your life easier with…

Checking sensor readings

Take readings every step of the installation with a HOBO Shuttle or HOBOware. This can help you identify potential air gaps, compaction issues, and even severed cables. This is highly recommended for any large installation.

Home-made tools

Need to install a sensor down a deep hole? Visit the hardware store and purchase a ½ inch (1.27 cm) pvc pipe and cut a notch in the end for a quick, inexpensive installation tool. (Also cut a slot at 90 degrees for the cable.) What about a pilot hole tool? You can use a putty knife to create a pilot hole for the 10HS sensor.

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