

# Measuring Infiltration Using An Automated, Water-Table-Depth Instrument



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Setting up Marriott/reservoir

Installing the infiltrrometer ring



Filling the Marriott/reservoir



Filling the infiltrrometer ring



Marriott/reservoir supplies water and controls the head

Infiltration measurements are time consuming and should be automated whenever possible. Automation is often expensive, especially when measurement sites are separated by tens of meters, reducing the number of measurements that can be taken at one time. We have explored the idea of using an inexpensive, data-logging, water-level sensor for measuring water infiltration into field soils. This infiltration technique offers a solution to otherwise expensive automated data-logging equipment as well as a large labor force taking timed measurements. Our instrument contained a Marriott/reservoir, an infiltrrometer ring, and a data-logging, water-level sensor.



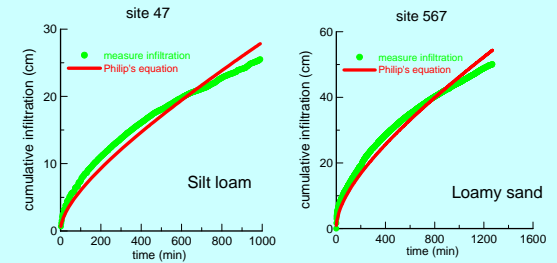
Marriott/reservoir, was made from a 180 cm length of 15 cm dia. PVC pipe and various fittings. The Marriott was attached to the infiltrrometer ring via plastic tubing. (estimated cost \$65)

The infiltrrometer ring is made from 30 cm dia PVC pipe, sharpened on one end for easier installation. (estimated cost \$15)



Our measuring device was an Odyssey capacitance, water-level probe with self-contained data logger. (estimated cost \$180)

We used 10 infiltrmeters to characterize the infiltration properties in a 70 acre field site near San Jacinto, CA. A total of 66 sites were measured during a 7-day period, two examples are shown.



## Benefits of this technique

- Can be used when distances between sites prohibits connecting to a mutual data logger
- Long infiltration times are possible by varying the Marriott/reservoir length
- Increased sensitivity by reducing the Marriott/reservoir diameter
- Encapsulated data logger (weather and dust proof)
- Easily installed under field conditions
- PVC parts available at home improvement stores
- Constant head controlled by Marriott
- Sensor is unaffected by Marriott "bubbling"
- Data is stored in data logger until retrieved by computer