

To people conducting hydrology experiments on the Carleton Well Field:

3/10/2004

The well field equipment is far from idiot-proof, so please read these comments on how to use it without messing things up:

- Needed items:

- Key to pump
- Outlet hose and bushing
- Calibrated Orifice bucket
- Depth sensors (probes, battery boxes & meter stick holders)
- 2 Measuring tapes
- 2 pipe wrenches
- Faucet grease
- Data sheet handouts
- Wooden blocks
- Watch with minute/second counter
- Shovel (?)

- Test the pump and depth gauges at least a day before the pump test lab. The pump needs to be tested to make sure the electricity is working, but as soon as you turn it on you disturb the water table so this should be done a day ahead so the water table has time to return to its undisturbed state.
- The depth probes should be tested several days ahead of time so they can be repaired if they don't work. Before the lab clean off the electrodes on the screwdrivers by gently rubbing them with a cleaning pad; if they have oxidation on them it inhibits the flow of electricity considerably.
- **The probes and battery boxes are fragile, especially in the wiring. Ask people to not tug on the wire connections (as when unplugging) or they will break the connections.**
- The two outer wells currently are buried in sand. The need to be dug out before you run the lab, and be sure to rebury them in the sand so people and lawnmowers don't fall into the holes.
- When pumping, the blue hose must be laid out carefully to get all the kinks and corners out, otherwise the pumping rate will not stay steady. Also, if the hose is kinked or stepped on while the pumping is underway it will affect the flow rate and your cone of depression will bounce up and down. The hose must be as free and open as possible and not be disturbed during the pumping.
- The Calibrated Orifice Bucket needs to be held level, and have several inches of clear space below it so the water flows out the pipe nipples freely. Propping it up on wood blocks works well.
- **Nothing can be dropped down the wells!!!** Sticks and other debris that goes down the wells wedge the probes down there so you can't get them out. This causes major repair problems. Please ask people not to wedge sticks in their apparatus to make it more firm, because these sticks can fall down into the wells when they pull the apparatus off the well. There is no way to get sticks out of a well except to replace the well, which is a big job.
- When opening up the observation wells, if the well starts to turn as you unscrew the cap you need to hold it with a second wrench. Allowing it to turn could unscrew a coupling down in the ground and wreck the well. If an underground coupling comes undone there's no way to hook it back up or retrieve the well point from the ground.
- When you recap the wells after the experiment make sure there is some (not great gobs, though) grease on the pipe threads. If the threads rust over the summer or winter they are very hard to get undone the next time. Screw the tops on **moderately** with a wrench, hard enough so a pubescent vandal can't undo them by hand but not so tight that they lock up and are impossible to open a year from now.
- Make sure everything you use is back where it belongs when you're done. See Tim if you don't know where it goes.