

## **Electronic Water Level Indicator**

### **FSOP 3.1.4 (January 17, 2013)**

## **Ohio EPA Division of Environmental Response and Revitalization**

### **1.0 Scope and Applicability**

- 1.1 Electronic water level indicators are used to measure the depth to ground water in monitoring wells and other types of wells. Typically, electronic water level indicators consist of a reel, tape and sensor. The reel generally has an alarm, control switches and a battery pack. The tape has a wire or series of wires encased within it. The tape is connected to the reel and graduated in tenths and hundredths of feet. The sensing probe is connected to the end of the tape which is lowered into the well. When the tape is lowered into the well and the probe contacts water, an audible or visual alarm is activated.
- 1.2 This FSOP is only applicable to electronic water level indicators. Other types of water level indicators are available (e.g., tapes with manual sounding devices, weighted steel tapes with chalk), however, electronic water level indicators are the environmental industry standard and are preferred by Ohio EPA for determining water levels in wells.

### **2.0 Definitions**

Not applicable

### **3.0 Health and Safety Considerations**

- 3.1 Consult the instrument's operation manual to determine if it is intrinsically safe when working in an area where there is a potential fire or explosion hazard.
- 3.2 Always review the site-specific health and safety plan (HASp) for site-specific sampling hazards before beginning work

### **4.0 Procedure Cautions**

- 4.1 The user should be familiar with the operation of the instrument being used. Consult the instrument manual for operating instructions specific to the instrument prior to use.
- 4.2 Inspect the instrument tape to make sure there are no cuts or abrasions that may impair the function of the tape.
- 4.3 The use of electronic water level indicators to measure the depth to water in residential or other wells with pumps and associated plumbing is generally discouraged because the tape may become entangled in the downhole plumbing or centralizing disks. If water level measurements must be obtained from such wells, the pump and plumbing may need to be temporarily removed first, which generally requires the services of a registered water well drilling contractor. Additionally, for residential or other water supply wells, there may be additional sanitary requirements for disinfection of the well and/or downhole equipment

required by the county or local health department that has jurisdiction over the well.

- 4.4 Use caution when lowering and raising the tape within a well. A sharp casing edge or burr may damage the tape if the tape is allowed to rub against the edge of the casing.
- 4.5 Do not use electronic water level indicators in wells known or suspected to contain nonaqueous phase liquids (NAPL). Use an interface meter instead (refer to FSOP 3.1.3, Interface Meter.)
- 4.6 If using the water level indicator to measure the total depth of the well, add the length of any probe extension beyond the sensor pin (e.g., 0.3 ft) to obtain an accurate measurement of the total well depth.
- 4.7 Be sure the instrument has new or charged batteries. Replace old or weak batteries as necessary.
- 4.8 Remove instrument batteries if the instrument is not going to be used for an extended period of time.
- 4.9 Always transport the instrument in a protective case or secure the instrument during transport.
- 4.10 When reeling the tape back in, be careful that the tape does not twist, kink or fold.

## **5.0 Personnel Qualifications**

Ohio EPA personnel working at sites that fall under the scope of OSHA's hazardous waste operations and emergency response standard (29 CFR 1910.120) must meet the training requirements described in that standard.

## **6.0 Equipment and Supplies**

- 6.1 Water level indicator with battery and operation manual
- 6.2 Protective case for instrument transport
- 6.3 Field data sheet (attached) or field book and pen
- 6.4 Well keys or tools to open well
- 6.5 Decontamination equipment and supplies
- 6.6 Personal protective equipment appropriate for site-specific work activities

## **7.0 Procedures**

- 7.1 Make sure the electronic water level indicator is functioning properly and the battery is charged. (**Note:** when testing the instrument, use tap water and not distilled water. Distilled water contains no dissolved solids to act as electrolytes and the alarms will not be activated.)

- 7.2 Open the well by removing the lock, if present, and cap. Allow sufficient time for the water level in the well to equilibrate, especially if the well is installed in a confined aquifer or if air pressure is released (a “popping” sound is heard) when the well casing cap is removed.
- 7.3 Locate the designated measuring point mark on the casing. For monitoring wells this is generally marked on the highest point or north side of the top of the inner casing. If a mark is not present, use the highest visible point of the inner casing as the measuring point. If the inner casing is level (no discernible high point), use the north side of the casing.
- 7.4 Turn the water level indicator’s switch on to the highest sensitivity position.
- 7.5 Slowly lower the tape down the well taking caution not to twist the tape or allow the tape to scrape the edge of the casing as it is being lowered. When the tape’s probe contacts water, the instrument’s audible (buzzer) and visual (light) alarms will be activated.
- 7.6 Raise the tape slightly to lift the probe out of the water. The alarm should stop. A mild shake of the tape may also be necessary to remove water from the probe’s sensor pin. Lower the tape slightly until the alarms activate and hold the tape firmly against the side of the casing so that the probe does not move up or down.
- 7.7 Carefully read the tape measurement at the well’s measuring point to the nearest hundredth (0.01) foot.
- 7.8 Record the water level reading and supporting information (site, date, time, notes) on the attached field log sheet or in a field log book.
- 7.9 If using the water level indicator to measure the total depth of the well, turn off the instrument. Next, lower the tape to the bottom of the well and record the tape reading at the measuring point. Remember to add the length of any probe extension to the total depth measurement.
- 7.10 Decontaminate the probe and the length of tape lowered into the well in accordance with the decontamination procedures specified in FSOP 1.6, Sampling Equipment Decontamination or the site specific work plan.

## **8.0 Data and Records Management**

Refer to FSOP 1.3, Field Documentation.

## **9.0 Quality Assurance and Quality Control**

Not applicable

**10.0 Attachments**

Field Log Sheet for Depth to Ground Water Measurements in Monitoring Wells and Piezometers

**11.0 References**

FSOP 1.3, Field Documentation

FSOP 1.6, Sampling Equipment Decontamination

FSOP 3.1.3, Interface Meter

