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Standard Operation Procedure 9: Hydrological Measurement Using Staff Gauges

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Standard Operation Procedure 9: Hydrological Measurement Using Staff Gauges

Staff Gauges

Staff gauges are installed instead of groundwater wells in wetlands where surface water is highly persistent throughout the growing season (Figure 9.1). Staff gauges have a graduated scale against which water height is measured relative to a fixed reference point. For this protocol, we calibrated the gauges so that the zero point actually sites at ground level and is representative of true water levels at that location.

Navigation to Staff Gauge

See SOP 2. Use well location waypoint file.

Materials

1. Graduated staff gauges
2. 1 - 2, 6-ft “U-channel” style grommated steel fence posts
3. Galvanized or zinc coated hardware (Bolts (some w/deep well socket), nuts, washers, lock-washers) that match hole size of fence posts (Grade 5, up to 1/3”) for attaching staff gauge to fence post. The thread of the bolts should go all the way to the head.
4. Fence post driver / sledge
5. Crescent wrench
6. Drill

Installation

1. Install gauge during low water so minimal wading and working under water is required.
2. Using sledge or post driver, drive post 1 into consolidated subsoil until securely anchored.
3. Position the staff gauge against the posts with zero close to the wetland bottom, so staff gauge readings are representative of true water levels.
4. For areas with depths greater than 2 m, two posts are needed to extend gauge height. Attach post 2 to post 1 with two deep well socket (>2”), bolts, nuts, and washers, and crescent wrench.
5. Pre-drill holes in the staff gauge to match to location of the grommated post holes and secure the gauge/s to the post/s with nuts and bolts.

Measurement

Measurements are made by safely wading to the gauge (if possible) or by viewing from distance with a set of binoculars. Graduation marks are every centimeter and numbers are located at decimeters.



Figure 9.1. Installed staff gauge at Fawn Pond, Cuyahoga Valley National Park.