# SSHCZO Metadata Worksheet

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| Data File Name | **CZMW10\_DO.csv** |
| Date Prepared | 2019-08-05 |
| Descriptive Title | CZMW 10 Dissolved Oxygen |
| Update Frequency | Continuous |
| Abstract | CZMW 10 was drilled on 2017-11-21 using an Acker Soil Scout® Track Mounted Drill Rig by [Mountain Research, LLC](http://www.mountainresearch.com/index.php). A direct push drilling method was used to collect overburden soil from 0 to 10 feet (0 to 3.05 meters) below ground surface. A 6.25 inch inner diameter HSA was used to auger from 0 to 3.05 meters. A Mission SD 6 inch diameter down-hole pneumatic driven rotary percussion hammer was used to drill from 10.0 to 40.0 feet (3.05 to 12.19 meters). Competent rock was observed about 30 feet (9.14 meters) below ground surface. 4 inch inner diameter PVC/riser casing was installed and sealed with 5 50 pound bags of 3/8 inch bentonite chips (Halliburton Baroid Industrial Drilling Products).  CZMW10 well was completed using an air rotary Mission SD 4 inch diameter down-hole pneumatic driven rotary percussion hammer from 40 to 115.0 feet (12.19 to 35.05 meters). The completed well is 4 inch diameter open bedrock borehole from 40 to 115.0 feet (12.19 to 35.05 meters).  CZMW\_10 is continuously monitored using a vented [Meter Environment HYDROS 21 sensor](https://www.metergroup.com/environment/products/hydros-21-water-level-monitoring/). The sensor measures depth, water temperature, and conductivity (CTD). Measurements are made every 3 minutes, averaged, and are recorded every 15 minutes to a Campbell Scientific CR1000 data logger. The logger is programed and calibrated to manual water level measurements below ground. If changes are made in the offset between top of casing (TOC) and water level, the program will automatically store the old offset after the new offset is entered.  A Campbell Scientific CS-511 Dissolved Oxygen sensor was installed 2019-08-02. The sensor is set at 9 meters and zip-tied to its own cable, so the sensor is at a slight angle to prevent air bubbles on the membrane. The sensor is programmed to scan every minute, store a sample measurement every 15 minutes, and use measurements every 3 minutes to average over a 15-minute period. The multiplier used to for calibration is 0.29839 and will be calibrated annually. Older multipliers will be stored automatically once a new multiplier is entered. |
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| Data Value Descriptions | * COL1: label = TmStamp; Timezone = UTC * COL2: label = RecNum; internal logger reference * COL3: label = DOmv; Units = millivolts * COL4: label = DOppm; Units = parts per million; converted using .29839 as multiplier * COL5: label = DOppm\_Avg, Units = parts per million; 5 measurements over 15 minutes averaged |
| Keywords | Groundwater Depth, Groundwater Temperatures, Hydrology |
| Methods | Groundwater level measurements are recorded every 15 minutes with a vented [METER Environment HYDROS 21 sensor](https://www.metergroup.com/environment/products/hydros-21-water-level-monitoring/) (previously Decagon CTD) wired to a [Campbell Scientific CR1000](https://www.campbellsci.com/cr1000) data logger. Data are streamed to campus via Ethernet and fiber optic connections to the University network.  TOC above land surface = 0.29 meters  Sensor location down borehole from TOC = 7.00 meters  Sensor location from ground level = 6.71 meters  The water table below land surface is measured by subtracting the head pressure and above ground casing length from the sensor depth. |
| Sites | Shale Hills Valley: 40.66477, -77.90712(NAD\_1983\_StatePlane\_Pennsylvania\_South\_FIPS\_3702) |
| Publications | none |
| Citation | The following acknowledgment should accompany any publication or citation of these data: Logistical support and/or data were provided by the NSF-supported Susquehanna Shale Hills Critical Zone Observatory. |
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