



Berks Nature EnviroDIY Management Workshop

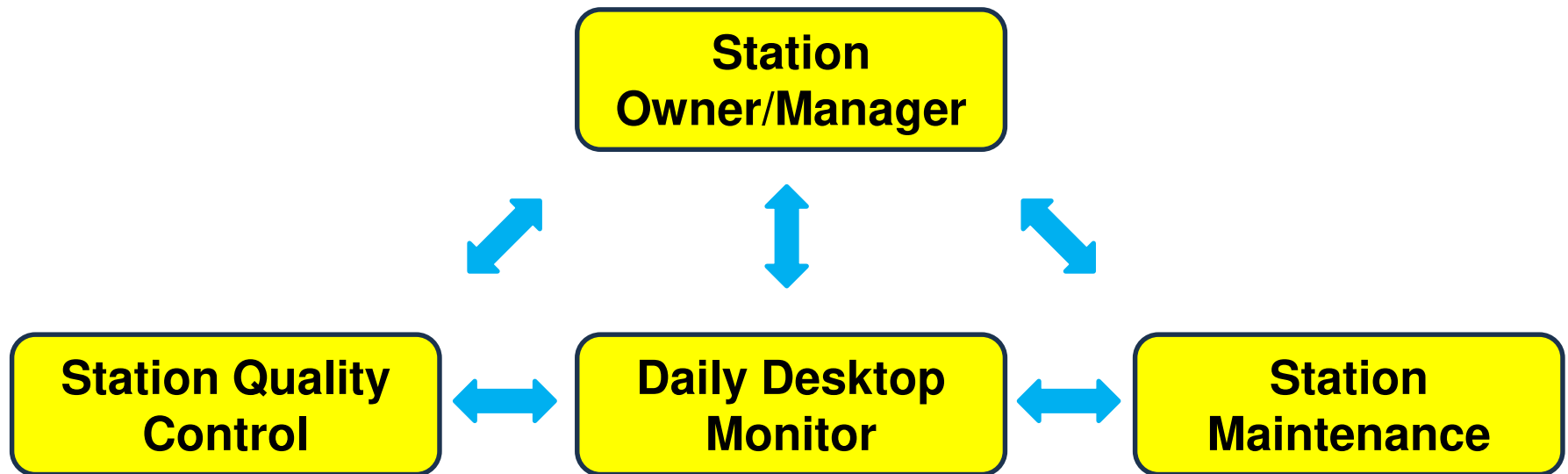
Saturday, March 9, 2024

Dave Manning and Charlie Coulter
Station Maintenance

Why maintenance?

- **Stuff happens.**
- **The best laid plans...**
 - **Age takes its toll.**
 - **Nature is destructive.**
 - **Go(ne) with the flow.**

Basic Station Management Process: Personnel

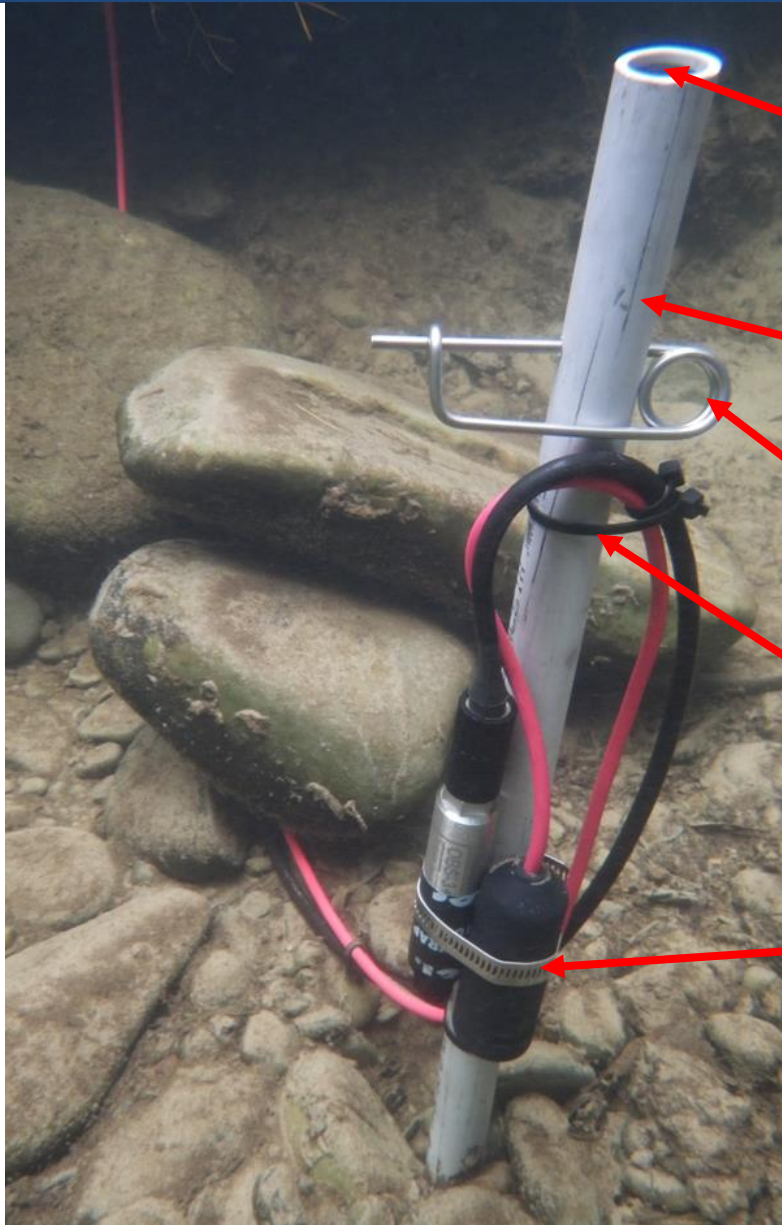


Station Maintenance: Per Situational Needs and Ongoing

Once per month, at a minimum:

- Review station data on Monitor My Watershed before and after station maintenance
- Clean *sensor(s)*
- Clear sediment and debris from under and near *sensor(s)*
- Clear vegetation and debris from around *logger*
- Clear vegetation from above, and wipe dust from, the *solar panel*

Parts of the sensor bundle to know about



$\frac{3}{4}$ in Pointed "rebar" with holes
– anchored in stream bed



$\frac{3}{4}$ in PVC

Stainless steel retaining pin

Outdoor rated cable ties

Stainless steel hose clamp

Cleaning the CTD sensor



Use the soft white bristles or Q-tip to *gently* clean the four screw heads



Cleaning the CTD sensor



Check sensor readings BEFORE and AFTER cleaning

- If **cleaning doesn't change the readings** much (e.g., <10%) then consider cleaning **less frequently**
- If **cleaning changes readings substantially** consider **cleaning more frequently**

Cleaning the CTD sensor



Digging out buried sensor

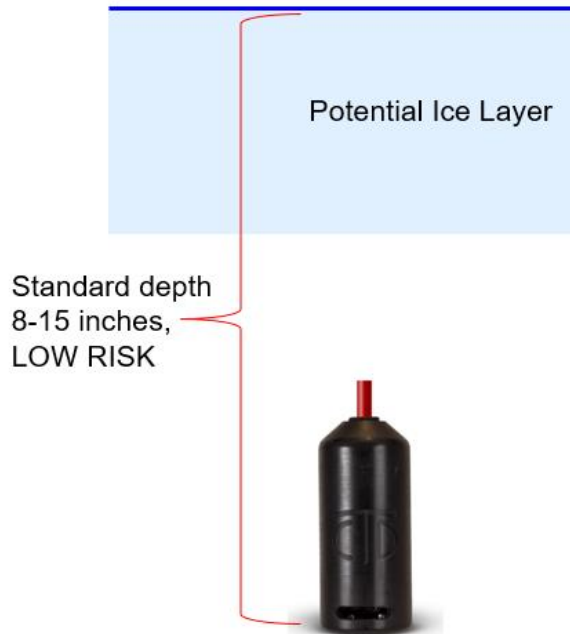
Deposits of sediment, leaves, branches, *etc.*, should be removed – not usually necessary to move sensor

- Dig out with hands or shovel (be careful to not damage sensor)



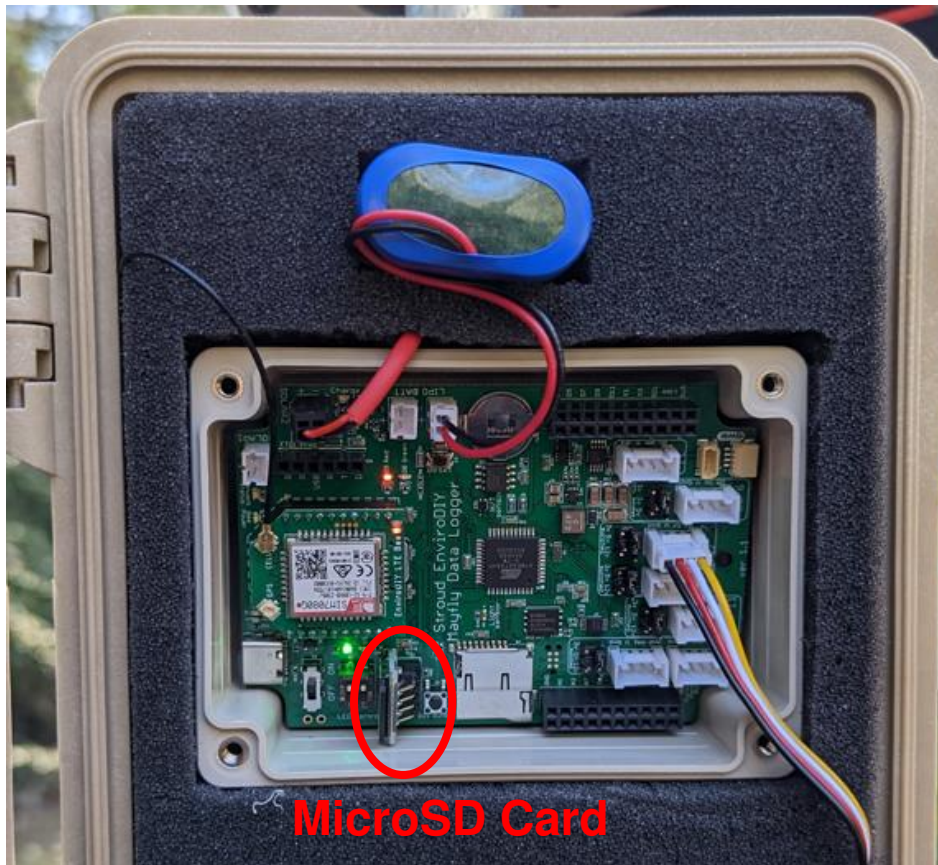
Adjusting for freeze risk

- No need to break ice or remove sensor if it's below where ice will form
 - Only risk of damage if ice forms on the CTD sensor itself



(Especially) For a Station That Does Not Communicate with MMW

Download data files from microSD card



Download files then delete from card – swap in blank card every time you download

microSD card

Download data files from microSD card

Store files on a secure server
or hard drive

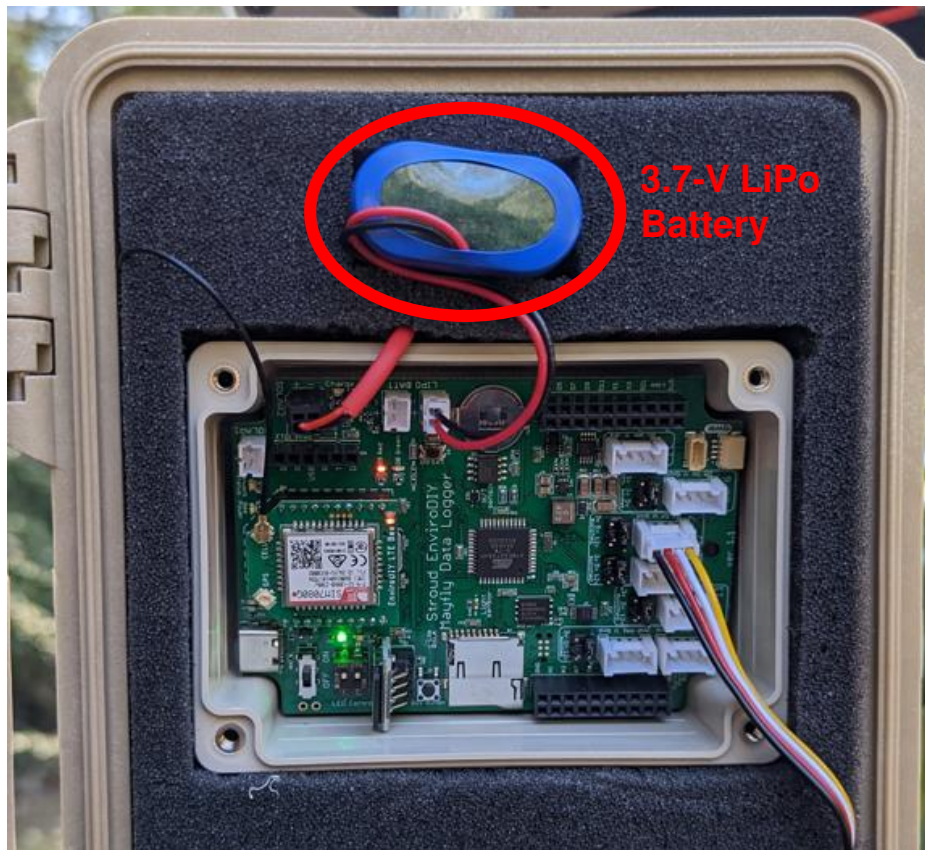


	A	B	C	D	E	F	G	H	I
1	Data Logger: SL082	RamseyRun							
2	Data Logger File: SL082_RamseyRun_2023-10-30.csv								
3	Sampling Feature UUID: 85d2450f-a802-4c4f-8664-be32277d3c08								
4	Sensor Name:	MeterHyd	MeterHyd	MeterHyd	SensirionS	EnviroDIY	CalculateC	SensirionSHT4x	
5	Variable Name:	specificCo	temperatu	waterDep	temperatu	batteryVo	signalPer	relativeHumidity	
6	Result Unit:	microsie	degreeCe	millimete	degreeCe	volt	percent	percent	
7	Result UUID:	de4a6bf7-	ff3ec931-	e48623f5-	a9fb6aa5-	9ad8e5fe-	7bd50ed4-	a77568d8-e0da-48ea-	
8	Date and Time in U	Hydros21c	Hydros21t	Hydros21c	SHT4xTem	Battery	signalPer	SHT4xHumidity	
9	10/30/2023 11:45	251.3	16	210.7	22.27	4.124	52	75.31	
10	10/30/2023 11:50	251.1	16	210.2	22.35	4.245	52	81.58	
11	10/30/2023 11:55	250.8	16.03	210.2	22.51	4.245	58	84.26	
12	10/30/2023 12:00	250.6	16.1	211.2	22.66	4.245	58	85.1	
13	10/30/2023 12:05	250.6	16.1	210.7	22.8	4.245	52	85.46	
14	10/30/2023 12:10	250.5	16.1	212	22.99	4.245	55	85.97	
15	10/30/2023 12:15	250.5	16.1	211.3	23.17	4.245	58	87.18	
16	10/30/2023 12:20	250.2	16.2	210.8	23.52	4.245	55	90.22	
17	10/30/2023 12:25	250.2	16.2	211.2	24.21	4.245	58	89.33	
18	10/30/2023 12:30	250	16.2	211.2	24.25	4.245	55	89.43	
19	10/30/2023 12:35	250.7	16.3	211	24.24	4.245	55	88.39	
20	10/30/2023 12:40	250.1	16.3	210.2	24.86	4.245	58	85.89	
21	10/30/2023 12:45	249.7	16.3	210.8	24.49	4.23	58	86.39	
22	10/30/2023 12:50	250.4	16.4	210.7	24.27	4.245	55	86.03	

**Note SD card files can be
uploaded to Monitor My
Watershed to fill data gaps*

Especially For a Station That Does Not Receive Sufficient Sunlight

Replace the lithium battery as the charge approaches 3.6 volts.



3.7-V LiPo Battery



Lithium Ion Battery Pack – 3.7V 4400mAh.



SparkFun LiPo Charger Plus.

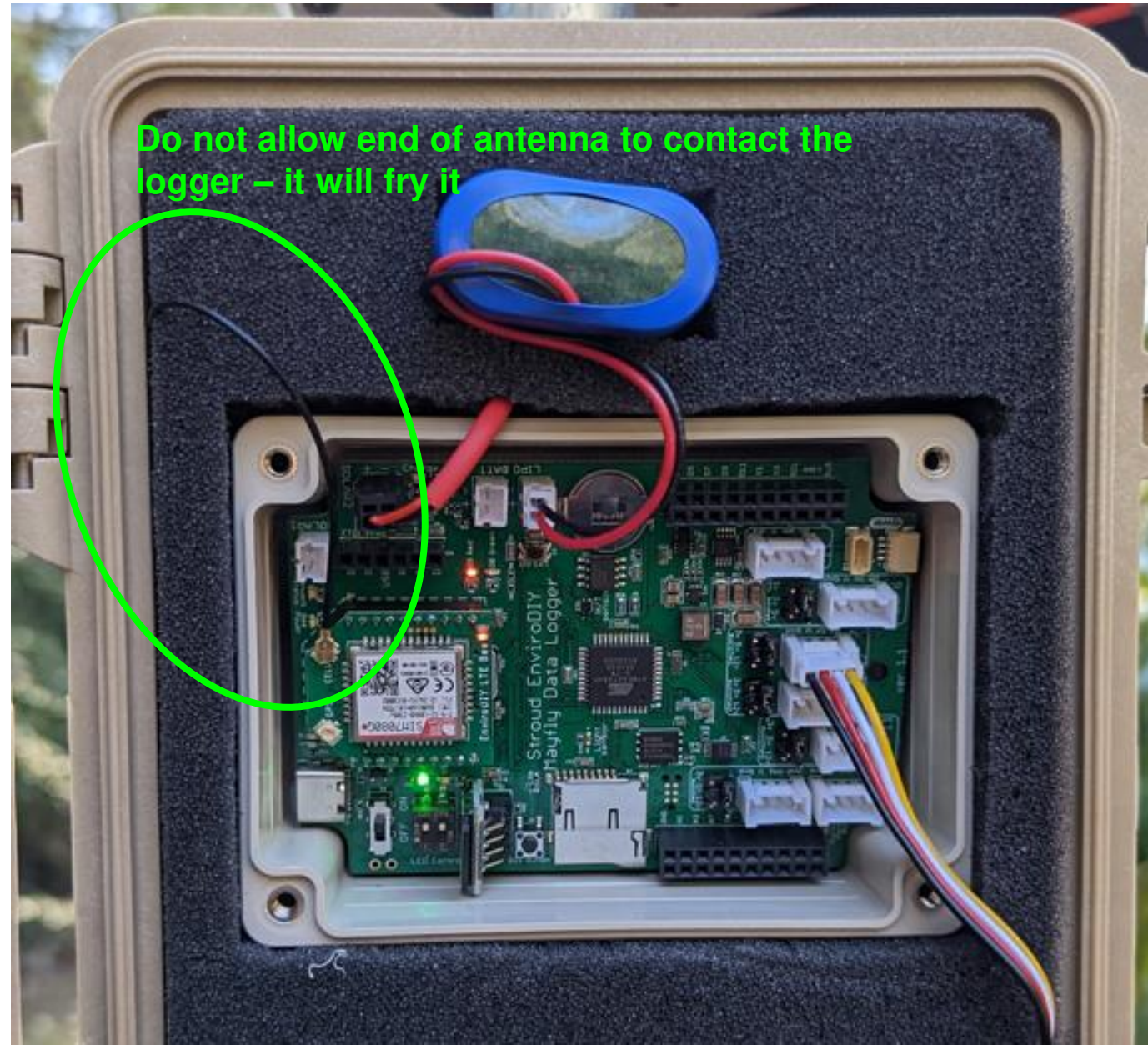


USB 2.0 Cable A to C – 3 Foot.



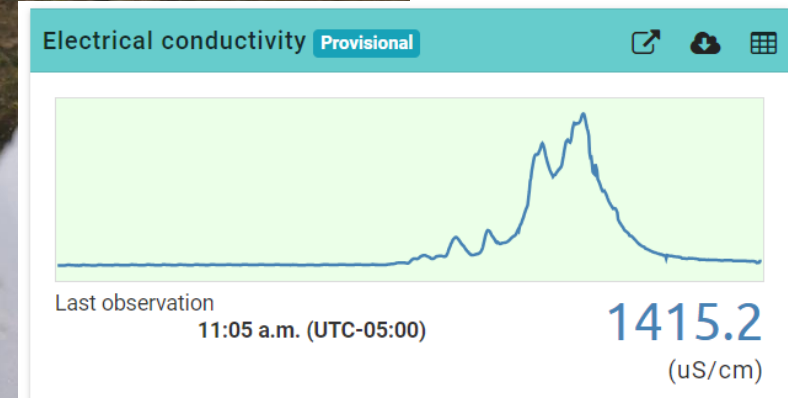
USB Wall Charger – 5V, 1A (Black)

Parts of the Mayfly to know about



Quality Control (quarterly or per situational needs)

Cross check Conductivity and Water Temperature using calibrated hand held meter



*Recommended
<10% difference
between readings

Quality Control

Cross check Water Depth using a metric ruler



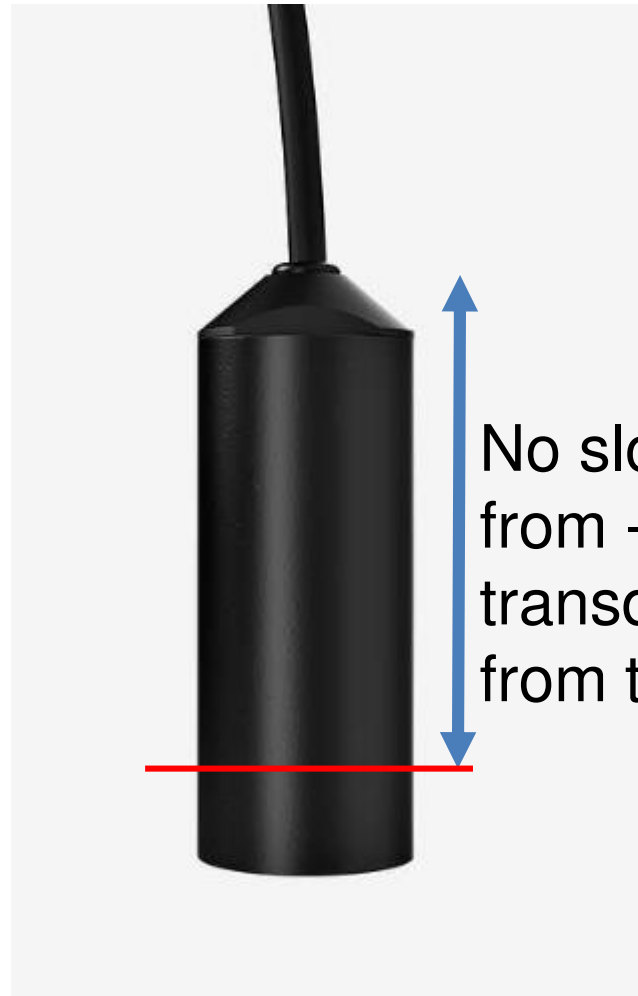
Older Version CTD

Measure from
pressure
transducer to
water surface

Quality Control

Cross check water depth using a metric ruler

Newer Version CTD



No slot to measure
from - pressure
transducer **8cm**
from top of sensor

Station Maintenance: Per Situational Needs, But At Least Monthly

- Complete Field Visit Data sheet and enter the data into an online form located at <https://wikiwatershed.org/drwi/>
 - It's not a bad idea to *cc the online form to the Station Owner/Manager* for the purpose of record keeping.
- **Note:** Consult the EnviroDIY Maintenance Quick Guide as needed, available through the above-noted website.