**HORSETOOTH RESERVOIR FIELD SAMPLING**

**Sample Checklist**

* Profile (Temperature, pH, conductivity, salinity, dissolved oxygen, and chlorophyll *a*)
* Secchi depth
* Algae ID sample
  + Duplicate samples, epi only
  + Preserve in Lugol’s solution
* Zooplankton ID sample
  + Duplicate samples, epi only
  + Preserve in Lugol’s solution
* 15 ml filtered (NH4/NO3) – *only fill to ~10 ml*
  + Duplicate samples, epi and hypo
* 50 ml filtered (TDN/DOC)- *only fill to ~40 ml*
  + Duplicate samples, epi and hypo
* 15 ml unfiltered (TP)- *only fill to ~10 ml*
  + Duplicate samples, epi and hypo
* GFF- *marked with filtered volume*

**PACKING CHECKLISTS**

**Packing list (per boat)**

* Anchor
* Sonde
* Sonde handheld (charged)
* Sonde cable
* Cooler
* Ice packs
* Secchi disk
* Van dorn sampler with line and messenger
* Zooplankton net
* Squeeze bottle
* Distilled water
* Lugol’s solution
* Gallon bags (5) – labeled by parameter
* Extras of items listed below
* GPS

**Packing list (per group)**

* Sharpie (1)
* Aluminum foil squares (2)
* Whirl packs (2)
* Forceps (1)
* GFFs (4) – wrap in aluminum foil
* 15 ml tubes (8)
* 50 ml tubes (8)
* Choco bottle (1)
* Syringe (1)
* Luer-loc filter holder (1)
* Disposable pipette (1)

**Personal packing list (individuals)**

* Shoes with a heel strap (tennis shoes, chacos etc. no flip flops)
* Water bottle
* Sun protection (sunblock, hat etc.)
  + *Pro tip*- a hat with a white brim might still burn your face because the sun reflects off the water, at your hat and back on to your face.
* Maybe a rain jacket- check weather in the AM
* Something to write with (plus optional clipboard/ notebook)

**PROTOCOLS**

**Secchi depth protocol**

1. Position yourself so that you can lower the secchi disk in the water while avoiding shadows
2. Remove sunglasses
3. Lower the Secchi disk until you can no longer see it then raise it slowly until you can see it again.
4. Record the depth of this transition from visible to invisible.
5. Have everyone in the group measure Secchi depth then calculate the group average.

**Depth profile protocol**

1. Beginning at the surface (z = 0 m), take a measurement at 1-meter increments.
2. Wait until all parameters stabilize before recording values
3. Record temperature, pH, conductivity, salinity, dissolved oxygen (percent and concentration) and chlorophyll *a* on your sampling sheet.

**Algae and zooplankton sampling**

1. After checking that the basket is secure and valve is closed, lower the net to a depth of 1 meter.
2. Allow net to fully unfurl then gently raise it to the surface then repeat
3. Pull the net fully out of the water and then use a squeeze bottle full of distilled water to rinse off the sides of the net, collecting as much material as possible in the basket.
4. Aim tube into a 50 ml falcon tube and open valve, fill to ~ 40 ml line.
5. Repeat until you have four tubes of samples (2 for algae and 2 for zooplankton)
6. Add ~0.5 ml of Lugol’s solution to each falcon tube using your disposable pipette.
7. Label tubes with parameter, group number, date and location and place in cooler.

**Water chemistry**

1. Collect a sample as follows from a depth of 1 meter (epilimnetic sample) and from 1 meter below the thermocline (determine this depth from depth profile).
2. ***Double check to make sure the messenger is securely on the line***
3. Close the valves then open the van dorn fully and lower to desired depth and let rest for a few moments
4. Send the messenger down the line to close the van dorn
5. Pour a small amount of the sample water into your 1 liter bottle, close the lid, shake thoroughly then dump this water out.
6. Once rinsed with the sample water, fill the 1-liter bottle with water from the van dorn, secure the lid and then set the bottle down somewhere out of direct sunlight.
7. First, fill your 15 ml tubes designated for total phosphorus. *Make sure to only fill to ~10 ml because water expands when it freezes and you don’t want to break your tube.*
8. Next, prepare your filters with 1 GFF (using forceps) and use the provided syringe to gently pass water through the filter as your fill your remaining falcon tubes (15 ml tubes for NH4/NO3 and 50 ml tubes for dissolved organic carbon*, fill to 10 and 40 ml, respectively*). Pull water into the syringes then expel water through the filter into the falcon tubes. KEEP TRACK OF HOW MUCH WATER passes through the filter.
9. Keep the filter for the next step.
10. Label with parameter, depth, group number, date and location and place in cooler.

**Chlorophyll *a* protocol**

1. For the epilimnion sample, carefully remove the used filter using forceps and place it on one of your precut pieces of aluminum foil
2. Gently fold the filter in half and then fold aluminum around your sample.
3. Label each whirl pack with the volume of water that was filtered, group number, date and location and place in cooler