**CCE mineral soil processing protocol**

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Updated for CCE by Weronika Konwent: October 3, 2024

REMINDERS:

* **The most important thing is to avoid contaminating/cross-contaminating samples. Keep surfaces/tools clean, use fresh deli paper for each sample, clean gloves between each sample + switch gloves frequently. You can keep 1 designated weight boat for rocks, 1 designated weight boat for CWD (but make sure it’s clean between samples).**
* Wet weights for soil and CWD do not include bag weights, dry weights do include bag weights. Moisture subsample (in tin) wet weight DOES include the weight of the tin. All dry weights include weight of bag/tin.
* All mass measurements in g to 2 decimal places
* Label all cookie bags with project, ID, and sample type. Ex: CCE 2024, 1, >5 CWD

PROTOCOL:

* Thaw samples. Thawing samples can be pulled out of the fridge in the far corner of the wet chemistry side of the lab (311)
* For each sample, tare a clean weigh boat, then record the wet weight of the entire sample in “**prehomog\_wet\_mass**” column. The sample should be removed from the bag as completely as possible. Make sure to remove the paper label. This is a great time to check that the paper label matches the bag label.
* Set aside 100g of soil, unhomogenized, as representative as possible, for radiocarbon. This soil will go in a quart ziploc, with the appropriate label in the bottom left corner. It will go back into the freezer - there is no need to write down the weight.
* With clean gloves on, work through and homogenize the sample
  1. Do this on or over a piece of deli paper or by putting sample back in ice bag and picking through it in the bag. Whatever is easier while avoiding sample contamination
  2. At this point we are no longer worried about losing bits of sample.
* Remove rocks (goal is we are removing rocks that wouldn’t fit in a 2 mm sieve).
  1. IF THE SAMPLE IS A GRAB SAMPLE - remove the rocks, but we do not need to worry about them being clean. Still record their mass and volume.
  2. IF THE SAMPLE IS A CORE SAMPLE - rocks should be as clean as possible! Remove as much soil from the rocks as you are able. We want to get the mass of just the rocks.
  3. Measure the mass of the rocks. You can reuse the same weight boat for rock mass. Record in “**rock\_mass**” column
  4. Measure the volume of the rocks using a graduated cylinder. Fill graduated cylinder with water until the meniscus is at an identifiable mark. Use the smallest graduated cylinder that the rock(s) will fit into. The volume is the difference between the initial volume and the volume after the rock(s) are added. Graduated cylinder can be reused for multiple samples, but keep track of starting and ending volume for each sample. Record volume in “**rock\_vol**” column
  5. Toss rocks when we’re done with them
  6. If there are no rocks, put 0 in the datasheet.
* Remove CWD greater than 2 mm diameter
  1. Sort CWD into 2-5 mm and >5 mm diameter. Smaller than 2 mm stays in soil sample
  2. Tare weigh boat (or cookie bag) and record wet weight of each CWD fraction in “**2-5\_coarsewet\_mass**” and “**above5\_coarsewet\_mass**” column
  3. Put each CWD fraction in its own cookie bag
     1. Goes in big drying oven (60 degrees) for 48 hours
* Moisture subsample (taken after rocks and CWD removed)
  1. Take a tin with number label! It does not need to be particularly clean.
  2. Record tin # in “**tin\_number**” column and tin mass in “**tin\_mass**” column
  3. Use a clean scoopula to add ~20 g of sample to the tin. **DO NOT TARE THE BALANCE BEFORE ADDING SOIL. WET MASS INCLUDES MASS OF THE TIN.** If there isn’t space for quite that amount that’s ok, we don’t want to overfill the tin and have sample falling out
  4. Record wet soil + tin mass in “**tin\_wet\_mass\_110**” column
  5. Tins go in small drying oven (set to ~110 degrees) for 48 hours
* Archive/CN subsample (taken after rocks and CWD removed)
  1. Save some sample for archive. This should be ~60g.
  2. Record wet mass in “**archive\_wet\_mass**” column. Save the sample in a tared and labeled cookie bag. The wet mass should not include bag weight.
  3. Put sample in 60 degree drying oven for 48 hours
* Airdry subsample (taken after rocks and CWD removed)
  1. Save the remaining sample in a labeled flat-bottomed small lunch bag. It DOES NOT need to be tared. Record wet mass in “**airdry\_wet\_mass**” column.
  2. Leave this sample to air dry in a designated fume hood until completely dry. It will later be used for pH and texture.
* Put the paper label back in the bag, and place the bag in the CCE bag box.
* Throw away your deli paper, grab a new weighboat, change gloves, cleaned tabletop and tools, and make sure that you have checked off your sample on the sample processing list and on the sample list.

NOTES:

* Make sure that all soil that is drying is crumbled as much as possible, to ensure quick and even drying. If you are putting samples in the oven, make sure that the samples are somehow marked when they went in, so that we can be sure when to remove them.
* Make sure that your workspace is clean at the end of each day. This includes sweeping the floor.
* IF your sample is small because it is a grab sample, you can drop down to 100g for RC, 40g for archive, and 40g for airdry. If even this is not enough, you can take up to 40g from RC, and distribute evenly.

POST-DRY:

* Dry weights
  1. Moisture subsample: record dry mass of tin + sample in “**tin\_dry\_110**” column
  2. Archive subsample: record dry mass of cookie bag + sample in “**archive\_dry\_60**” column
  3. CWD: record dry mass of cookie bag + 2-5 mm in “**2-5\_coarsedry\_mass**” column and cookie bag + >5 mm in “**above5\_coarsedry\_mass**” column
  4. There is no need to weigh the airdry sample after drying. Once it is completely dry, it can be put away in the CCE airdry box after folding well to ensure that no sample falls out!