BCAL Phosphorus Sample Preparation Protocol

Blue Carbon Analysis Laboratory (BCAL) & Seagrass Ecosystems Research Laboratory (SERL)
Coastlines and Oceans Division, Institute of Environment, Florida International University
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Prior to Sample Preparation:

1. Finely ground (homogenized) solid samples should be dried to constant weight in a 70 °C drying oven prior to being weighed for Phosphorus analysis. Overnight drying directly before weighing is recommended.

2. Print the BCAL Phosphorus Data Sheet (available online at http://seagrass.fiu.edu/bcal.htm) and fill out the "Customer Information" section at the top.

NOTE: There are two ways to send samples to BCAL. Either, ship vials inside of a 100-count scintillation vial box, OR ship them packed in a plastic carrying tray with plenty of padding. DO NOT ship samples loose inside of the package or inside of a ziploc bag, this almost always leads to vials breaking.

3a. Shipping vials in a 100-count box: Obtain a 100-count scintillation vial box to hold your samples. FIU labs can borrow an empty box from BCAL or you can purchase your own (see "Materials" section at the end of the protocol). Use label tape to label your box with the same Sample Set Name written under "Customer Information" on your Data Sheet. When labeling the box, orient it so that the front left cell is A1 (columns A-J facing you running left to right, rows 1-10 on the sides of the box running front to back). When weighing your samples, you will work from the front-left cell backwards, meaning the samples will go in the order A1, A2, A3…, and after A10 comes B1, etc. Leave positions B9, B10, D10, E9, E10, G9, G10, I10, J9, and J10 (highlighted on the Data Sheet in gray) *EMPTY*. These cells will be filled in by BCAL technicians.

NOTE: DO NOT label vials in any way (sharpie, label tape, paper label) as the vial will need to be ashed at 500 °C. The vial's position in the box indicates it's Sample ID, since every Cell # corresponds to a unique Sample ID on the Data Sheet. Labeling the vial caps is recommended (caps are removed before ashing), in case samples get dislodged from their cells in the box during shipment.

3b. Shipping vials in a plastic carrying tray: Obtain a plastic carrying tray to hold your samples. FIU labs can borrow an empty rack from BCAL or you can purchase your own (see "Materials" section at the end of the protocol). When packing for shipment, please ensure that samples are protected by foam, packing peanuts, bubble wrap, etc. to avoid samples knocking into each other and breaking during shipping. It is recommended that a second carrying tray be placed on top of samples, and the two trays rubber banded together to ensure safe shipping. When weighing samples, please fill out all rows on the Data Sheet *EXCEPT* those highlighted in gray. These rows will be filled in by BCAL technicians.

NOTE: DO NOT label vials in any way (sharpie, label tape, paper label) as the vial will need to be ashed at 500 °C. Please mark the lid of each vial ONLY with the Sample ID.

Sample Preparation:

4. Wearing gloves, clean the workspace (place a clean Kimwipe on the benchtop in front of the analytical balance) and weighing tools (spatula) with 90% ethanol and Kimwipes to remove trace organic matter prior to weighing a sample.

5. Record the Sample ID in the "Sample ID" column of the Data Sheet. Use a gloved hand to place a scintillation vial on the analytical balance, close the balance doors and press the "Tare" button.

6. After the balance has tared, remove the scintillation vial from the weigh chamber and place it on the workspace. Use the spatula to place a small amount of ground sample material into the vial. Place the vial on the balance, close the doors, and check the sample weight. Add or remove sample from vial until the desired weight has been attained, but always do so on the workspace and not inside of the balance. Once the desired weight has been attained, record the weight (XX.X mg) in the "Weight (mg)" column of the data sheet. Plant tissue should be weighed between 17-21 mg, animal tissue should be weighed between 1-3 mg, and soils should be weighed between 30-35 mg (but weigh peat soils rich in P at 17-21 mg). If you spill anything inside the chamber, gently wipe the weighing tray with a Kimwipe.

7a. Shipping vials in a 100-count box: Cap the vial tightly and place it in the corresponding cell inside of the box.

7b. Shipping vials in a plastic carrying tray: Cap the vial tightly and label *ONLY THE LID* with the Sample ID.

8. Repeat steps 4-7 until all samples have been weighed, filling out the Data Sheet as you go. Don't skip step 4! Cleaning the workstation and tools must be done before EVERY sample to prevent cross-contamination.

9a. FIU researchers: Once you have finished preparing your samples, e-mail the BCAL Lab Manager, Sara at sawilson@fiu.edu to arrange a drop off. Don't forget you will need to fill out a BCAL Chain of Custody form.

9b. Non-FIU researchers: Once you have finished preparing your samples, ensure that they are packaged carefully with some bubble wrap or other protective pacakaging to prevent samples moving around during shipment. If you can ship the tray with THIS END UP instructions on the box, that is helpful to futher try to ensure that no samples move around. Include the Data Sheet inside your package. Send an e-mail to the BCAL Lab Manager, Sara at sawilson@fiu.edu to let us know your samples are on the way (don't forget to attach a BCAL Chain of Custody form). Ship to:

Attn: Sara Wilson OE-148
Florida International University
11200 SW 8th St.
Miami, Florida, USA, 33199

Materials:

BCAL Phosphorus Data Sheet (available at http://seagrass.fiu.edu/bcal.htm)
20 mL borosilicate glass scintillation vials with polyethylene caps (500-count box via FisherSci.com catalog # 03-337-7)
Plastic carrying tray for 20 mL scintillation vials (5-count via FisherSci.com catalog # 06-408-6)
Spatula (12-pack via FisherSci.com catalog # 21-401-10)
Gloves, Kimwipes, label tape, sharpie
Analytical balance – required for one-tenth of a milligram weight precision (XX.X mg)