

SAMPLE PROCESSING PROTOCOL

POLARIS PROJECT AQUATIC SURVEY

21 JUNE 2011

Sample Processing Equipment

-GeoPump peristaltic pump with Masterflex C-Flex tubing (size 24)

Sample Processing Supplies (per each sample location)

- Geotech 0.45 μm capsule filter (1) - *may be used for more than one sample on the same day*
- Millipore 47 mm diameter AP40 GFF filter, ashed (1)
- Whatman 25 mm GFF filter, ashed (2)
- aluminum foil squares, ashed (3)
- Glass 20 mL vial, ashed (1) - *for DOC, should be reused*
- Wheaton 20 mL HDPE vial (4)
- Nalgene 125 mL HDPE bottle (1) – *for alkalinity, should be reused*
- Nalgene 60 mL precleaned HDPE bottle (5)

SAMPLE PROCESSING PROTOCOL

Set up a clean bench in the lab. Wear gloves and maintain a clean work space. Rinse all bottles 3 times with a small volume of sample water before collecting the final sample.

A. Unfiltered Whole Water Samples

Install pump tubing (Masterflex C-Flex, size 24) into peristaltic pump. Be very careful to keep the ends of the tube clean (*you can put the ends of the tube inside a latex glove to protect them from contamination*). Place one end of the tube in the 4-liter carboy and pump approximately 500 mL of water through the tube (discard this water). Then fill the following bottles with whole (unfiltered) water.

Bottle 1: H_2^{18}O . 20 mL HDPE vial, fill completely.

Preservation: Wrap cap with black tape, refrigerate, export.

B. Particulate Samples

These samples are filtered through reusable plastic filter holders, using ashed (4 hours @ 450°C) glass fiber filters. The filters are individually wrapped in aluminum foil. Open a filter holder, use filter forceps to place filter inside, and close filter holder again making sure that the filter is centered.

The carboy should be agitated periodically to help keep sediments suspended. In all cases, filter water into graduated cylinder and *record amount of water filtered*. Pump speed should be set low to avoid bursting filters. Dry filter as much as possible by forcing air through filter holder, then fold filter in half and pack it into its aluminum foil wrapper. There may be some residual particulates that remain on the filter holder between filtrations. Rinse the filter holder with the filtered water in the graduated cylinder, then shake off excess water. No particulate matter should be visible on the filter holders after it is rinsed with filtered water.

Filter 1: Chlorophyll. 25mm Whatman GFF.

Preservation: Put in 13 mL test tube, label, freeze, analyze in Cherskiy ASAP.

Filter 2: POC/PON. 25mm Whatman GFF.

Preservation: Dry, then store (folded in half) in foil wrapper, export.

Filter 3: TSS. Pre-weighed 47mm Millipore AP40 glass fiber filter.

Preservation: Dry, then store in foil wrapper, analyze in Cherskiy ASAP.

C. Capsule Filtered Water Samples

Attach a Geotech 0.45 μm high-capacity capsule filter to the end of the tube and pump through enough water to fully wet the filter surface and fill the capsule (at least 500 mL). Then filter water into the following sample bottles. Rinse each of these bottles three times before filling.

A single capsule filter can be used for more than one sample, but be sure to first force all water out and then flush with plenty of the new sample before collecting new samples. Discard the capsule filter at the end of the day (multiple filters may be needed on busy days).

Bottle 2: Alkalinity. 125 mL HDPE, fill completely.

Preservation: Refrigerate and analyze in Cherskiy ASAP.

Bottle 3: DOC and TDN. 20 mL ashed glass DOC vial, fill to shoulder.

Preservation: Refrigerate and analyze in Cherskiy ASAP (acidify if extended storage is necessary).

Bottle 4: Optics (UV-VIS scans and EEMs): 20 mL HDPE vial, fill to shoulder.

Preservation: Refrigerate and analyze in Cherskiy ASAP.

Bottle 5: NH_4 and SRP. 60 mL HDPE, fill to shoulder.

Preservation: Refrigerate and analyze in Cherskiy ASAP (freeze if extended storage is necessary).

Bottle 6: Archive 1. 60 mL HDPE, fill to shoulder.

Preservation: Freeze. Store in Cherskiy.

Bottle 7: Archive 2. 60 mL HDPE, fill to shoulder.

Preservation: Freeze. Store in Cherskiy.

Bottle 8: Trace Elements. 60 mL HDPE, fill to shoulder.

Preservation: Refrigerate, export.

Bottle 9: DOC, TDN. 20 mL HDPE, fill to shoulder.

Preservation: Freeze, export.

Bottle 10: NO_3 , NH_4 , PO_4 , Si. 20 mL HDPE, fill to shoulder.

Preservation: Freeze, export.

Bottle 11: Archive. 60 mL HDPE, fill to shoulder.

Preservation: Freeze, export.