



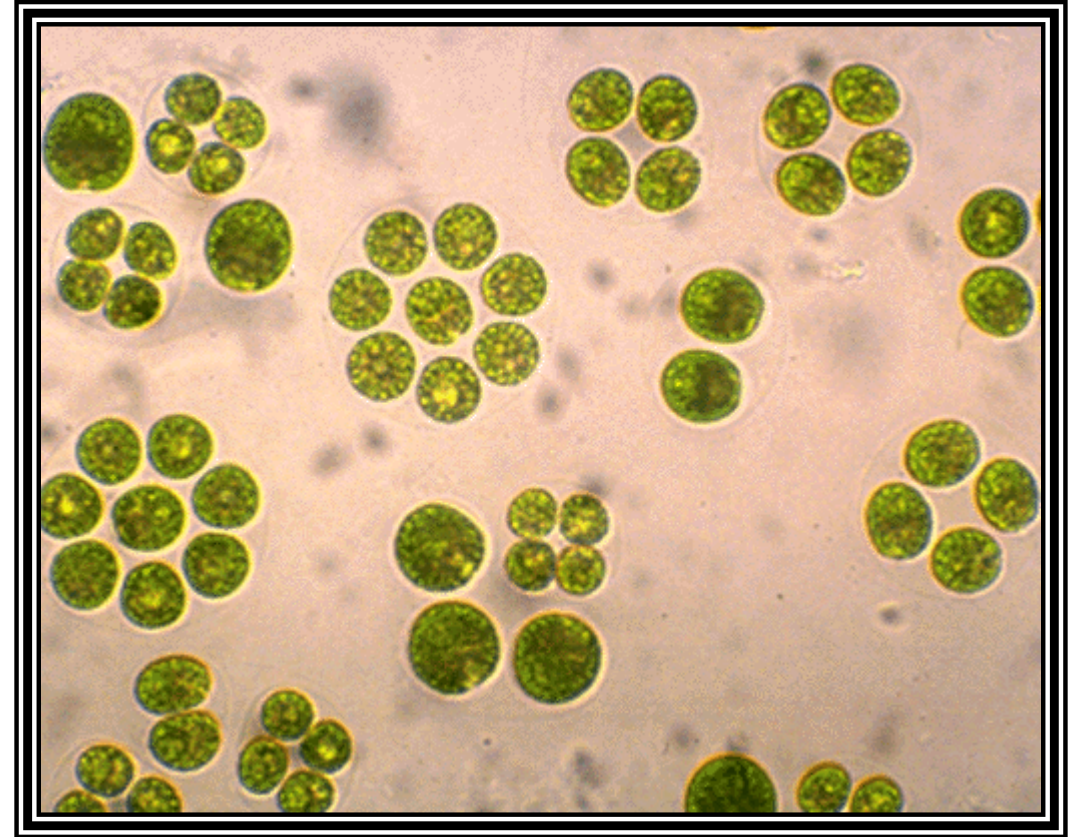
Chlorophyll a

Dr. Paul Steen

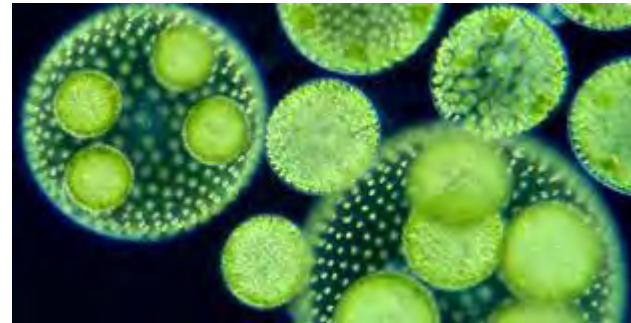
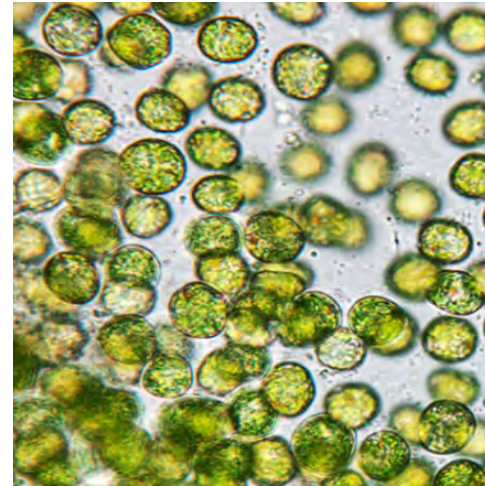


Chlorophyll *a* Training Outline

- What is chlorophyll?
- Schedule
- Water Collection
- Sample filtering and turn in
- End of the year data report



What is Chlorophyll-a?



Chlorophyll *a*
is the best
measure of
the Trophic
Status Index



Sampling Schedule



CHLOROPHYLL
2024 Sample
Collection and Turn-in Schedule



COUNTY	TURN-IN ADDRESS <i>(EGLE unless noted otherwise)</i>	SAMPLING DATES	TURN-IN DATES
Allegan, Kalamazoo, Barry, Van Buren, Berrien, Cass, St. Joseph	EGLE Kalamazoo District Office 7953 Adobe Road Kalamazoo, MI 48909 Deana Mercks: 269-330-8571	Sample #1 May 10-20 Sample #2 June 10-20 Sample #3 July 10-20 Sample #4 Aug 10-20 Sample #5 Sept 19-23	8 am-Noon June 25 8 am-Noon September 24
Calhoun, Jackson, Washtenaw, Branch, Hillsdale, Lenawee	EGLE Jackson District Office 301 E. Louis B. Glick Hwy. Jackson, MI 49201 Brittany Santure 517-740-6504	Sample #1 May 10-20 Sample #2 June 10-20 Sample #3 July 10-20 Sample #4 Aug 10-20 Sample #5 Sept 19-23	8 am-Noon June 25 8 am-Noon September 24
St. Clair, Macomb, Oakland, Wayne, Monroe	EGLE Warren District Office 27700 Donald Court Warren, MI 48092 Lindsey Eveleth 586-292-2971 (June) Jack Cotrone: 248-763-1994 (Sept)	Sample #1 May 10-20 Sample #2 June 10-20 Sample #3 July 10-20 Sample #4 Aug 10-20 Sample #5 Sept 19-23	8 am-Noon June 25 8 am-Noon September 24
Ottawa, Kent, Montcalm, Ionia, Muskegon, Oceana, Newaygo, Mecosta	EGLE Grand Rapids District Office 350 Ottawa St. NW, Unit 10, 5th Floor Grand Rapids, MI 49503 Lucy Robinson or Mercedes Alvarado: 616-250-7915	Sample #1 May 10-20 Sample #2 June 10-20 Sample #3 July 10-20 Sample #4 Aug 10-20 Sample #5 Sept 12-16	8 am-Noon June 25 8 am-Noon September 17



CHLOROPHYLL 2024 Data Form 1



Lake Name: _____ County: _____ Township: _____

Lake Sampling Site (Field ID) Number: _____ (see reverse and mark location on map)
Circle

Latitude: _____ Longitude: _____ GPS / Map

Volunteer Monitor Name(s): _____

Sampling Event #1 (May)

Date Sampled: _____ Time: _____

Secchi Depth : _____ (feet)

Composite Sample Depth: _____ (feet)

Weather Conditions (sunny, cloudy, windy, etc.): _____

Unusual Conditions (heavy rain, boating, etc.): _____

Filtering Sample (if 50 cc could not be filtered for this sample, indicate amount filtered):

Sample 1: _____ (cc) Sample 2: _____ (cc)

Sampling Event #2 (June)

Date Sampled: _____ Time: _____

Secchi Depth : _____ (feet)

Composite Sample Depth: _____ (feet)

Sampling Event #3 (July)

Date Sampled: _____

Secchi Depth : _____ (feet)

Composite Sample Depth: _____

Weather Conditions (sunny, cloudy, windy, etc.): _____

Unusual Conditions (heavy rain, boating, etc.): _____

Filtering Sample (if 50 cc could not be filtered for this sample, indicate amount filtered)

Sample 1: _____ (cc) Sample 2: _____ (cc)

Sampling Event #4 (August)

Date Sampled: _____

Secchi Depth : _____ (feet)

Composite Sample Depth: _____

Weather Conditions (sunny, cloudy, windy, etc.): _____

Unusual Conditions (heavy rain, boating, etc.): _____

Filtering Sample (if 50 cc could not be filtered for this sample, indicate amount filtered)

Sample 1: _____ (cc) Sample 2: _____ (cc)

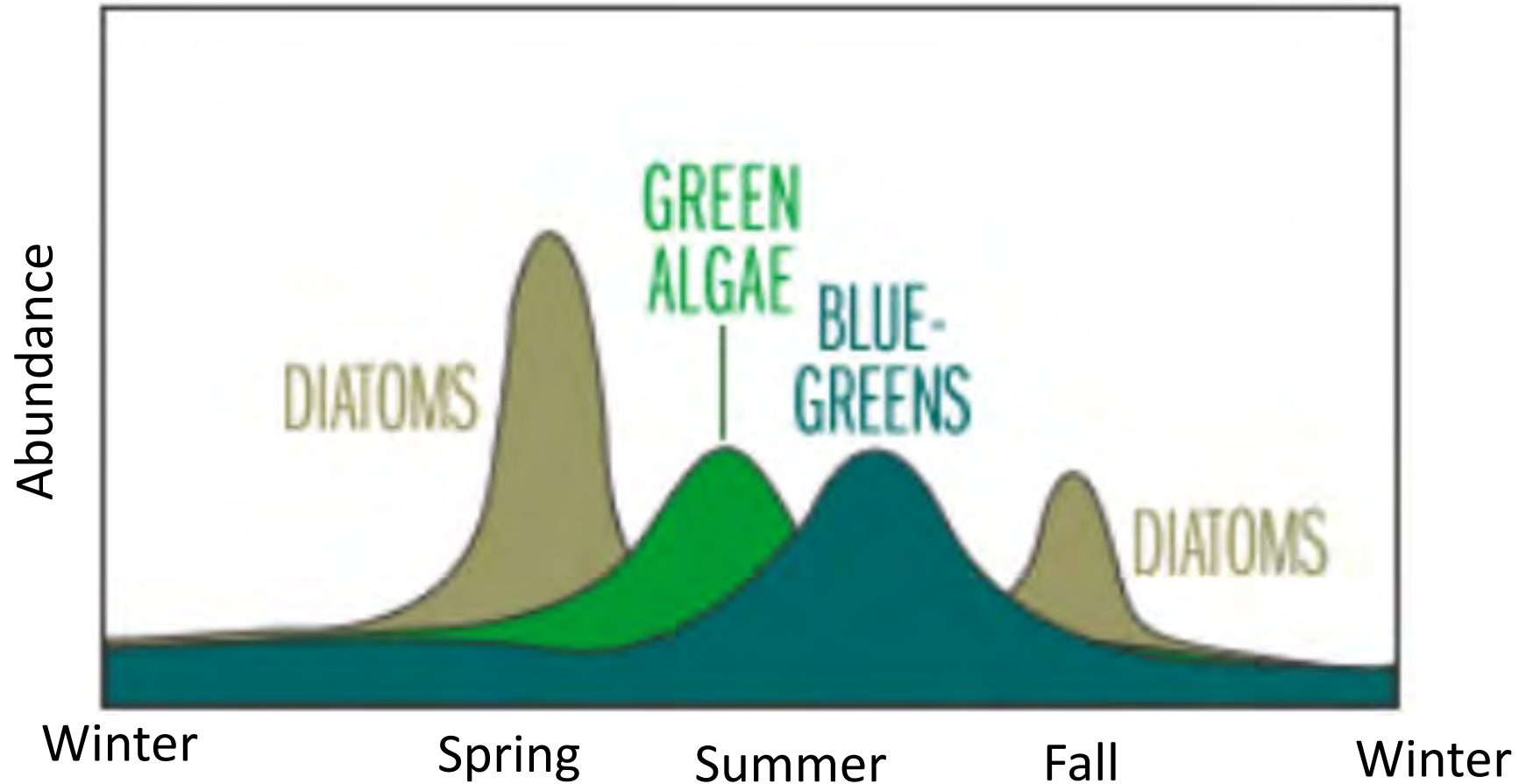
Sampling Event #5 (Sept or Aug)

Date Sampled: _____ Time: _____

Secchi Depth : _____ (feet)

Composite Sample Depth: _____

Data Requirement: 4 or 5 samples.
Lakes change over the course of the season!



Credit: Water on the Web

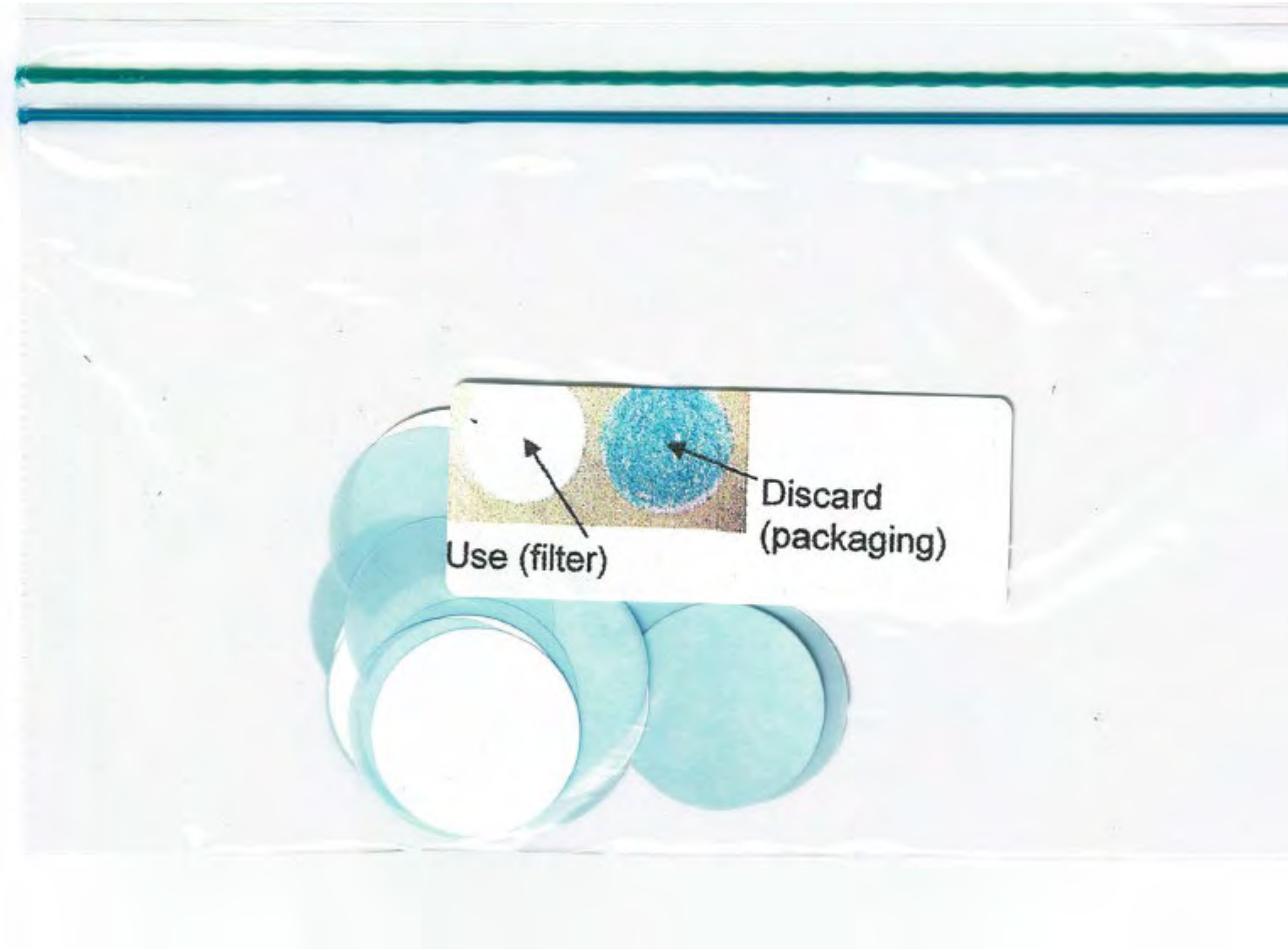
Chlorophyll Equipment for a First time Monitor

- Bag of equipment contains
 - 60 cc (ml) syringe
 - filter holder
 - filters (12-13) (in a baggy)
 - tygon tube
 - vials with caps (11)
 - tweezers
 - amber bottles (2)
 - dropper bottle with MgCO_3 (labeled)
 - zip-lock bags
 - labels (11)
 - clothes pin
- Weighted composite sampler (you provide the marked rope)

Blue = BAD

Separator sheets look like tissue paper.

The good filters are opaque, white, often plastic looking



Connecting ring

Measured line

Rubber stopper with 2 glass tubes

Suspension chain

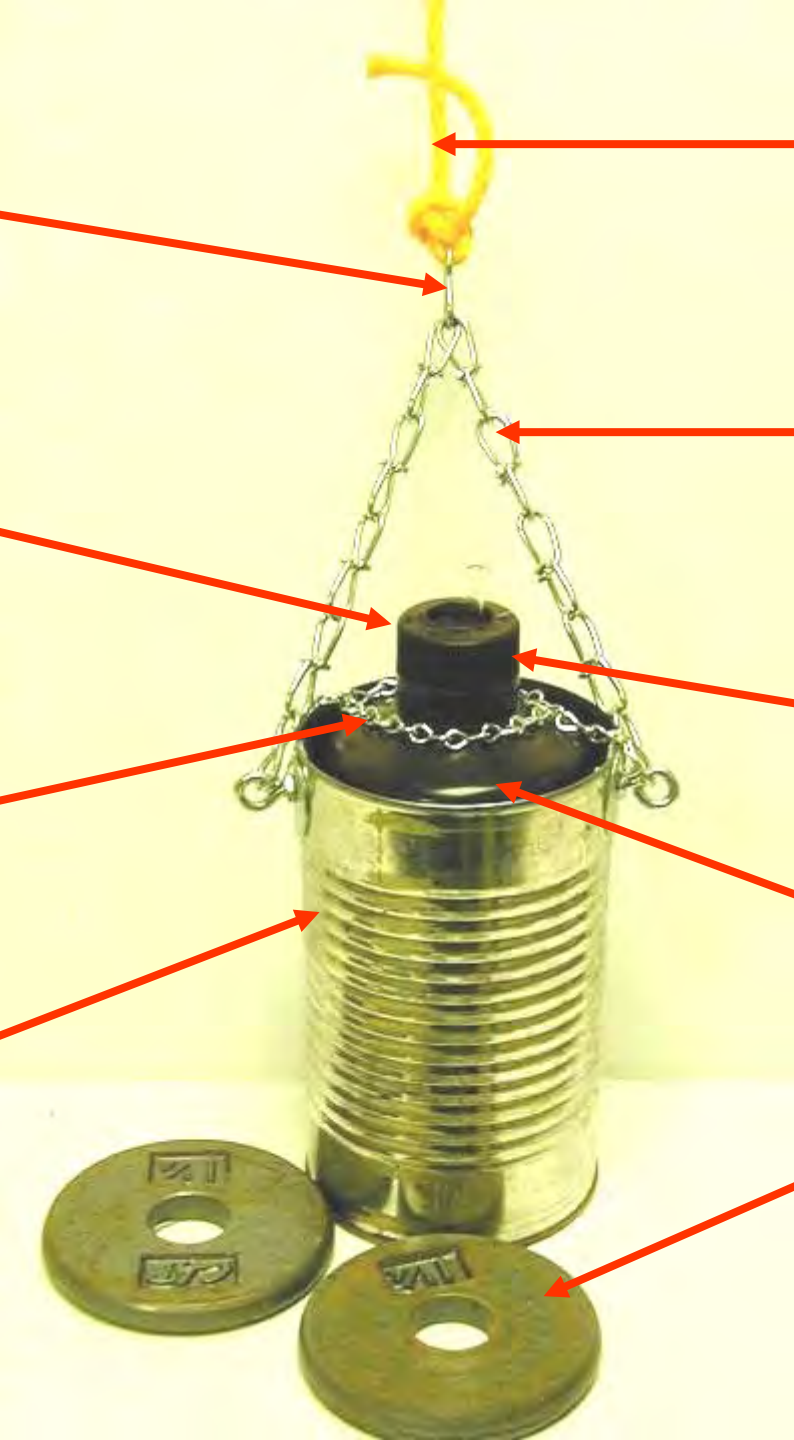
Retaining chain

Bottle cap

Juice can

One liter amber bottle

2 dumbbell weights



What is a resupply kit?

It only comes with the consumables.

- Filters (11- 12) with warning label (in envelope).
- Vials with caps (11)
- Dropper bottle with MgCO_3 (labeled)
- Zip-lock bags
- Labels (11)

Returning volunteers- don't use old filters.

Chlorophyll Sampling Equipment

Provided by volunteer:

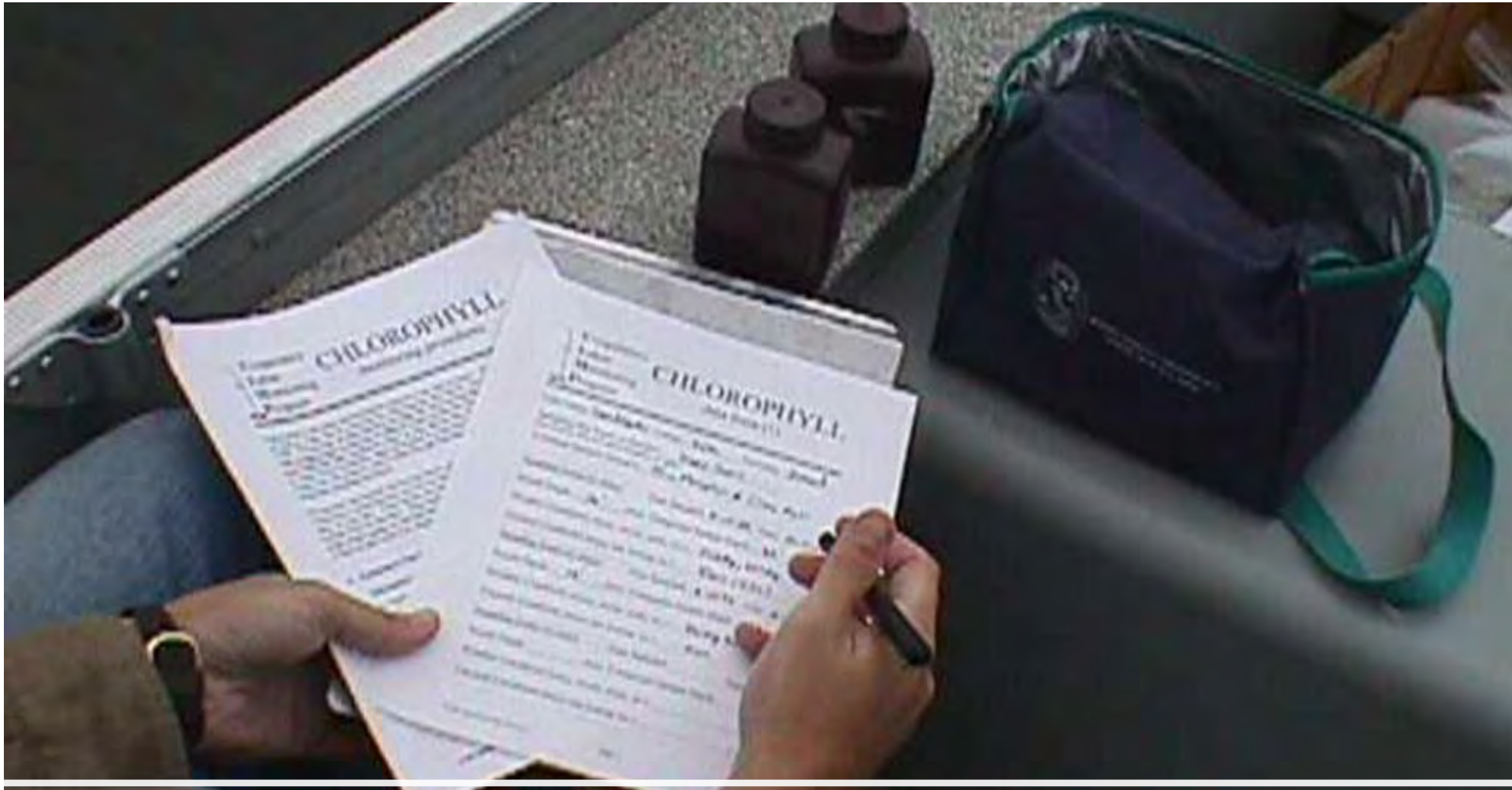
- boating safety equipment
- anchor
- pencil or indelible ink pen
- measured line for sampler
- freezer pack/ ice
- small amount of aluminum foil

Sampling Step 1

Getting a depth integrated water sample

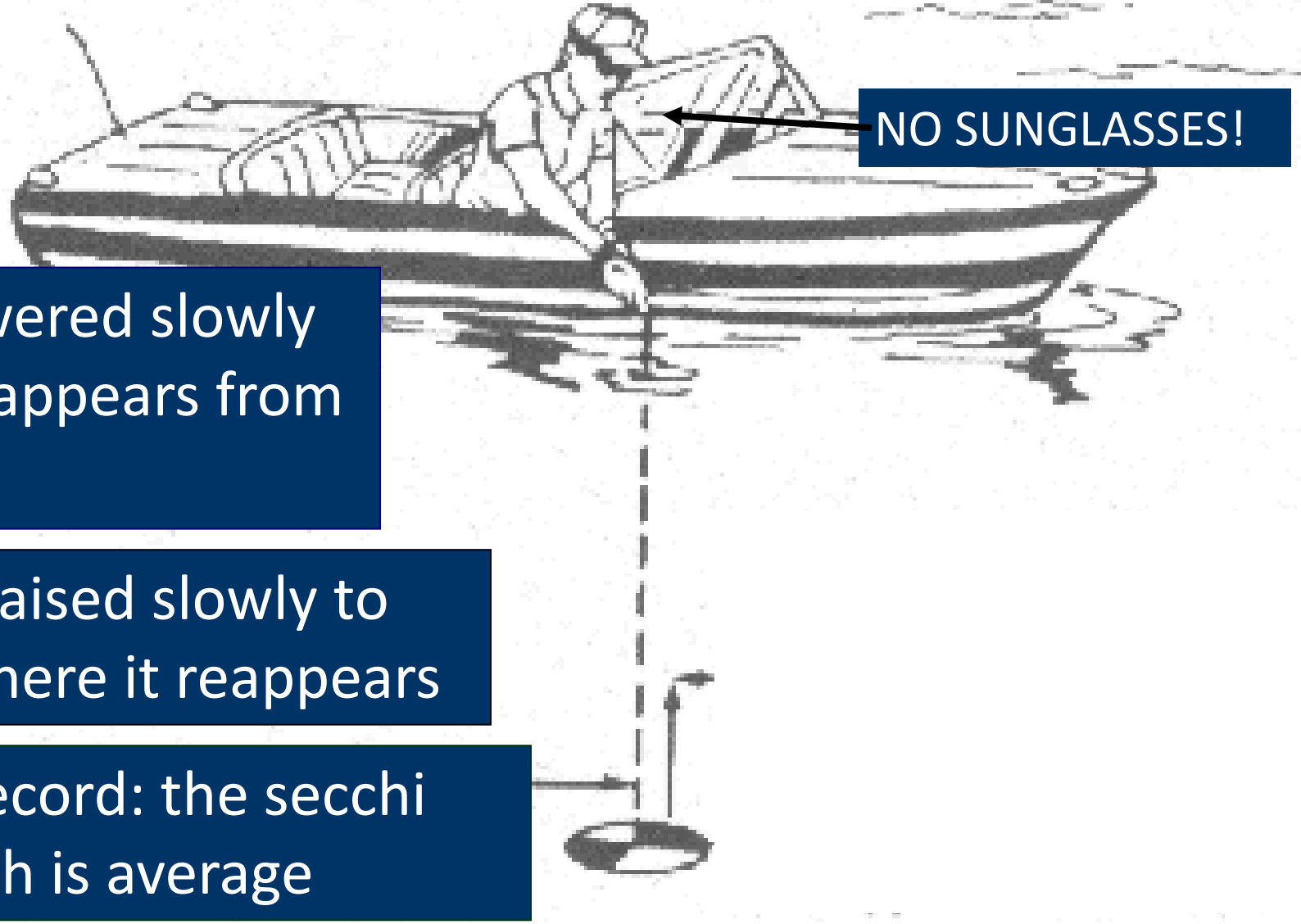


Head out onto the water



Start to fill out the data sheet

Secchi Disk Measurement

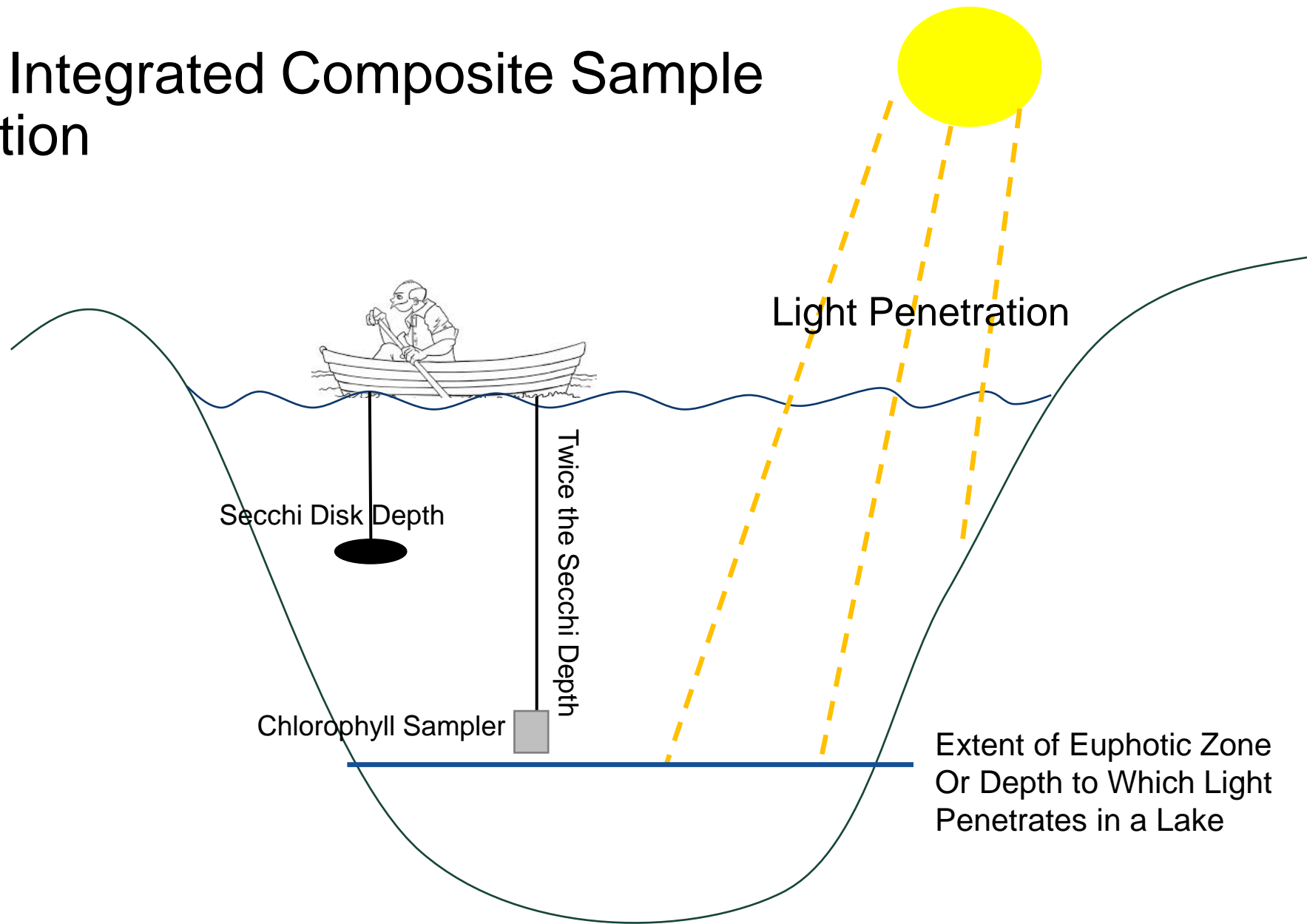


1. Disk lowered slowly until it disappears from view

2. Disk raised slowly to point where it reappears

3. Record: the secchi depth is average

Depth Integrated Composite Sample Collection





CHLOROPHYLL 2022 Data Form 1



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Circle

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Sampling Event #1 (May)

Date Sampled: _____ Time: _____

Secchi Depth : _____ (feet)

Composite Sample Depth: _____ (feet)

Weather Conditions (sunny, cloudy, windy, etc.): _____

Unusual Conditions (heavy rain, boating, etc.): _____

Filtering Sample (if 50 cc could not be filtered for this sample, indicate amount filtered):

Sample 1: _____ (cc) Sample 2: _____ (cc)

What if...

- ...my lake is too shallow to go 2x the Secchi depth?

- Measure the depth to bottom
- Record the depth minus 1 foot as your “composite sample depth”
- Don’t hit the bottom when you drop your sampler

- ...my Secchi disk is at the very bottom of the lake?

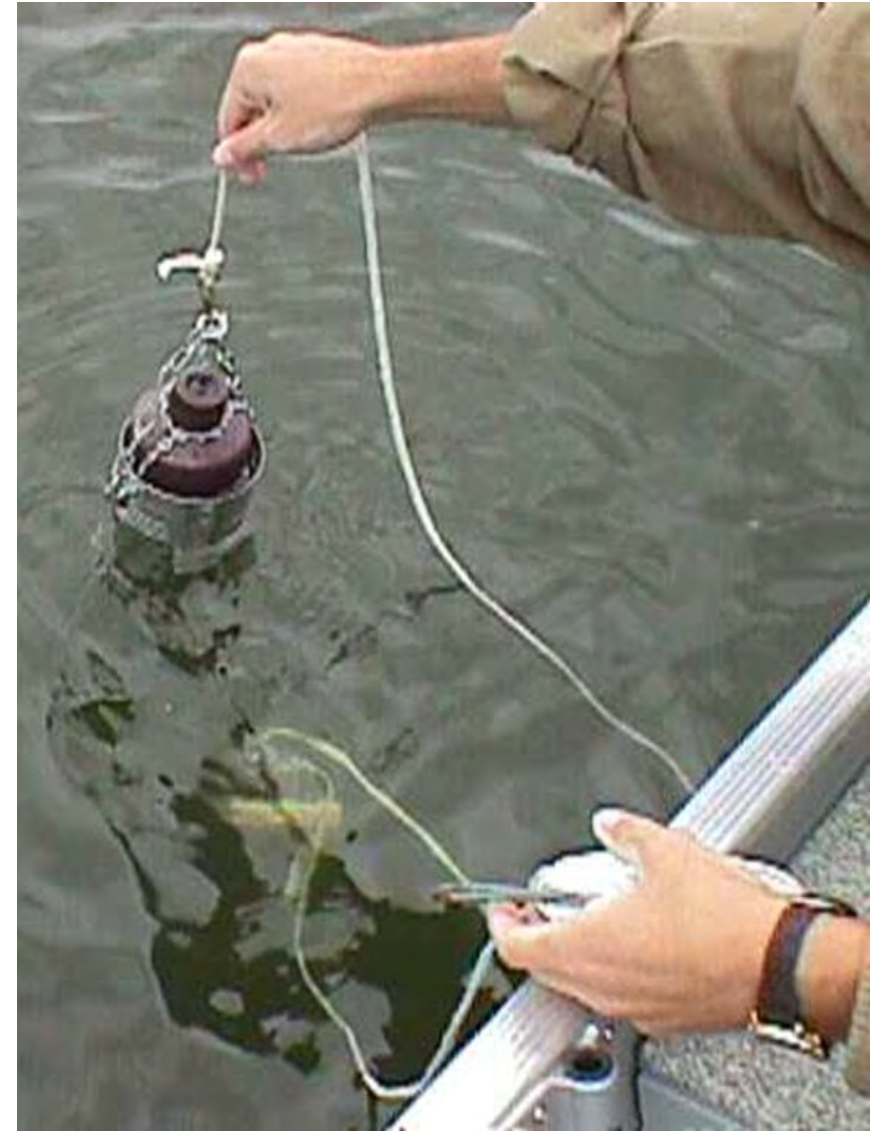
- Record the depth minus 1 foot as your “composite sample depth”
- Don’t hit the bottom when you drop your sampler

Take sampler apart. Rinse 1 liter bottle with lake water



Use clothes pin to mark the composite sample depth on the rope;

Release and let it free fall sink until the clothes pin is at the water surface.



Slowly bring to surface at a slow, steady rate.



Goal: Your bottle is 2/3 to 3/4 full

If it is too empty or full, dump the water and try again, changing your pulling speed.



Swirl your bottle to gently mix it...

... and then fill the 2 rectangular amber bottles.



Mix MgCO_3 well...

...add 5 drops to each
bottle; swirl to mix



Cold storage until
returning to shore



Sampling Step 2

Filtering the water sample

Let's go to the video tape!

Filtering section starts at 5:50 and goes through 12:26

Micorps.net → Lakes → Lake Training → Scroll down

<https://www.youtube.com/watch?v=iCSAYkScxnY>



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Sample turn-in and submitting your data

1. Make copies of your data forms for your records. (Take a picture of it).
2. Keep everything frozen! Sample turn-in are the same days as Spring and Summer Phosphorus turn-ins.
3. Your field notes need to be added to the database by October 31.
<https://micorps.net> → Data Exchange → Enter Data



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Common Reasons for Sample Rejection

- Sample collected at the wrong time
 - Samples collected outside the assigned interval will be rejected
- Samples collected on the separator sheet. BLUE = BAD
- Samples not wrapped in foil
- Incorrect delivery
 - If you forget or can't turn your samples in to the drop-off location on the assigned date – CONTACT US for instructions on safe shipping. Unexpected shipments will thaw and be rejected.

Questions about procedures?



Questions?

To learn more about the Cooperative Lakes Monitoring Program, visit:

MiCorps.net



MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY



Huron
River
Watershed
Council



Working Together to Protect Lakes

