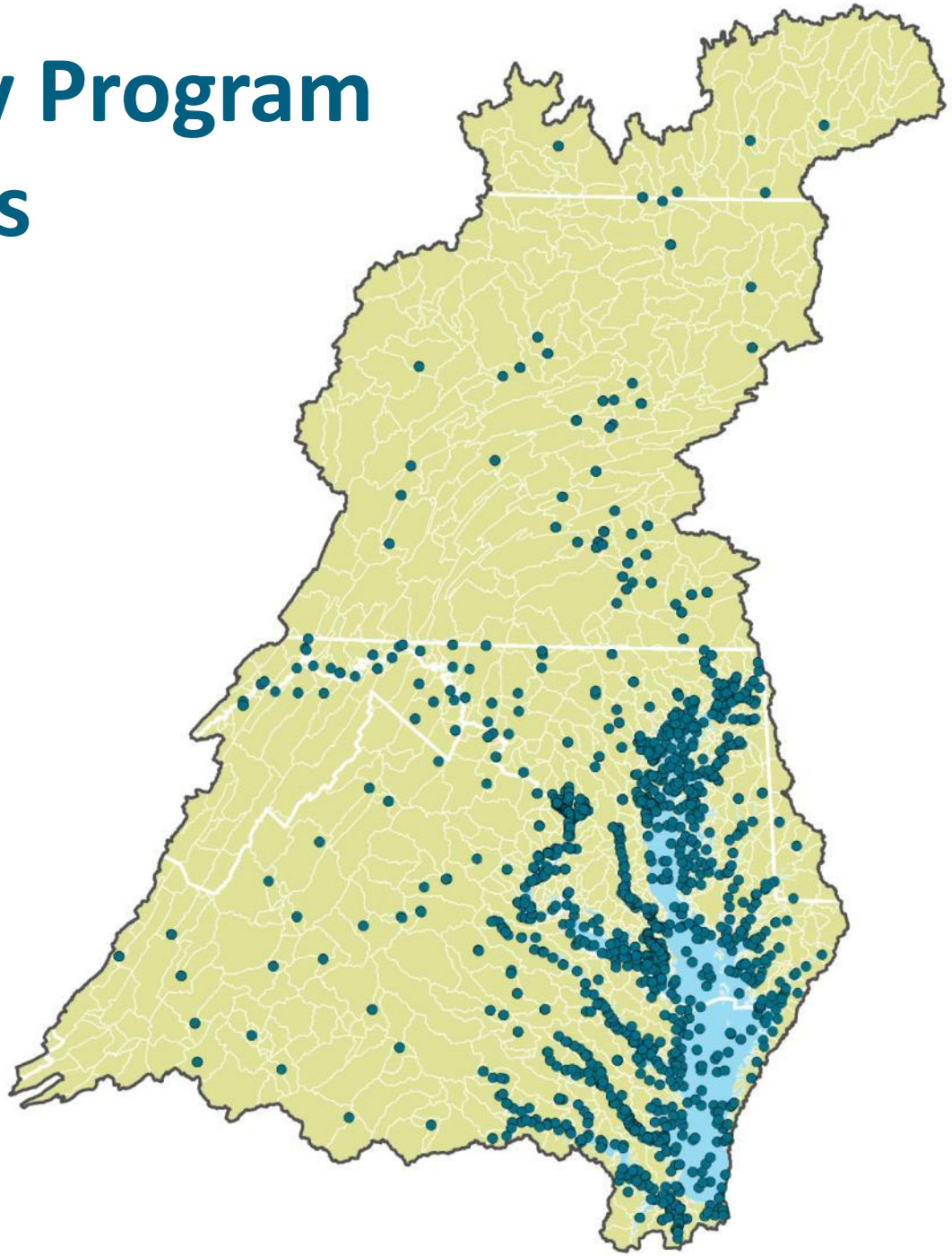
Chesapeake Monitoring Cooperative

Project Update: Citizen and Nontraditional Monitoring – ACB CB96334901

Liz Chudoba – Program Manager, Alliance for the Chesapeake Bay
Emily Bialowas – Program Coordinator, Izaak Walton League of America
Peter Tango- USGS

Photo courtesy of the Chesapeake Bay Program

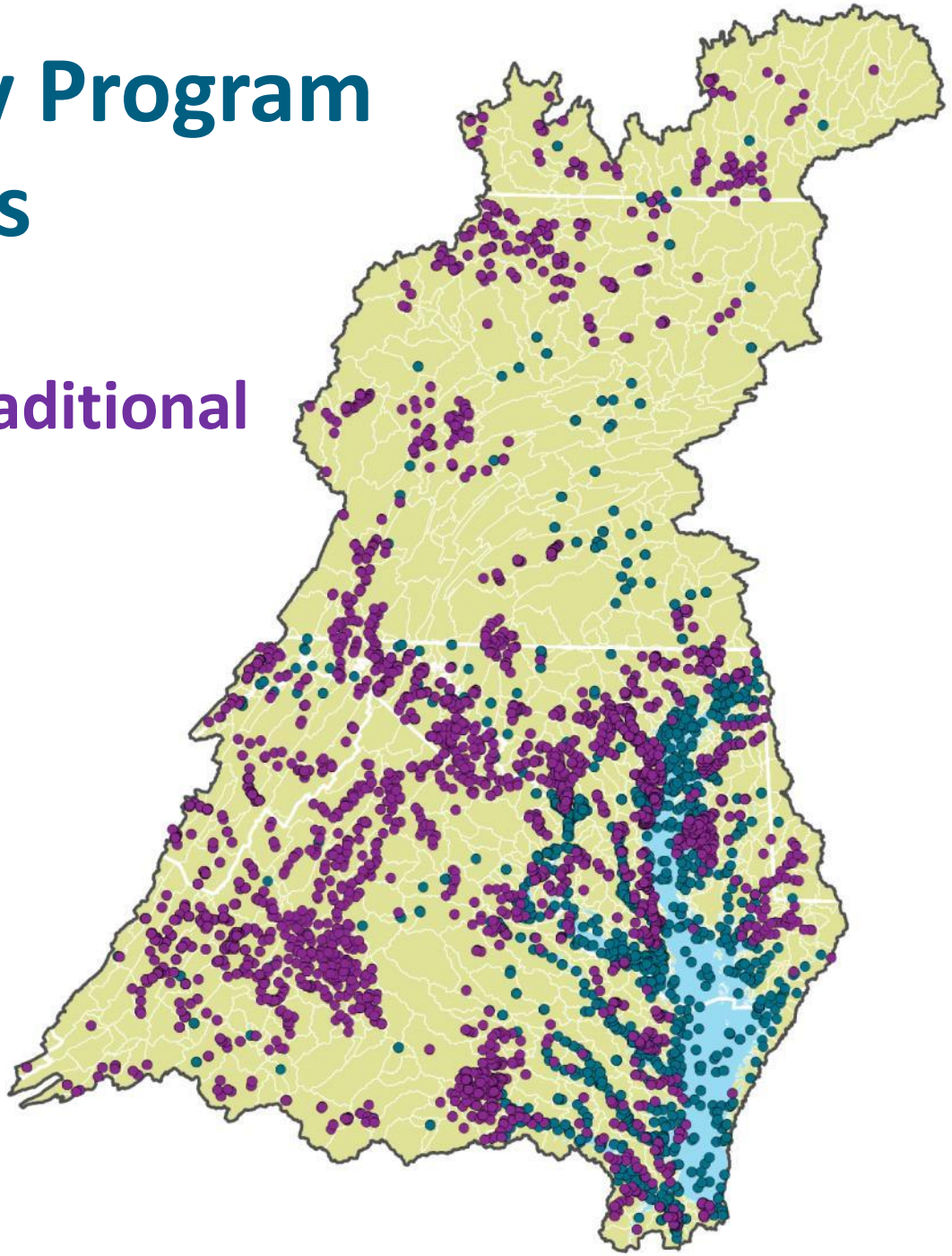
Chesapeake Bay Program Monitoring Sites



CMC

Chesapeake Bay Program Monitoring Sites

Plus Chesapeake Bay Volunteer and Nontraditional Monitoring Sites



CMC

Needs of the Chesapeake monitoring community

Photos courtesy of the Chesapeake Bay Program

Quality Assurance

Comparability

Technical Support

Share Data

Collaboration

Chesapeake Monitoring Cooperative

A partnership that aims to provide technical, logistical, and outreach support for the integration of volunteer-based and nontraditional water quality and benthic macroinvertebrate monitoring data into the Chesapeake Bay Program (CBP) partnership.

Cooperative Agreement

Alliance for the Chesapeake Bay

Chesapeake Bay Program
Science. Restoration. Partnership.

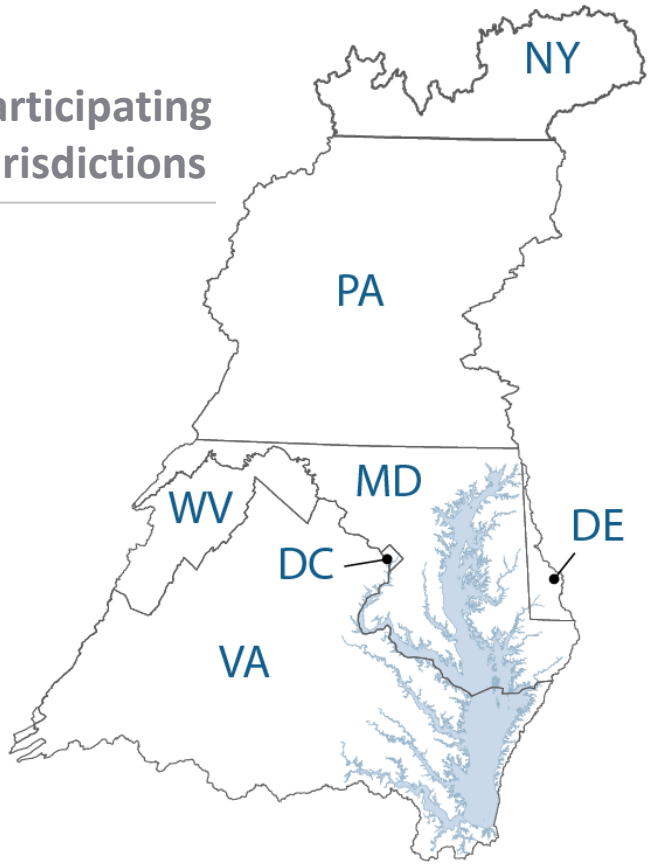
CMC development team partners & service providers

The Izaak Walton League of America — Defenders of Soil, Air, Woods, Waters and Wildlife

Alliance for Aquatic Resource Monitoring — ALLARM — est. 1986

University of Maryland
Center for Environmental Science

Participating Jurisdictions



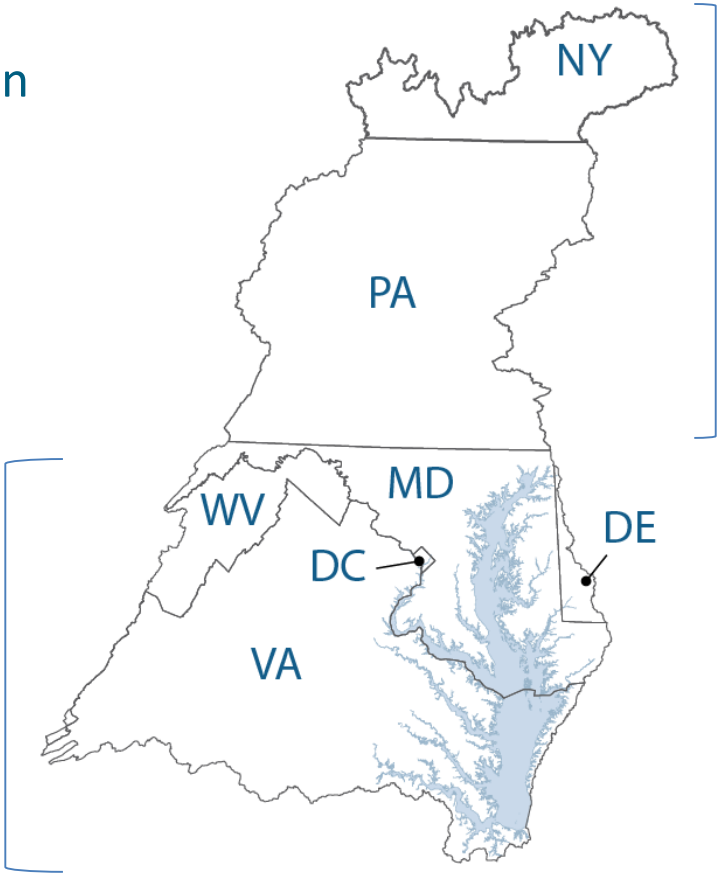
CMC

The CMC Team

University of Maryland
CENTER FOR ENVIRONMENTAL SCIENCE

Tidal Tier III data integration and data interpretation.

Benthic macroinvertebrate and water quality monitoring training and QA



Benthic macroinvertebrate monitoring training and QA

Water quality monitoring training and QA

Alliance for the Chesapeake Bay

The CMC Team

Liz Chudoba (ACB)
Project Manager

Emily Bialowas (IWLA)
Project Coordinator

Nissa Dean (ACB)

Danielle Donkersloot (IWLA)

Julie Vastine (ALLARM)

Jinnie Monismith (ALLARM)

Caroline Donovan (UMCES)

Alex Fries (UMCES)

Types of Data

1. Tidal Water Quality
2. Non-Tidal Water Quality
3. Benthic Macroinvertebrate

Technical Support Resources

- Quality Assurance Project Plans – Tier 1 & 2
- Standard Operating Procedures (SOPs) – Tier 1 & 2
- User-friendly Methods Manuals
- Indicator Fact Sheets
- Prioritization Report: How volunteer and nontraditional monitoring can help fill data gaps in the Chesapeake Bay Watershed

Let's take a quick look!

Photos courtesy of the Chesapeake Bay Program

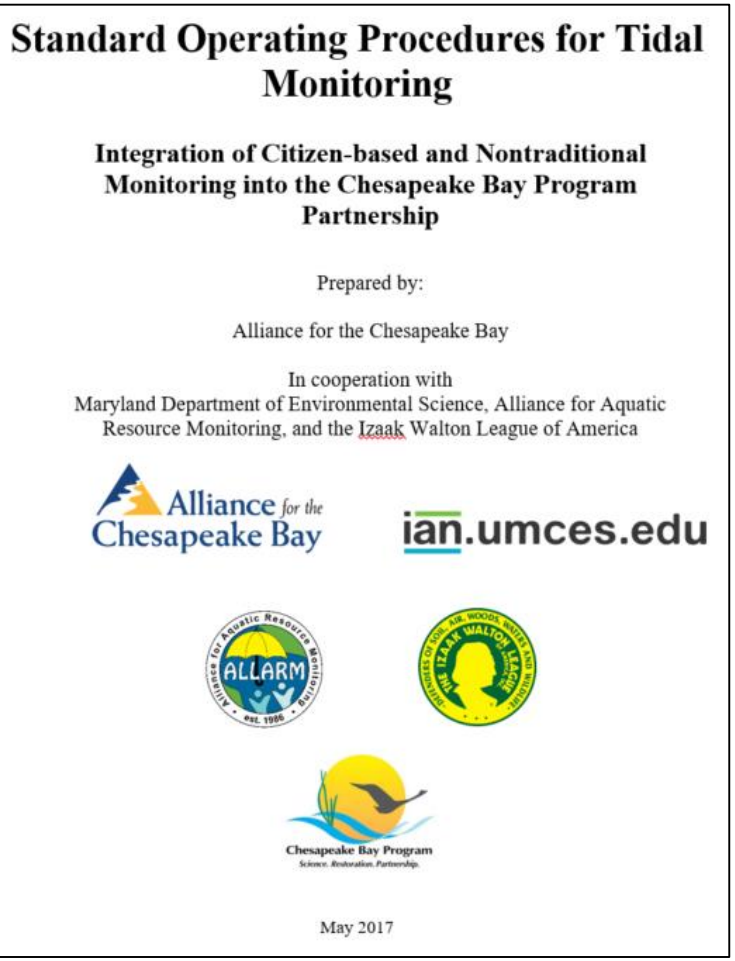
Quality Assurance Project Plans

Water Quality Monitoring in:
Tidal streams (Tier 1 & 2)
Nontidal streams (Tier 1 & 2)

Benthic Macroinvertebrate Monitoring in:
Nontidal wadable streams (Tier 1 & 2)

Tier 3 water quality data:
Candidates will be nominated by the CMC and subsequently audited by the Data Integrity Workgroup.

Standard Operating Procedures



Standard Operating Procedures for Tidal Monitoring

Integration of Citizen-based and Nontraditional Monitoring into the Chesapeake Bay Program Partnership

Prepared by:

Alliance for the Chesapeake Bay

In cooperation with
Maryland Department of Environmental Science, Alliance for Aquatic Resource Monitoring, and the Izaak Walton League of America

Alliance for the Chesapeake Bay

ian.umces.edu

ALLARM

Chesapeake Bay Program
Science. Restoration. Partnership.

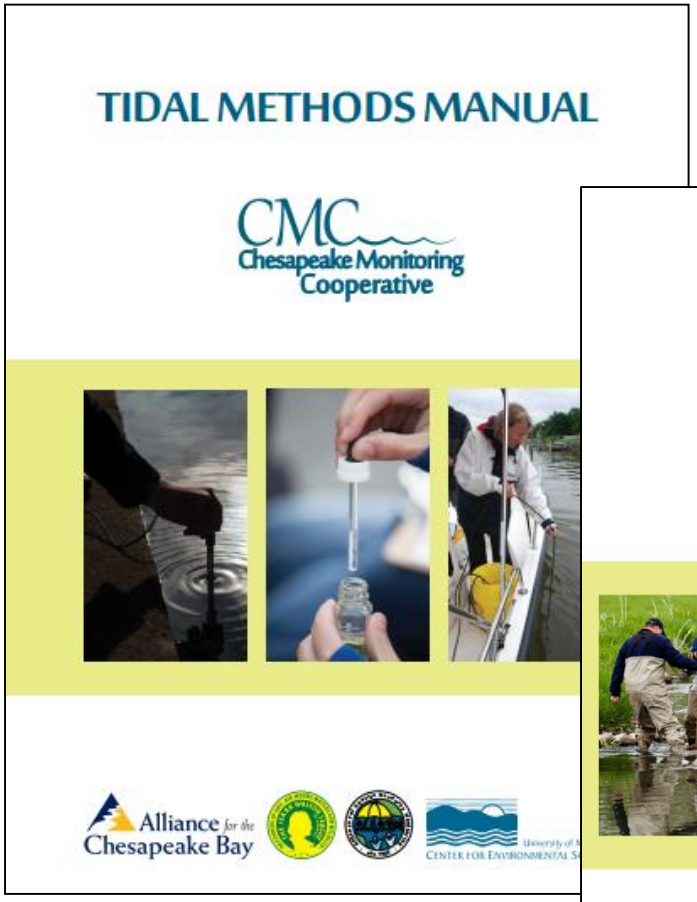
May 2017

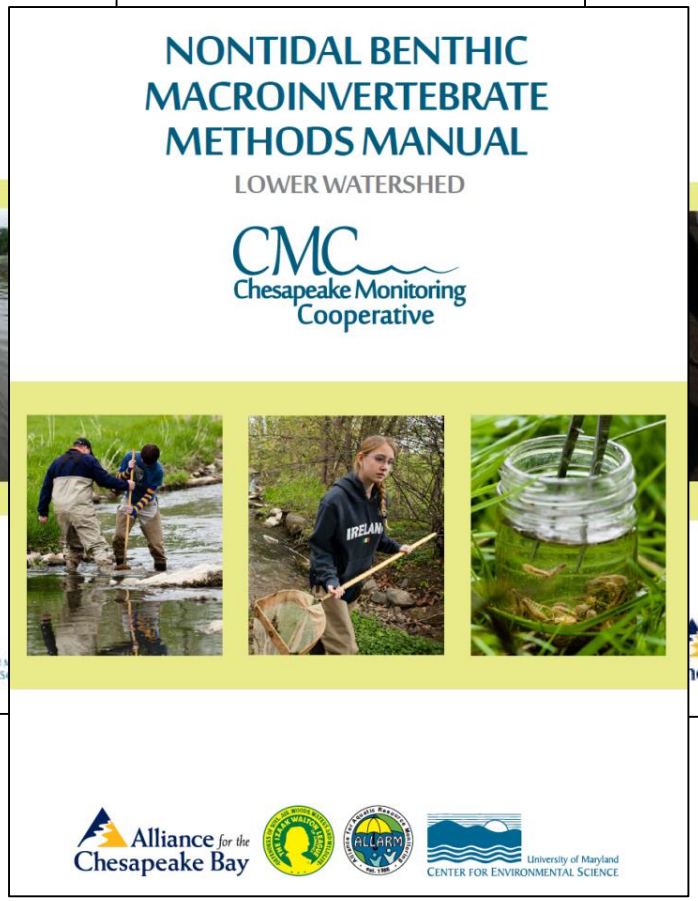
Water Quality Monitoring in:
Tidal streams (Tier 1 & 2)
Nontidal streams (Tier 1 & 2)

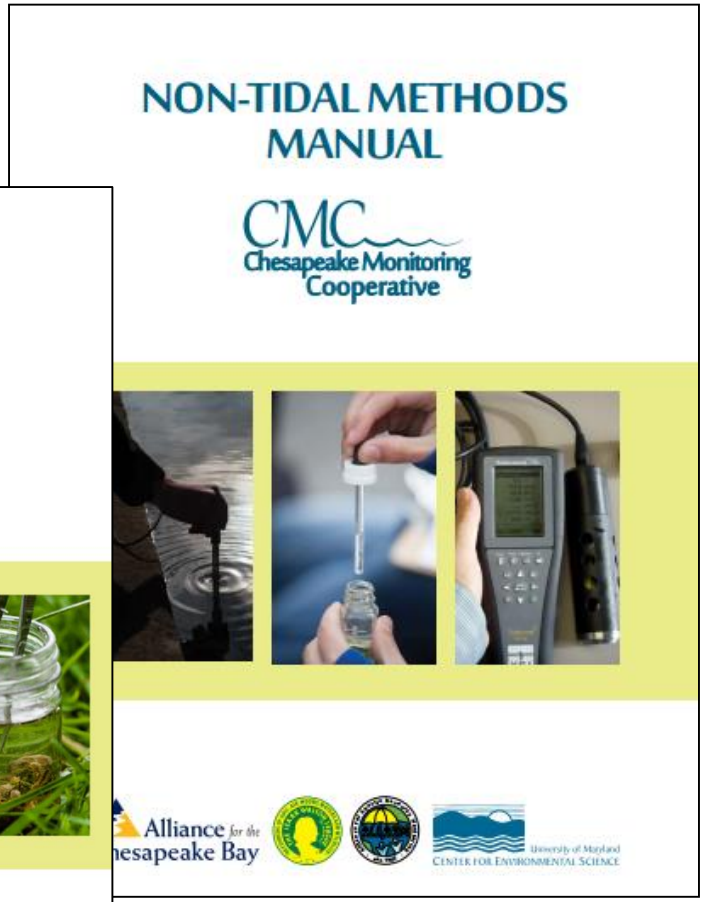
Benthic Macroinvertebrate Monitoring in:
Nontidal wadable streams (Tier 1 & 2)

These are a compilation of the most commonly used methods throughout the watershed. They are not a comprehensive list of every method available.

User Friendly Method Manuals







User Friendly Method Manuals

How the manual is organized

NOTE

There are notes highlighted in yellow (like this one) to remind you of important things such as safety, replicates, and best practices. Be sure to read these and take note of their contents.

Each method will have a few options for how to approach sampling. You will need to work with your monitoring coordinator to define which one works for your monitoring plan.

In order to help you pin point what piece of a method you will be using, there are visual buttons to help you quickly find what you need.

Blue circular buttons represent the tool that you will use to collect your sample, including directly in the waterway, a bucket, a probe, or with a sampling pole.

Purple hollow circles represent the platforms from which you will be collecting your samples, including wading in the waterway, from a boat, from a bridge, and from a dock. If you are sampling from the shore, try to take note of the method for wading into the waterway and apply those concepts to your sampling.

TOOLS

Probe | Sampling pole | Bucket

Direct collection | Secchi disk

PLATFORMS

Boat | Dock

Bridge | Wade in

1-6

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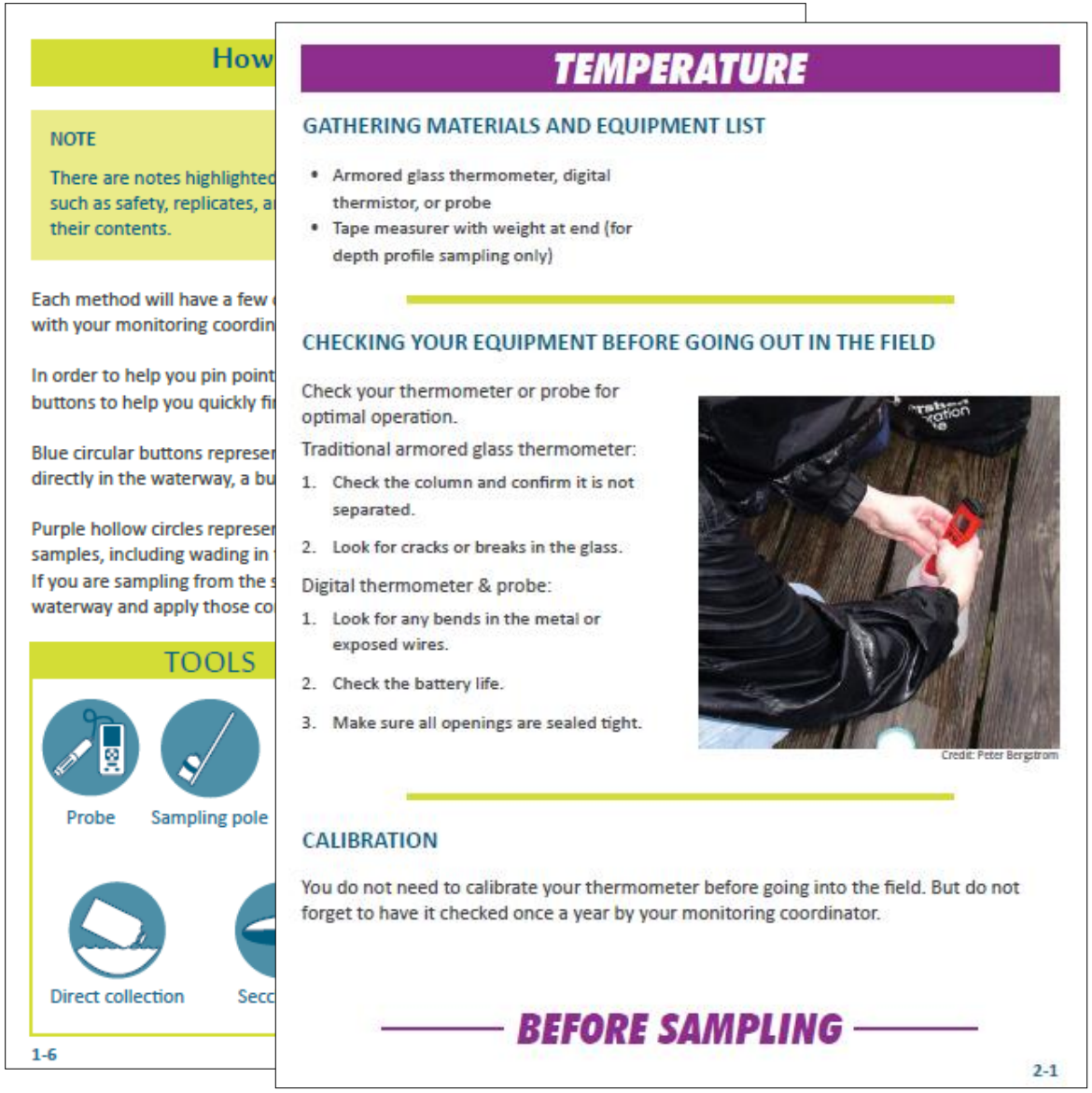
User Friendly Method Manuals



How

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Probe

Sampling pole

Direct collection

Secc

1-6

TEMPERATURE

GATHERING MATERIALS AND EQUIPMENT LIST

- Armored glass thermometer, digital thermistor, or probe
- Tape measurer with weight at end (for depth profile sampling only)

CHECKING YOUR EQUIPMENT BEFORE GOING OUT IN THE FIELD

Check your thermometer or probe for optimal operation.

Traditional armored glass thermometer:

1. Check the column and confirm it is not separated.
2. Look for cracks or breaks in the glass.

Digital thermometer & probe:

1. Look for any bends in the metal or exposed wires.
2. Check the battery life.
3. Make sure all openings are sealed tight.

Credit: Peter Bergstrom

CALIBRATION

You do not need to calibrate your thermometer before going into the field. But do not forget to have it checked once a year by your monitoring coordinator.

BEFORE SAMPLING

2-1

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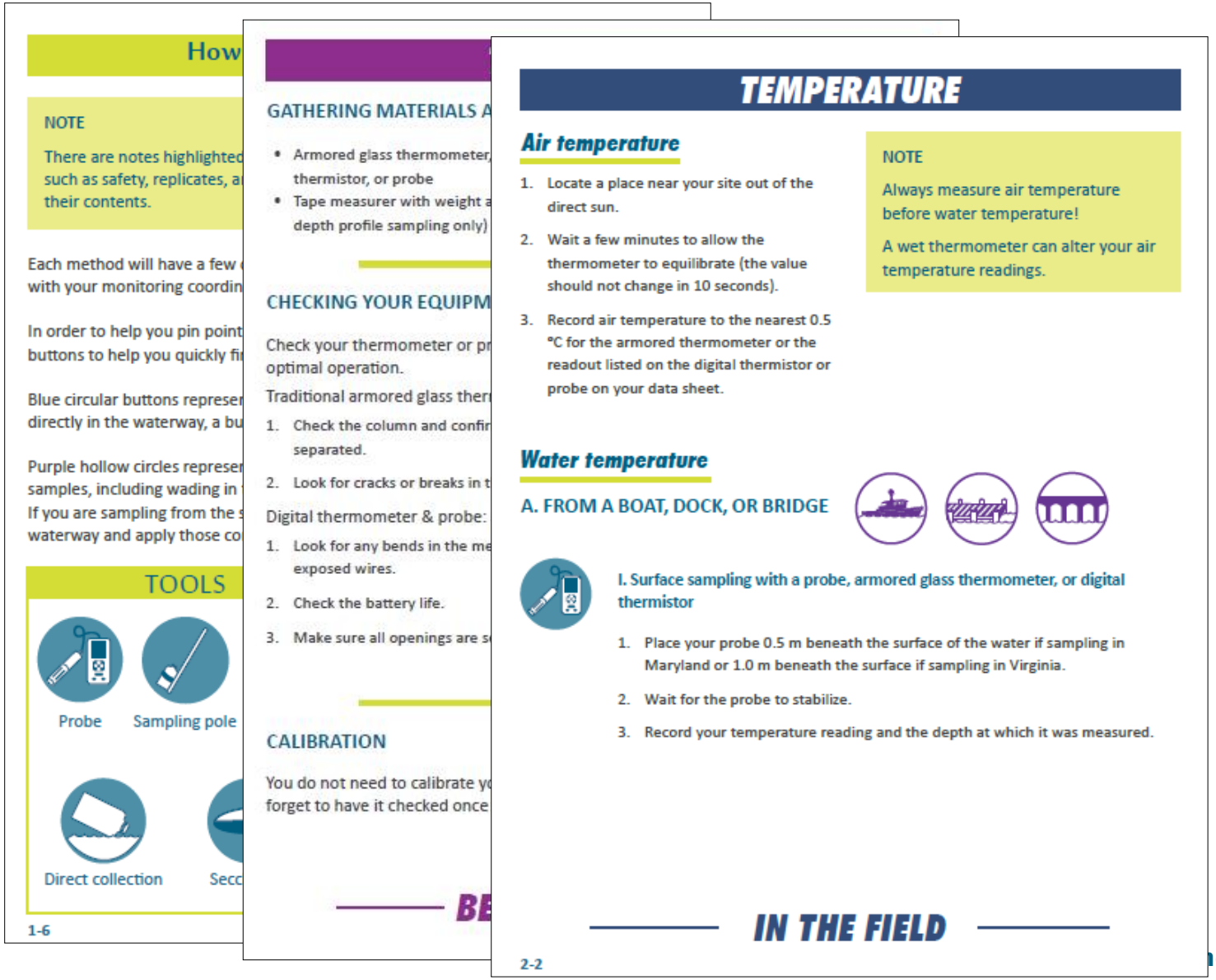
User Friendly Method Manuals



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BE

TEMPERATURE

Air temperature

1. Locate a place near your site out of the direct sun.
2. Wait a few minutes to allow the thermometer to equilibrate (the value should not change in 10 seconds).
3. Record air temperature to the nearest 0.5 °C for the armored thermometer or the readout listed on the digital thermistor or probe on your data sheet.

NOTE

Always measure air temperature before water temperature!

A wet thermometer can alter your air temperature readings.

Water temperature

A. FROM A BOAT, DOCK, OR BRIDGE

I. Surface sampling with a probe, armored glass thermometer, or digital thermistor

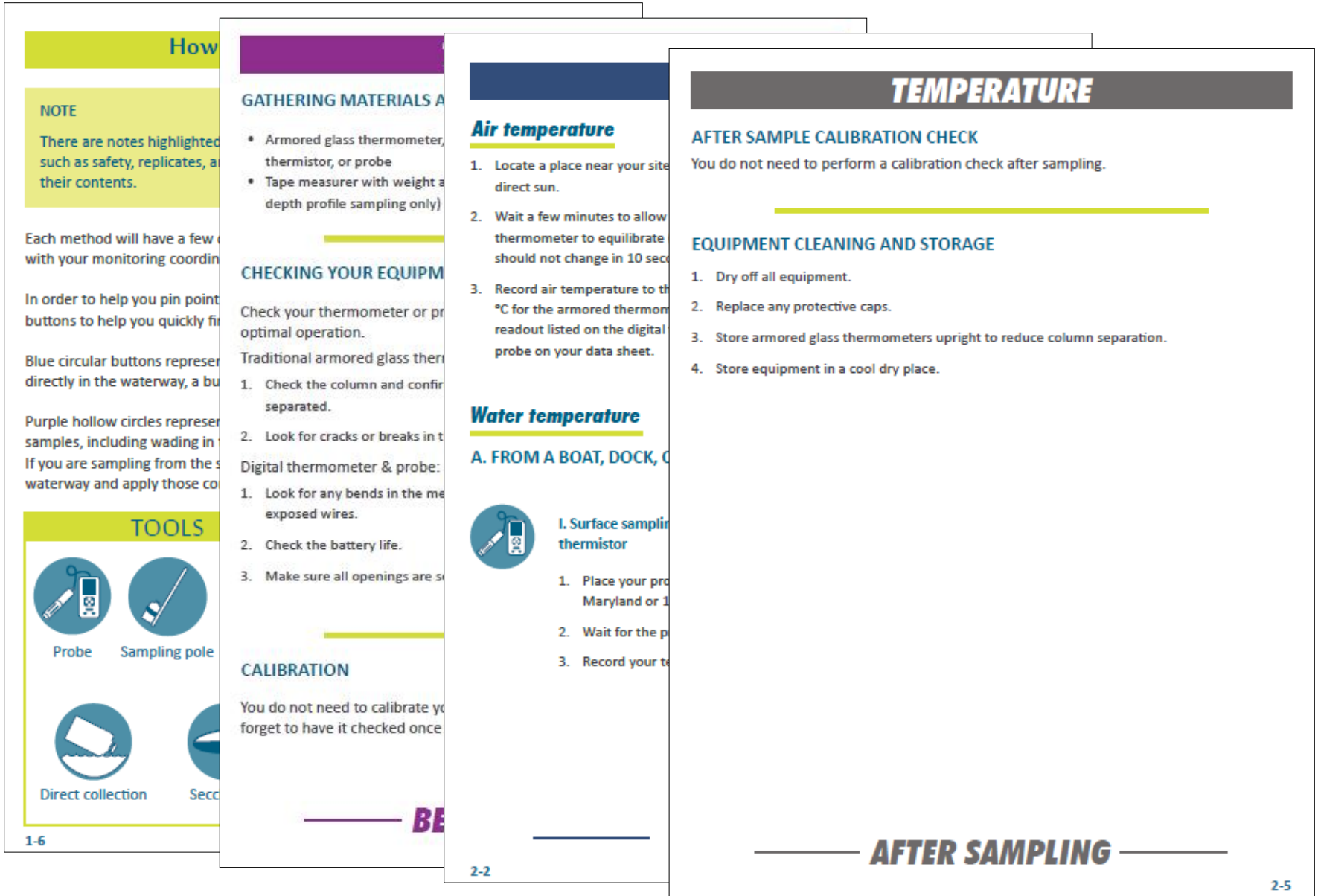
1. Place your probe 0.5 m beneath the surface of the water if sampling in Maryland or 1.0 m beneath the surface if sampling in Virginia.
2. Wait for the probe to stabilize.
3. Record your temperature reading and the depth at which it was measured.

IN THE FIELD

2-2

onitoringcoop.org

User Friendly Method Manuals



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3. Record your te

2-2

TEMPERATURE

AFTER SAMPLE CALIBRATION CHECK

You do not need to perform a calibration check after sampling.

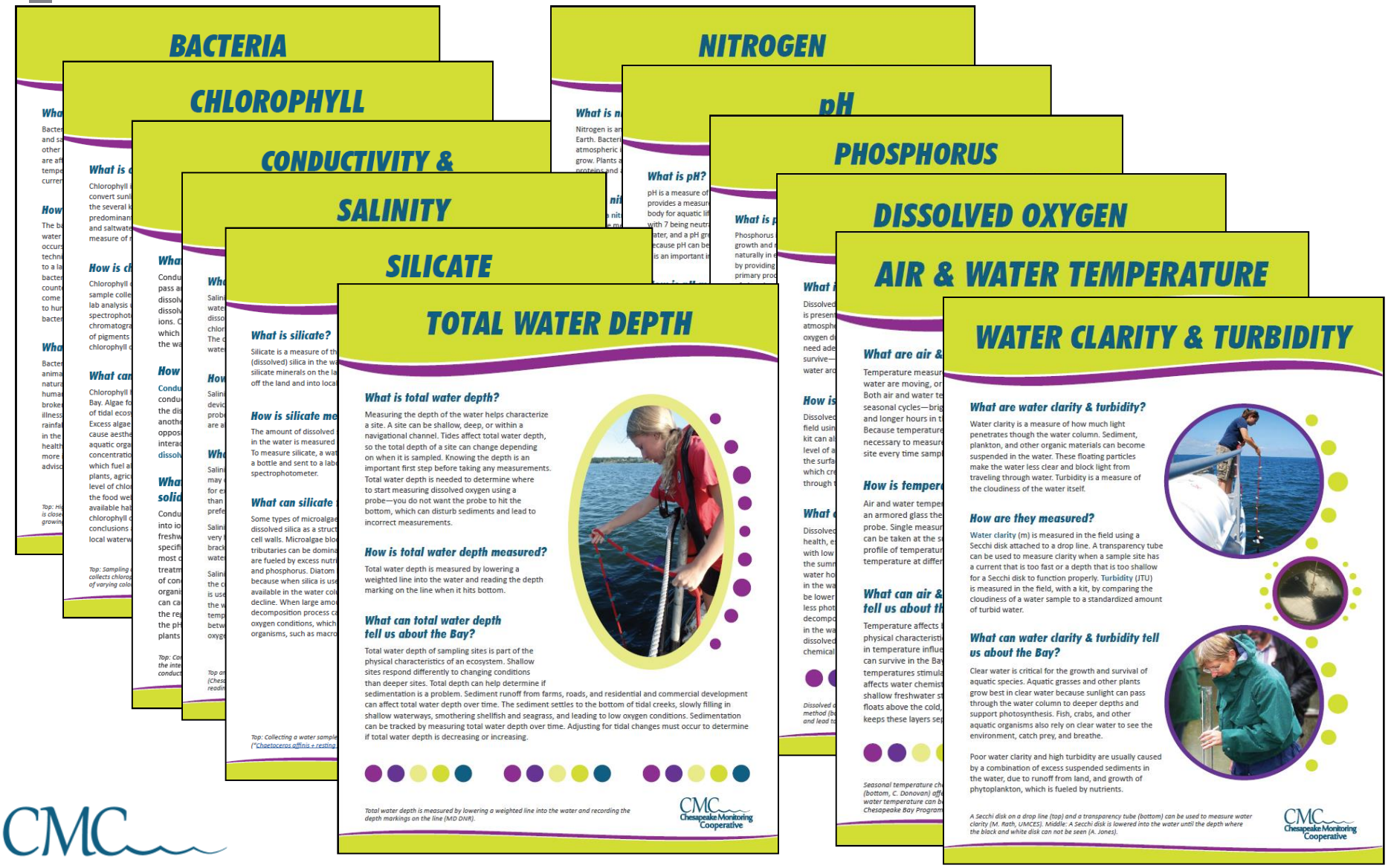
EQUIPMENT CLEANING AND STORAGE

1. Dry off all equipment.
2. Replace any protective caps.
3. Store armored glass thermometers upright to reduce column separation.
4. Store equipment in a cool dry place.

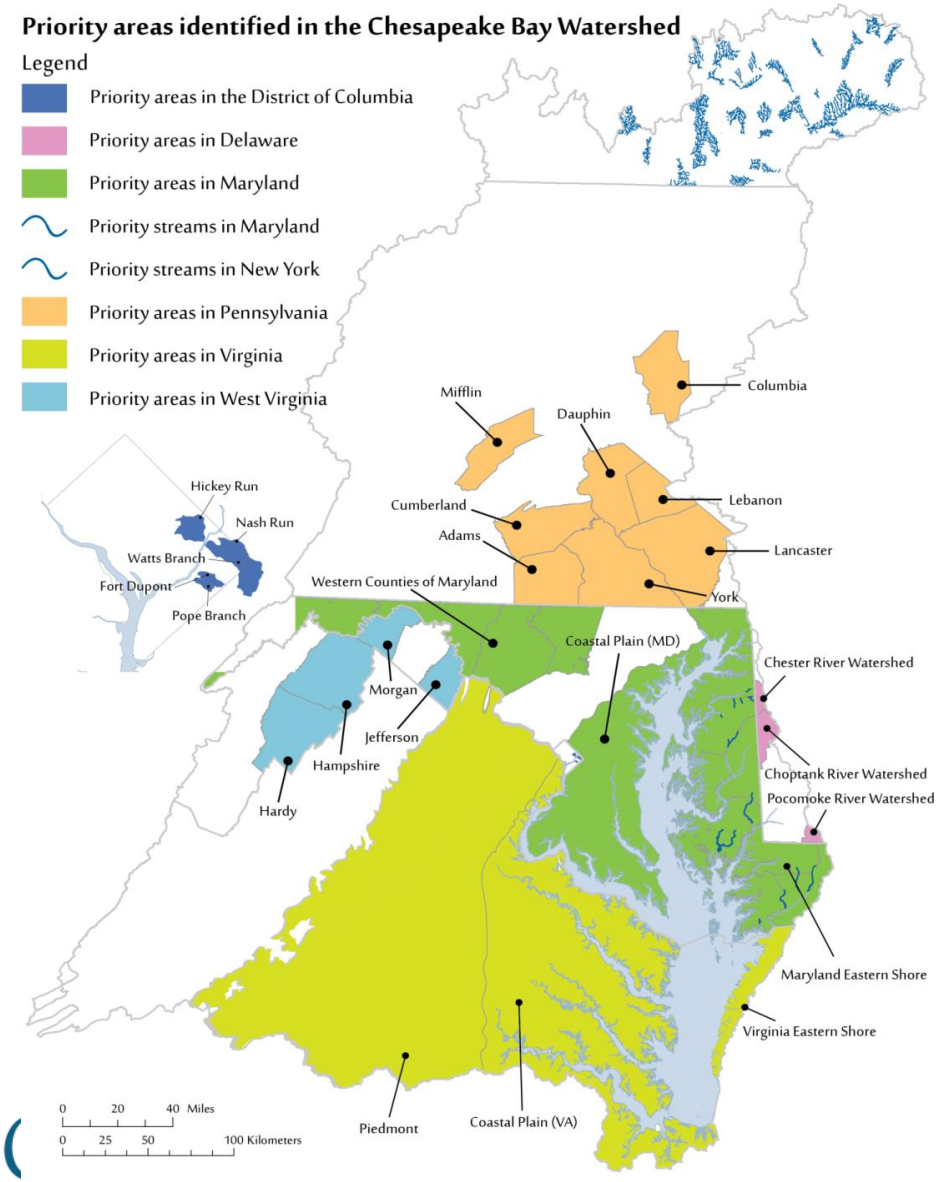
AFTER SAMPLING

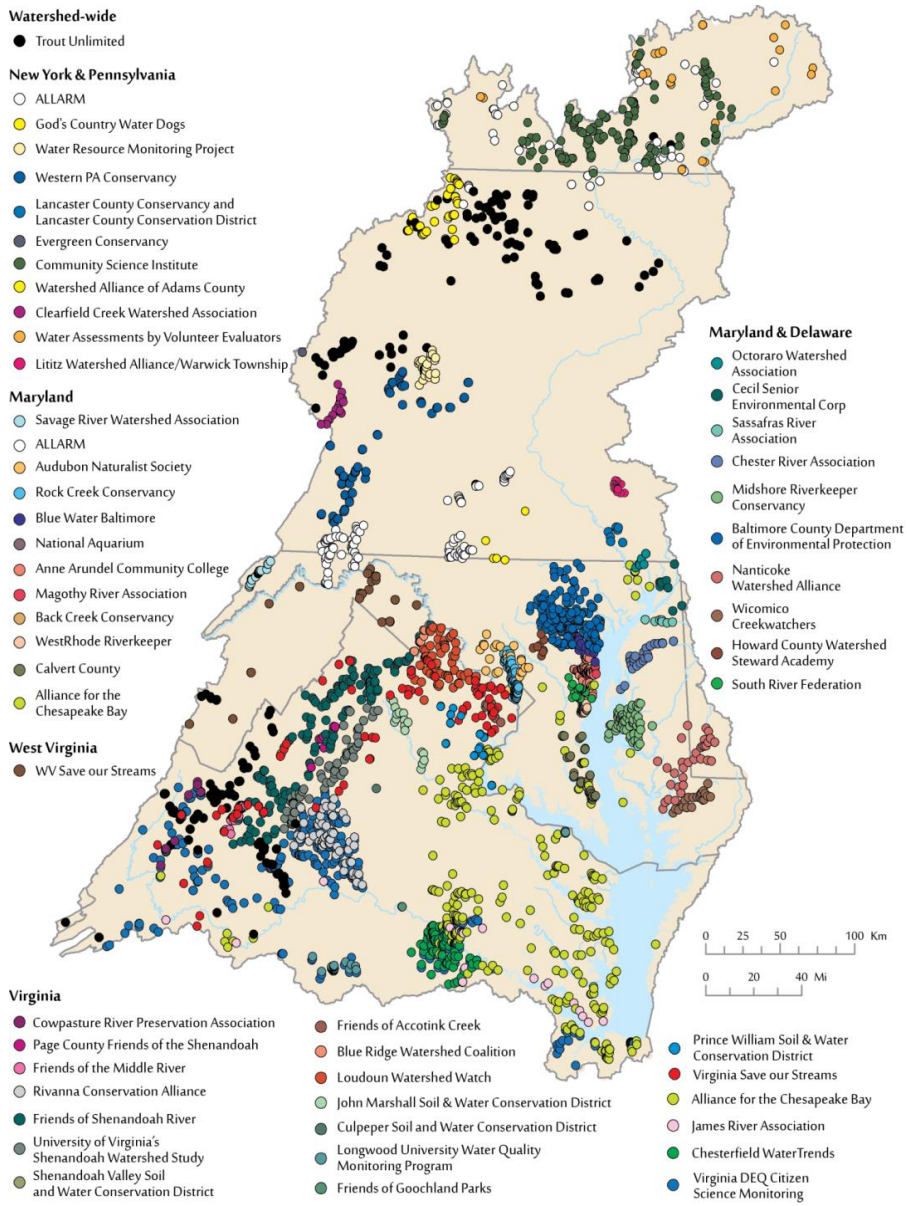
2-5

Indicator Factsheets

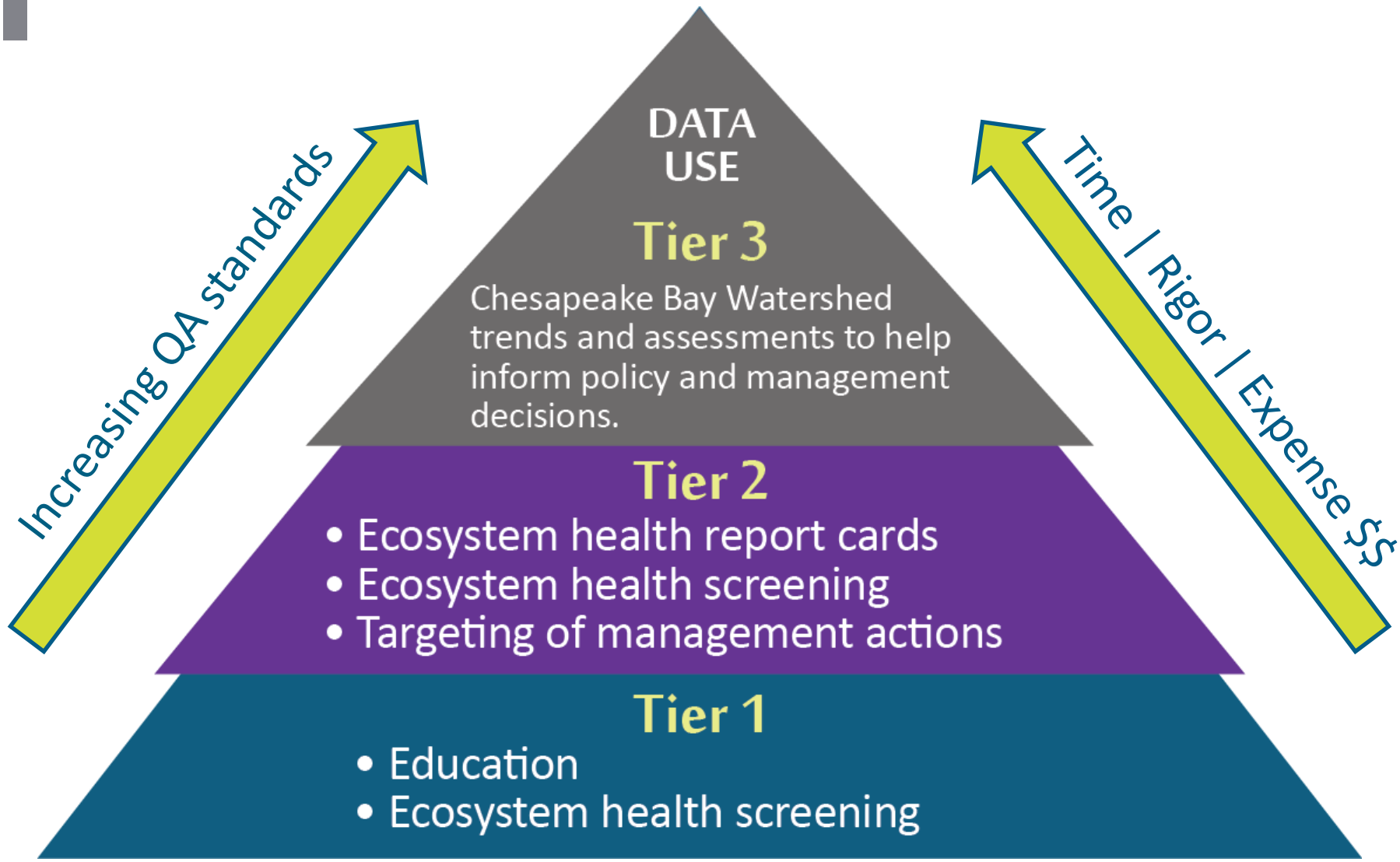


Prioritization Report

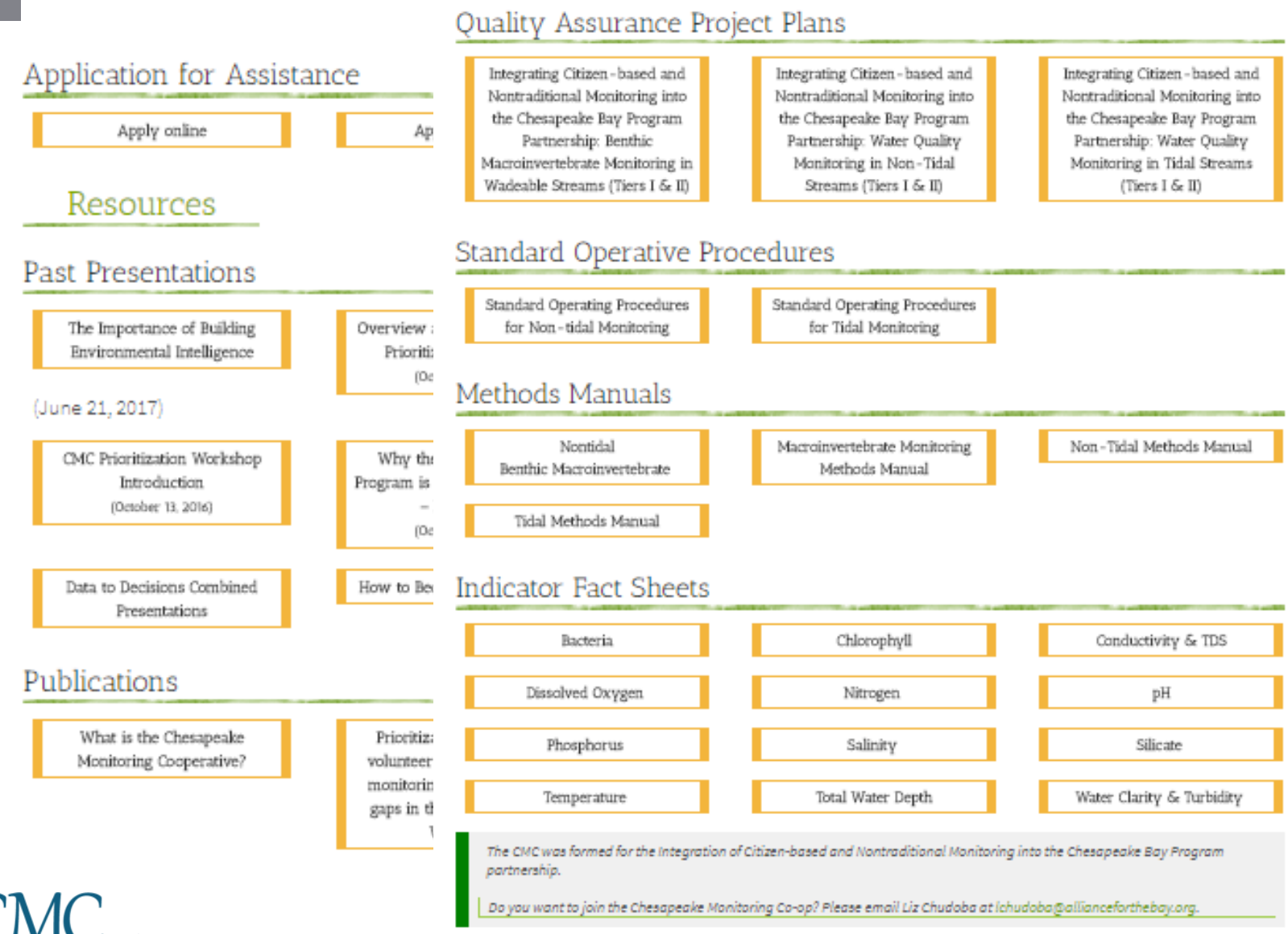




Tiered Framework



Online Toolkit



Application for Assistance

Apply online

Ap

Resources

Past Presentations

The Importance of Building Environmental Intelligence

(June 21, 2017)

Overview : Prioriti (Oc

CMC Prioritization Workshop Introduction

(October 13, 2016)

Why th Program is – (Oc

Data to Decisions Combined Presentations

How to Be

Publications

What is the Chesapeake Monitoring Cooperative?

Prioritiz: volunteer monitorin gaps in th

Quality Assurance Project Plans

Integrating Citizen-based and Nontraditional Monitoring into the Chesapeake Bay Program Partnership: Benthic Macroinvertebrate Monitoring in Wadeable Streams (Tiers I & II)

Integrating Citizen-based and Nontraditional Monitoring into the Chesapeake Bay Program Partnership: Water Quality Monitoring in Non-Tidal Streams (Tiers I & II)

Integrating Citizen-based and Nontraditional Monitoring into the Chesapeake Bay Program Partnership: Water Quality Monitoring in Tidal Streams (Tiers I & II)

Standard Operative Procedures

Standard Operating Procedures for Non-tidal Monitoring

Standard Operating Procedures for Tidal Monitoring

Methods Manuals

Nontidal Benthic Macroinvertebrate

Macroinvertebrate Monitoring Methods Manual

Non-Tidal Methods Manual

Tidal Methods Manual

Indicator Fact Sheets

Bacteria

Chlorophyll

Conductivity & TDS

Dissolved Oxygen

Nitrogen

pH

Phosphorus

Salinity

Silicate

Temperature

Total Water Depth

Water Clarity & Turbidity

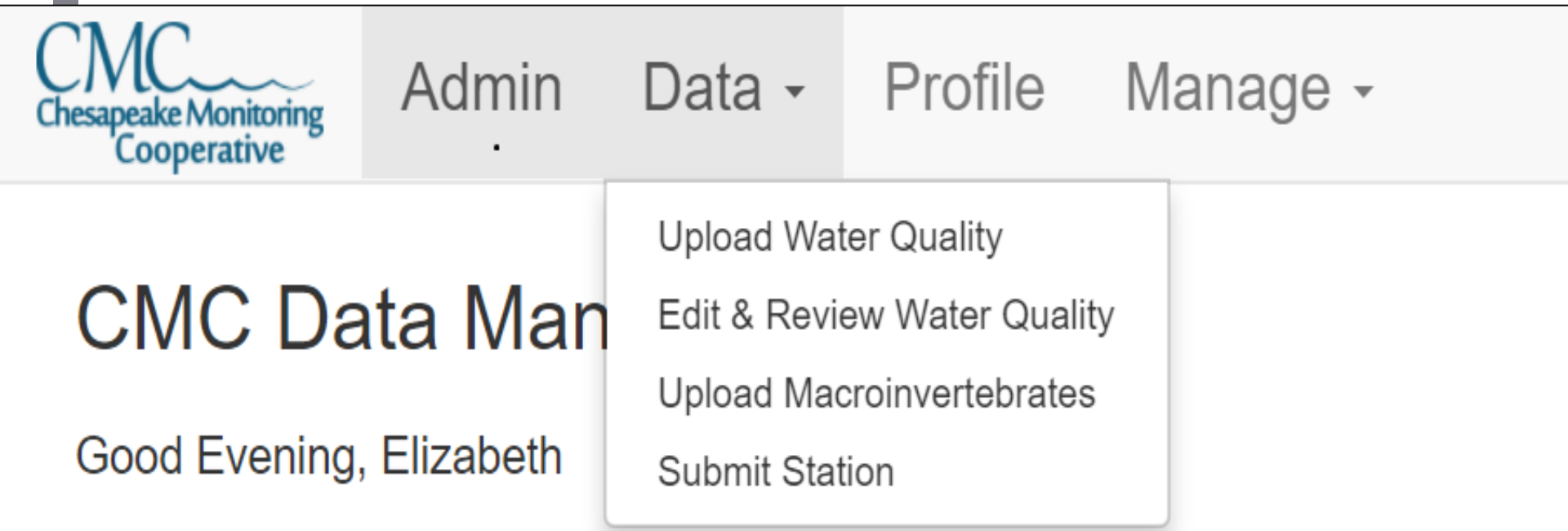
The CMC was formed for the Integration of Citizen-based and Nontraditional Monitoring into the Chesapeake Bay Program partnership.

Do you want to join the Chesapeake Monitoring Co-op? Please email Liz Chudoba at lchudoba@allianceforthebay.org.

CMC

igcoop.org

Chesapeake Data Explorer



STEPS TO BECOME A **CMC PARTNER**

Application for Assistance

To apply for assistance:

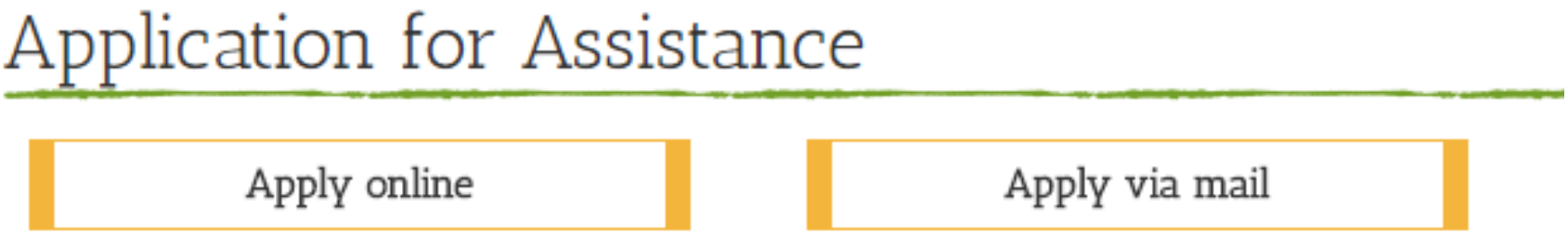
STEP 1

1) Complete the brief Application form.
   i. Basic organizational and contact information
   ii. Checklist of technical assistance needs
   iii. Open-ended Q's about the purpose for technical assistance
   iv. Identify service providers you've previously worked with

2) Email the completed form to Liz Chudoba at: lchudoba@allianceforthebay.org.

To apply for assistance

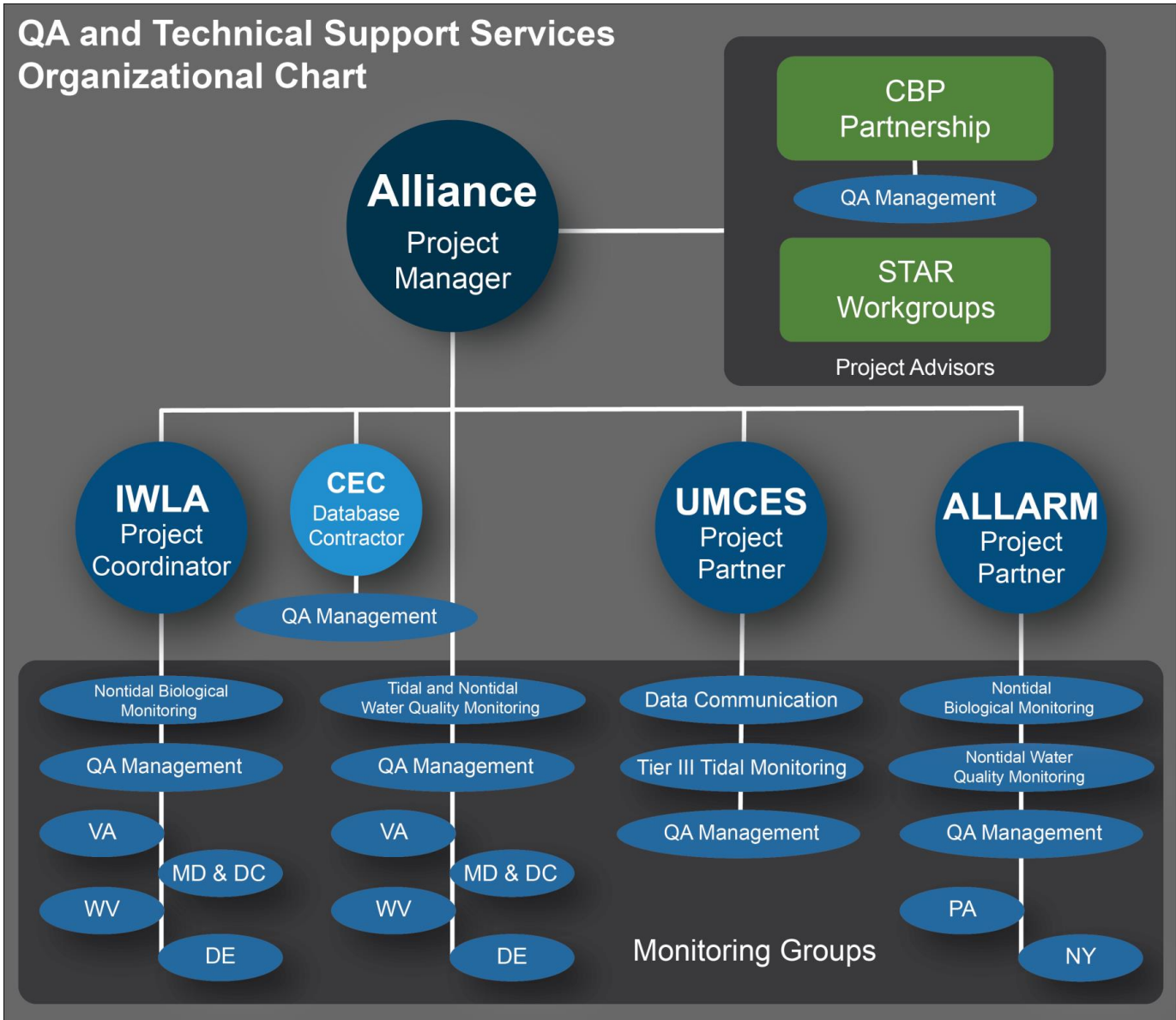
Go to:
ChesapeakeMonitoringCoop.org



Connect with a CMC Service Provider

STEP

2



On Boarding

STEP

3

New Monitoring Groups – the CMC service provider works with each group to conduct a Study Design workshop, Training workshops and equipment selection.

OR

Existing Monitoring Groups – the CMC service provider works with each group to review current quality assurance and standard operating procedures to determine Tier level.

Technical Support Services

- Study Design Workshops
- Water Quality and Benthic Macroinvertebrate Monitoring Trainings, Certifications, and Re-certs
- Benthic Macroinvertebrate Order Level Identification
- Equipment and Equipment Suggestions
- QA trouble shooting
- Data Interpretation and Report Card Workshops
- Data Verification & Quality Control
- Support for Data Cleaning and Data Uploads

Photos courtesy of the Chesapeake Bay Program

Enter Data into Chesapeake Data Explorer

STEP

4

Minimum eligibility requirements:

- GPS coordinates of your monitoring sites
- Documented methods
- Documented quality assurance procedures

Outreach and Engagement

- PA Watersheds Conference
- MD Streams Roundtable
- VA Water Monitoring Council
- Data to Decisions 2.0 Workshop
- Mid-Atlantic Water Monitoring Conference
- Chesapeake Bay Foundation's Environmental Education Conference
- National Monitoring Conference
- On Boarding Webinar

T=850

Where we are now

- Study Design Workshops
  - 6 completed
- Water Quality Monitoring Training
  - 9 completed as of October 19th
  - 2 scheduled by December 31st
- Macroinvertebrate Training
  - 8 completed as of October 19th
  - 3 schedule by December 31st
- Data Interpretation Workshops
  - To begin in 2018

CMC

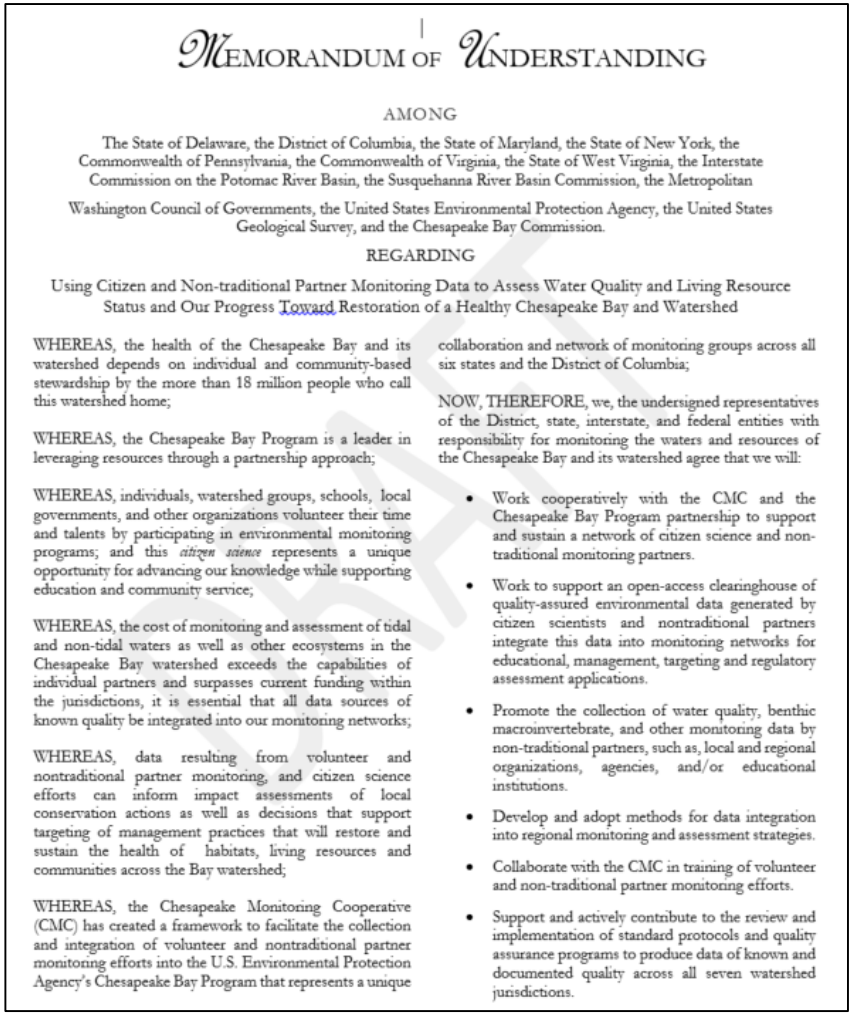
Where we are now

Tier III Groups

- Nanticoke watershed alliance is the first approved Tier III Group.
- BlueWater Baltimore is next in line.
- Next up, South River Federation, West/Rhode Riverkeeper and possibly MDE shellfish sampling.

CMC

Coming Up



MEMORANDUM OF UNDERSTANDING

AMONG

The State of Delaware, the District of Columbia, the State of Maryland, the State of New York, the Commonwealth of Pennsylvania, the Commonwealth of Virginia, the State of West Virginia, the Interstate Commission on the Potomac River Basin, the Susquehanna River Basin Commission, the Metropolitan Washington Council of Governments, the United States Environmental Protection Agency, the United States Geological Survey, and the Chesapeake Bay Commission.

REGARDING

Using Citizen and Non-traditional Partner Monitoring Data to Assess Water Quality and Living Resource Status and Our Progress Toward Restoration of a Healthy Chesapeake Bay and Watershed

WHEREAS, the health of the Chesapeake Bay and its watershed depends on individual and community-based stewardship by the more than 18 million people who call this watershed home;

WHEREAS, the Chesapeake Bay Program is a leader in leveraging resources through a partnership approach;

WHEREAS, individuals, watershed groups, schools, local governments, and other organizations volunteer their time and talents by participating in environmental monitoring programs; and this *citizen science* represents a unique opportunity for advancing our knowledge while supporting education and community service;

WHEREAS, the cost of monitoring and assessment of tidal and non-tidal waters as well as other ecosystems in the Chesapeake Bay watershed exceeds the capabilities of individual partners and surpasses current funding within the jurisdictions, it is essential that all data sources of known quality be integrated into our monitoring networks;

WHEREAS, data resulting from volunteer and nontraditional partner monitoring, and citizen science efforts can inform impact assessments of local conservation actions as well as decisions that support targeting of management practices that will restore and sustain the health of habitats, living resources and communities across the Bay watershed;

WHEREAS, the Chesapeake Monitoring Cooperative (CMC) has created a framework to facilitate the collection and integration of volunteer and nontraditional partner monitoring efforts into the U.S. Environmental Protection Agency's Chesapeake Bay Program that represents a unique collaboration and network of monitoring groups across all six states and the District of Columbia;

NOW, THEREFORE, we, the undersigned representatives of the District, state, interstate, and federal entities with responsibility for monitoring the waters and resources of the Chesapeake Bay and its watershed agree that we will:

- Work cooperatively with the CMC and the Chesapeake Bay Program partnership to support and sustain a network of citizen science and non-traditional monitoring partners.
- Work to support an open-access clearinghouse of quality-assured environmental data generated by citizen scientists and nontraditional partners integrate this data into monitoring networks for educational, management, targeting and regulatory assessment applications.
- Promote the collection of water quality, benthic macroinvertebrate, and other monitoring data by non-traditional partners, such as, local and regional organizations, agencies, and/or educational institutions.
- Develop and adopt methods for data integration into regional monitoring and assessment strategies.
- Collaborate with the CMC in training of volunteer and non-traditional partner monitoring efforts.
- Support and actively contribute to the review and implementation of standard protocols and quality assurance programs to produce data of known and documented quality across all seven watershed jurisdictions.

Memorandum of Understanding

Purpose is to forge a deeper understanding of and commitment to the use of citizen-based and other non-tradition partners' monitoring data in individual partners and shared partnership decision making.


Questions?
Credit: Chesapeake Bay Program