

Robert L. Ehrlich, Jr., Governor ! Michael S. Steele, Lt. Governor
C. Ronald Franks, Secretary



Watershed Services
580 Taylor Avenue
Annapolis, MD 21401
Toll Free in Maryland: 1(877)620-8DNR x8809
Out of State: 410-260-8809
TTY Users call via the MD Relay
www.dnr.maryland.gov

Be Part of Something Big!

DNR-14-0104-0030

March, 2005

The facilities and services of the Maryland Department of Natural Resources are available to all without regard to race, color, religion, sex, sexual orientation, age, national origin, or physical or mental disability.

The document is available in alternative format upon request from a qualified individual with a disability.



Printed on Recycled Paper



Contents

| | |
|--|-----|
| Preparing for Streamside and Outdoor Activities | 5 |
| Be Part of Your Watershed | 7 |
| Activity 1 – We’re on the Map!..... | 7 |
| Activity 2 – What is a Watershed?..... | 18 |
| Nature’s Water Recycling Program and How People Change It | 24 |
| Introduction..... | 24 |
| Activity 3– Water Cycle Theater..... | 25 |
| Where Does the Rain Go? | 31 |
| Activity 4 – Soak it Up!..... | 31 |
| Activity 5 – Nature’s Sponge..... | 39 |
| Too Much of A Good Thing | 43 |
| Activity 6 – Algae Soup!..... | 43 |
| Helping Restore Our Stream: Streamside Activities | 49 |
| Do’s and Don’ts by the Stream | 49 |
| Activity 7– Design Your Own Stream Study Kit..... | 50 |
| What’s a Healthy Stream? | 55 |
| Activity 8 –Portrait of Our Stream..... | 55 |
| Task A: How Our Stream Measures Up | 57 |
| Task B: Stream Temperature | 58 |
| Task C: Stream pH | 59 |
| Task D: Stream Banks and Bottoms..... | 60 |
| Task E: The Bug Test..... | 61 |
| Task F: Who Lives in the Stream?..... | 62 |
| Trash is Worse Than Ugly | 79 |
| Activity 9 – Stream Clean Up..... | 79 |
| The Neighborhood and the Stream | 85 |
| Activity 10 – Neighborhood Survey..... | 85 |
| Trees Are a Stream’s Best Friend | 93 |
| Activity 11 – Tree Planting | 93 |
| It’s All Connected | 101 |
| Activity 12 – Storm Drain Stenciling..... | 101 |
| Are YOU a Water Waster? | 108 |
| Water Wonders..... | 113 |
| Activity 13 - Water Use..... | 113 |
| Local Environmental Education Resources | 124 |
| Online Environmental Education Resources | 142 |

Introduction

Welcome to *Be a Part of Something Big!* This guide is designed for Grades 3-8 and provides educators and students the opportunity to gain hands-on experiences with water quality monitoring.

This series of activities is designed to help your class or student group learn more about the Chesapeake Bay and its tributaries. It does not need to be conducted in any particular order, however, some activities do build on one another. Please read through the entire guide before implementing it with youth.

The first part of this guide addresses basic watershed information and the flow of water. Students will learn what a watershed is, how to identify their watershed, and how water flows through the watershed. The second part of this guide addresses the impact of nutrients in the Chesapeake Bay. A hands-on activity demonstrates to students the problems associated with excess nutrients. The next section deals with streams and tributaries. Students will learn about chemical and biological characteristics of a stream and how to assess their local stream. The last section of this guide introduces students to action strategies that they can take to improve water quality in their local streams, and ultimately, the Chesapeake Bay. Activities in which they can participate include trash clean ups, stream buffer plantings, and personal conservation measures.

We hope that upon completion of the activities, students will be able to connect science concepts with their actions and that everyone will become active stewards of our watershed. Thank you for taking the time to teach youth about our rivers, streams and Chesapeake Bay. It is an important part of our lives and heritage. So, get out there and *Be Part of Something Big!*

Preparing for Streamside and Outdoor Activities

Many of the activities in “Be a Part of Something Big” are designed to be carried out at a stream or other outdoor location. The following steps are recommended to prepare for a safe and enjoyable streamside event.

1. Visit the stream yourself ahead of time. Determine which portion of the stream and how much of the stream is practical for your group to walk. Decide whether or not you can do activities that require wading in the stream.
2. Contact the property owner(s) whose lands are crossed by the stream you will visit. Venturing onto private property without permission is trespassing. **Please do not trespass under any circumstances!** Ask the owner(s) to grant permission for your group to walk the stream where it passes through their land.

The owner of a given property may be determined by:

- a) Talking to the people who live nearest this particular stream section.
 - b) Consulting property ownership maps prepared by the Maryland Department of Assessments & Taxation (MDAT). These maps may be viewed in the local MDAT office for your county or the local land records office. Real estate offices frequently have property ownership maps, as do some local libraries.
 - c) Contacting the local Department of Public Works or Planning & Zoning Office. These professionals know who the local property owners are and might have an idea of how cooperative they may be in granting permission for your activities.
3. Prepare your group for their streamside event:
 - a) The activities in “We’re on the Map!” and “Building a Watershed Model” are especially valuable in helping children understand the concept of a watershed and to visualize the relationship of the stream to their community, to the state of Maryland and to the Chesapeake Bay.

b) Review “Do’s and Don’ts by the Stream” **before** you travel to the stream and again at the streamside.

4. Make sure the children and their parents understand the importance of appropriate clothing and shoes for safety and comfort at the stream. You might advise them to bring extra pants, shoes and socks to school or the meeting place to change if necessary.
5. Have an adequate number of adult supervisors at the event. It is suggested that there is a 1:6 or 1:10 adult to child ratio depending on the age of the child.
6. Have a plan for how to deal with accidents and injuries should they occur. Know where you would need to call or go for medical treatment. Bring a first aid kit to take care of minor scrapes, cuts and bites.
7. Grouping of students may be done either prior to the event or at the meeting place to save time and confusion. If several activities are to be accomplished, make groups of at least three students each for safety reasons: one to get help, one to stay with the injured person.
8. Give instructions while students are at the meeting place. Let students know exactly what is expected of them and when and where they are to meet back (use a whistle if needed).
9. While you are streamside, try to review the data gathered while it is still fresh in their minds and able to be corrected.
10. Warn students not to drink water from the stream, even if it looks clean and clear.
11. Make sure to follow-up the trip by discussing data and “Wrap-Up” questions.

A Note About Rain...

Don't let rain stop you unless conditions are hazardous.

Be cautious, but use nature to your advantage. Rainy weather provides opportunities to see run-off and sediment pollution as it happens. Be very careful about currents at all times, especially during rain. An adult should always check the depth and strength of the current before children enter a stream.