

2019 LEBANON COUNTY ENVIROTHON

ELEMENTARY & MIDDLE SCHOOL

AQUATICS OBJECTIVES



TESTING RESOURCES

1. IDENTIFICATION STUDY LIST:

Fish	Reptiles	Invertebrates
Smallmouth Bass	Northern Fence Lizard	Stonefly Nymph
Rainbow Trout	Broadhead Skink	Mayfly Nymph
Brook Trout	Northern Water Snake	Midge Larva
White Sucker	Queen Snake	Case-building Caddisfly Larva

2. Fish & Boat Commission-**PA Fish Book** (Displayed as a "**GALLERY OF PA FISHES**" on PAFBC Website)
<http://www.fishandboat.com/Fish/PennsylvaniaFishes/GalleryPennsylvaniaFishes/Pages/GalleryPennsylvaniaFishes.aspx> Students should be familiar with the species overview, identification, and habitat for species on the **IDENTIFICATION STUDY LIST ONLY**.

3. How Fish Swim
<https://www.fishandboat.com/LearningCenter/EducationResourceCatalog/Fish/Documents/fishswim.pdf>

4. Fish Parts
<https://www.fishandboat.com/LearningCenter/EducationResourceCatalog/Fish/Documents/fishpart.pdf>

5. Fish & Boat Commission- **Amphibians & Reptiles Book** (ISBN 1-930369-00X)
 Hard copy, new teams should contact the Envirothon Coordinator to obtain a copy (if available)
 The entire book has been scanned and is on the LCCD website as 7 PDFs:

1. **PA AMPHIB & REP-INTRO**
<https://www.lccd.org/wp-content/uploads/2018/09/PA-AMPHIB-REP-INTRO.pdf>
2. **PA AMPHIB & REP-SALAMANDERS**
<https://www.lccd.org/wp-content/uploads/2018/09/PA-AMPHIB-REP-SALAMANDERS.pdf>
3. **PA AMPHIB & REP-FROGS & TOADS**
<https://www.lccd.org/wp-content/uploads/2018/09/PA-AMPHIB-REP-FROGS-TOADS.pdf>
4. **PA AMPHIB & REP-TURTLES & LIZARDS**
<https://www.lccd.org/wp-content/uploads/2018/09/PA-AMPHIB-REP-TURTLES-LIZARDS.pdf>
5. **PA AMPHIB & REP-SNAKES (PART 1)**
<https://www.lccd.org/wp-content/uploads/2018/09/PA-AMPHIB-REP-SNAKES-PART-1.pdf>
6. **PA AMPHIB & REP-SNAKES (PART 2)**
<https://www.lccd.org/wp-content/uploads/2018/09/PA-AMPHIB-REP-SNAKES-PART-2.pdf>
7. **PA AMPHIB & REP-QUICK REF & GLOSSARY**
<https://www.lccd.org/wp-content/uploads/2018/09/PA-AMPHIB-REP-QUICK-REF-GLOSSARY.pdf>

6. Allegheny Creek Connections: Species on list
<http://sitesmedia.s3.amazonaws.com/creekconnections/files/2013/12/stonefly.pdf>
<http://sitesmedia.s3.amazonaws.com/creekconnections/files/2013/12/mayfly.pdf>
<http://sitesmedia.s3.amazonaws.com/creekconnections/files/2013/12/midge.pdf>
<http://sitesmedia.s3.amazonaws.com/creekconnections/files/2013/12/casebuildingcaddisfly.pdf>

7. Pennsylvania's Major Watersheds
http://www.yorkccd.org/wordpress/wp-content/uploads/2012/12/Pennsylvanias_Major_Watersheds1.pdf
8. From the Woods: Watersheds
<http://pubs.cas.psu.edu/freepubs/pdfs/uh149.pdf>
9. Watersheds in Lebanon County, PA (See maps below)
10. Watersheds - What is a Watershed?
<https://www.lccd.org/programs/watershed/>
<http://watersheds101.ca/learn-about-watersheds>
11. The Water Cycle
View animated version at <https://pmm.nasa.gov/education/videos/tour-water-cycle>
<http://watersheds101.ca/learn-about-watersheds/how-does-water-move-in-the-watershed>

Water Cycle Songs (catchy songs to help learn the water cycle)
<https://youtu.be/JFasFIdZ704>
<https://www.youtube.com/watch?v=qrLEHV580Mg&index=1&list=RDqrLEHV580Mg>

The Water Cycle song, sung by Mr. Paul Seevinck (Paulito)

Water travels in a cycle, yes it does
Water travels in a cycle, yes it does
It goes up as evaporation, Forms clouds as condensation,
Then falls down as precipitation, yes it does
12. PLAY –Pennsylvania League of Angling Youth
<https://www.fishandboat.com/Transact/AnglerBoater/LegacyIssues/2000s/Documents/03march-april2000.pdf>
Pages: 24. April Showers Bring May Flowers
25. What Do You Know About the Water Cycle?
26. Six Ways to the Sea
27. How Much Water Do You Use?
28. Read the Water
13. EPA What's Up With Our Nation's Waters? (pages 1-8 and 11-12)
<https://nepis.epa.gov/Exe/ZyPDF.cgi/400019RS.PDF?Dockey=400019RS.PDF>
14. Dissolved Oxygen
<http://www.yorkccd.org/wordpress/wp-content/uploads/2012/12/Dissolved-Oxygen1.pdf>
15. Temperature
<http://www.yorkccd.org/wordpress/wp-content/uploads/2012/12/Temperature1.pdf>
16. Turbidity
<http://www.yorkccd.org/wordpress/wp-content/uploads/2012/12/Turbidity1.pdf>

17. pH

<http://www.yorkccd.org/wordpress/wp-content/uploads/2012/12/pH1.pdf>

18. Nitrates

<http://www.yorkccd.org/wordpress/wp-content/uploads/2012/12/Nitrates1.pdf>

18. New Stream Health Indicators Being Developed

http://ian.umces.edu/pdfs/ian_newsletter_209.pdf

LEARNING OBJECTIVES

FOCUS:

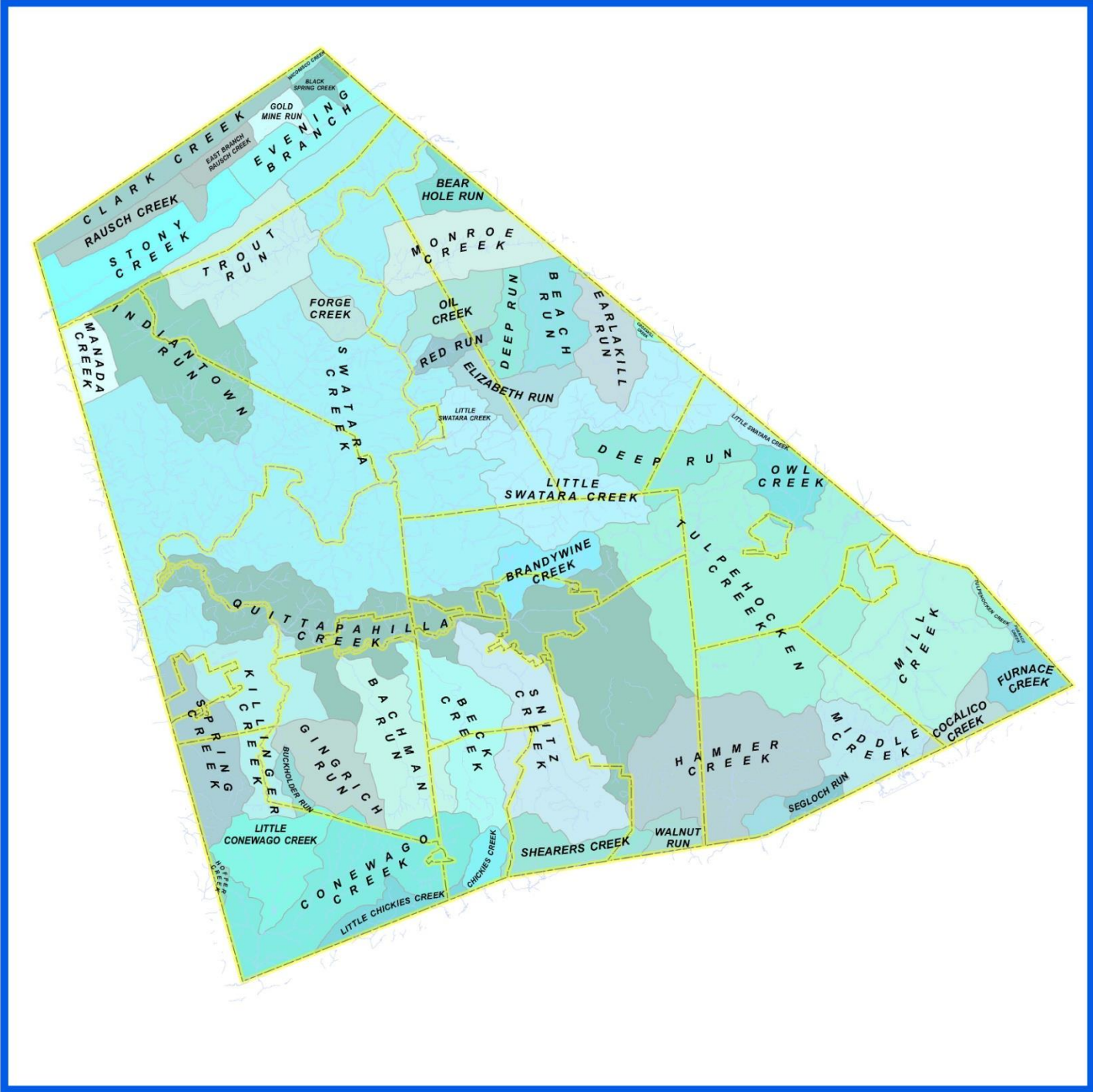

How does the quality of environments affect the health of living things?

- Know the major watersheds of Pennsylvania
- Explain the water cycle and how water enters and moves through a watershed
- Determine how different types of pollution enter our watershed and how to prevent pollution
- Use tools and techniques to analyze a freshwater environment
- Interpret visual, physical, chemical & biological data to assess the quality of a freshwater environment
- Explain how the quality of freshwater habitats affects people and the study species
- Understand the biology of study species including pollution tolerance level and habitat
- Be able to identify the study species by live sample, replica, or photo

SAMPLE QUESTION:

1. During a visual survey of a stream, you observe trees hanging over the stream and native vegetation growing along the stream's edge. You also observe water striders on the water's surface, see dragonflies, hear frogs croaking, and the water appears clean and clear. This suggests that this particular stream may be _____.

- A. Impaired B. Healthy C. Polluted D. Endangered

Map Produced by: LCCD

Date: October 1, 2008

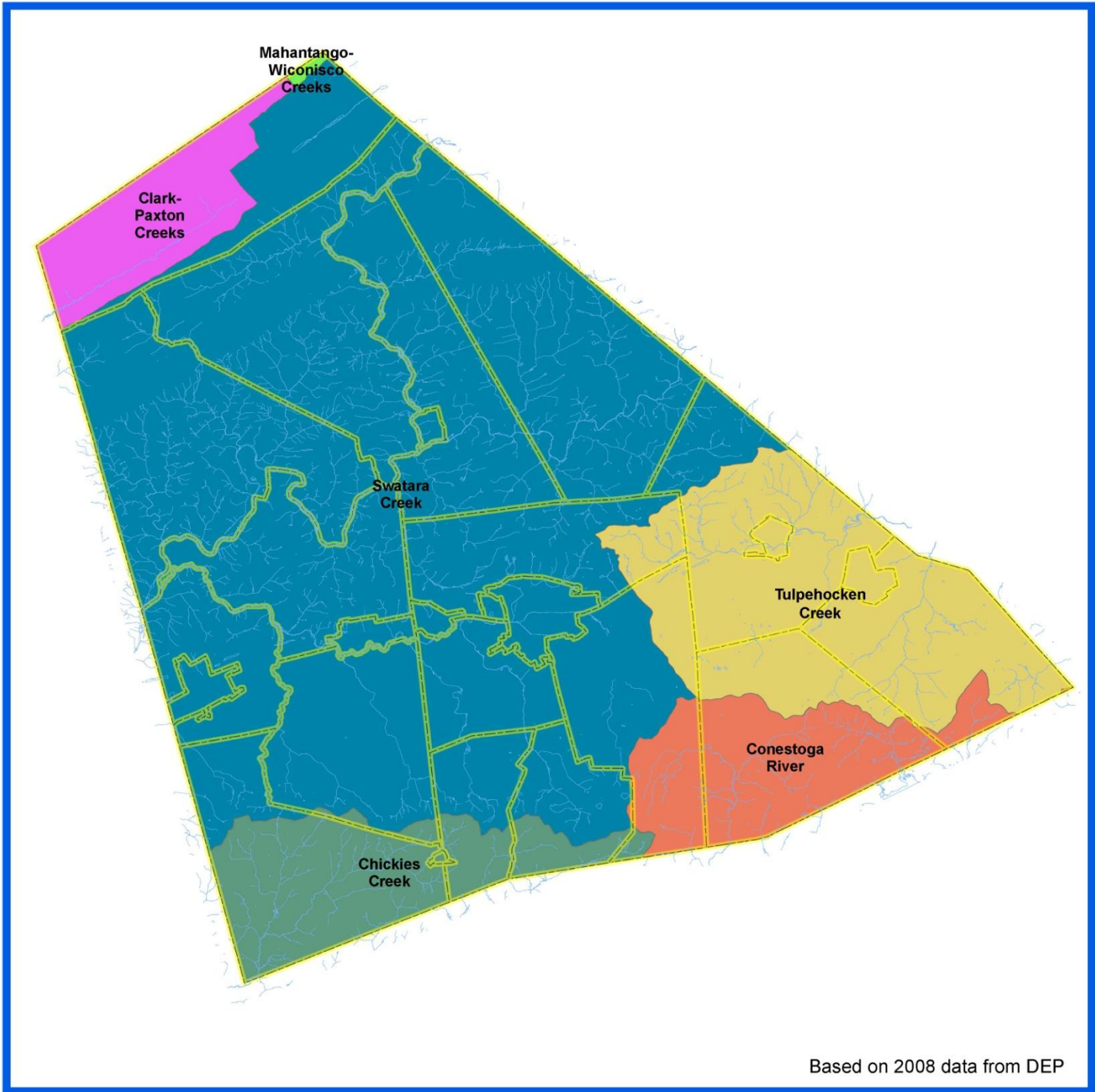
LEBANON COUNTY WATERSHED MAP













Hydrology

Municipal Boundaries





	<h2>LEBANON COUNTY WATERSHED MAP</h2>		
			
Map Produced by: LCCD Date: October 1, 2008	<ul style="list-style-type: none">  Municipal Boundaries  Hydrology  Chickies Creek  Clark-Paxton Creeks 	<ul style="list-style-type: none">  Conestoga River  Mahantango-Wiconisco Creeks  Swatara Creek  Tulpehocken Creek 	