Pointless Personal Pollution *Lesson Plan*
Students practice their skills and learn about different sources of pollution.

Topic: Point-source pollution is pollution that comes from one point—where you can point to the source (like a pipe discharging into a stream). Most of this kind of pollution has been cleaned up since the 1970s. The major pollution entering our waterways today is non-point source pollution, which comes from many sources. The major sources are pesticides, fertilizers, and pet waste. These pollutants find their way to waterways. People can help stop this "pointless" pollution through proper use of household chemicals and other means.

Grade Level: 4-6

Time Allotted: 1 or 2 50-minute class periods

Performance Objectives
References are to the Next Generation Sunshine State Standards (2007).

Language Arts

LA.4.1.7.3	The student will determine explicit ideas and information in grade-level text, including but not limited to main idea, relevant supporting details, implied message, inferences, chronological order of events, summarizing, and paraphrasing.
LA.4.2.2.2	The student will use information from the text to answer questions related to explicitly stated main ideas or relevant details;
LA.4.2.2.3	The student will organize information to show an understanding of main ideas within a text through charting, mapping, or summarizing.
LA.5.1.7.2	The student will identify the author's purpose (e.g., to persuade, inform, entertain, explain) and how an author's perspective influences text.
LA.5.1.7.3	The student will determine the main idea or essential message in grade-level text through inferring, paraphrasing, summarizing, and identifying relevant details.

Math

MA.3.G.5.1	Select appropriate units, strategies and tools to solve problems involving perimeter.
MA.4.A.1.2	Multiply multi-digit whole numbers through four digits fluently, demonstrating understanding of the standard algorithm, and checking for reasonableness of results, including solving real-world problems.
MA.4.G.3.3	Select and use appropriate units, both customary and metric, strategies, and measuring tools to estimate and solve real-world area problems.
MA.5.G.5.2	Compare, contrast, and convert units of measure within the same dimension (length, mass, or time) to solve problems.
MA.6.A.2.1	Use reasoning about multiplication and division to solve ratio and rate problems.
MA.6.A.2.2	Interpret and compare ratios and rates.

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Water Atlas Curriculum Lesson 32

Academic Outcomes/Lesson Objectives:

- Students will read a selection adapted from the Seminole County Water Atlas, written to provide reading skills practice.
- Students will respond to questions or prompts in Reading, Writing, and Math.

Materials

- Computer with internet access (Needed to access Pointless Personal Pollution reading handout)

References

The following references are available in the Water Atlas Digital Library:

Improving Old MacDonald's Farm: Protecting Streams from "Fruited Plains"
    Source: United States Environmental Protection Agency. 2001.

Pointless Personal Pollution(brochure). 2008. Florida Department of Environmental Protection.

Other references:

Frequently Asked Questions about New Mexico Dairies, Dairy Producers of New Mexico. Retrieved May 6, 2011.

"Make the Most of Manure," Mother Earth News. 1983. Retrieved May 6, 2011.

Key Vocabulary

Fertilizer
    Substance containing nutrients that is designed to nourish plants.

Herbicide
    Chemical that is designed to kill plants; weed killer.

Non-point source pollution
    Pollution that occurs when rainfall, snowmelt, or irrigation runs over land or through the ground, picks up pollutants, and deposits them into surface or ground water.

Nutrients
    Elements or compounds essential as raw materials for the growth and development of plants and animals, such as carbon, nitrogen, and phosphorus.

Pesticide
    Substance used for destroying insects or other organisms that are harmful to people, cultivated plants or animals, or property.

Point source pollution
    Pollution that can be traced back to a single origin or source such as a sewage treatment plant discharge.

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Prevention

Taking action to stop something from happening, or to stop a condition from arising.

Key

Reading

1. b. LA.4.2.1.4. Bloom's Taxonomy Level One
2. Use the rubric for Short Response Reading Questions – 2 points
    LA.4.2.2.2, Bloom's Taxonomy Level One
    Example response:

Ways People Cause Pollution	How Pollutants Hurt the Environment	How People Can Prevent Pollution
Car oil and antifreeze drips	Kills underwater plants & animals	Keep car in good condition
Pesticides	Make egg shells thin	Reduce the use of them
Animal Waste	Add minerals to the water and make algae grow too much	Properly dispose of it

3. d. LA.4.1.7.2, Bloom's Taxonomy Level Two
4. Use the rubric for Extended Response Reading Questions – 4 points
    LA.4.1.7.3, Bloom's Taxonomy Level Two
    Example of a top-score response:
    The article shows that the statement "Ordinary people can not do anything to prevent water pollution" is false in several ways. First, it explains that people can stop underwater animals and plants from being killed by preventing car leaks. Next, it describes how people have already protected birds like eagles by making a law stopping the use of the pesticide DDT. Finally, it shows that doing something as simple as scooping pet poop can prevent waste from getting into the water system, and it can make you a better neighbor too! There are many ways people can prevent pollution.

Writing

For all, use the rubric for Florida Comprehensive Assessment Test (FCAT) – 6 points.

1. LA.4.4.1.1
2. LA.4.3.2.1
3. LA.4.4.1.1
4. LA.4.4.1.1

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Math

1. Use the rubric for Short Response Math Questions – 2 points
   MA.4.A.1.2, MA.5.G.5.2
   Example of a Top-Score Response:
   80 lbs./cow/day x 200 cows/herd
   = 16,000 lbs./herd x 365 days/year
   = 5,840,000 pounds of waste/year

2. Use the rubric for Short Response Math Questions – 2 points
   MA.4.G.3.3, MA.3.G.5.1
   Example of a Top Score Response:
   320 feet divided by 4 sides = 80 feet
   80 feet x 80 feet = 6,400 square feet
   Therefore, 6,400 square feet can be surrounded by the fence.

3. a. MA.6.A.2.1, MA.6.A.2.2