

WATER POLLUTION GRAPHING

**2ND-
5TH**

OBJECTIVES

- Understand the connection between land-use activities and water quality within a watershed.

BACKGROUND INFORMATION

Pollutants accumulate in watersheds due to various human driven and natural events. These pollutants, while sometimes inevitable, drastically alter the state of the ecosystem. If we can determine the type of pollutant and its cause, then we can classify the source of the pollutant and take preventative measures to reduce any further contaminants. Below are examples of land uses and their potential problems:

LAND USE	ACTIVITIES	POTENTIAL POLLUTION
Agriculture	Tilling, Pest control, fertilization, animal waste	Sediment, fertilizer, pesticides, bacteria
Construction	Land clearing and grading	Sediment
Forestry	Timber harvesting road construction, fire control, weed control	Sediment
Land Disposal	Septic System	Bacteria, nitrate, phosphate
Surface Mining	Dirt, gravel, and mineral excavation	Sediment, heavy metals, acid, drainage, nutrient
Urban Run Off	Lack of automobile maintenance, lawn and garden care, painting	Oil, gas, antifreeze, nutrients, pesticides, paints

BACKGROUND INFORMATION- CONTINUED

A watershed is an area of land from which all the water drains to the same location such as a stream, pond, lake, river, wetland, or estuary. A watershed can be large, like the Colorado River drainage basin, or very small, such as all the water that drains to a small farm pond. Large watersheds are often called basins and contain many small watersheds.

Watersheds can transport non-point source pollution. Non-point source pollution is associated with rainfall runoff moving over and through the earth's surface, carrying natural and human made pollutants into water sources. Examples of non-point source pollutants include fertilizers, pesticides, sediment, gas, and oil.

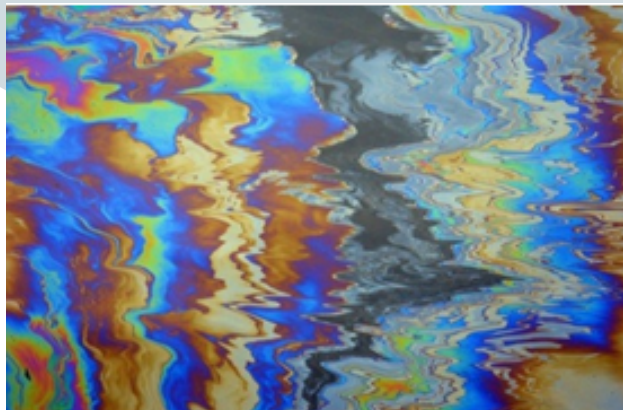
MATERIALS

- 2 Plastic Baggies per Group filled with assorted Skittles
 - One bag with more Skittles (all colors)
 - One bag with less Skittles (only two colors)
- Colored Pencils
- Graph Paper

ANTICIPATORY SET

Ask the students to guess what this is a photo of:

Answer: oil pollution on water.



Show your students the website "Vacation Hot Spot" found under Resources.

Ask your students how they feel seeing these pictures. What would it be like to live here? Discuss how some pollution is obvious, but other types are not so obvious.

TREE MAP: TYPES OF POLLUTION

As a class, create a Pollution "Tree Map." Write the word, Pollution on the trunk of the tree. Each of the branches will represent a different type of pollution. Help your students come up with the following types of pollution, and write them on each branch: *Sediment, Pesticides, Fertilizer, Oil/Gas, Toxic Waste, Trash.*

As a class, discuss how each of these pollutants can be used, and whether they are be beneficial, harmful, or both.

GRAPH IT!

Distribute two plastic bags to each group. These bags represent water samples from two locations. One bag should be filled with more Skittle (pollutants). The other bag should have fewer Skittles of only one or two colors. Each group will fill in a bar graph for each sample . Be sure they do not combine or mix up the Skittle bags! Graph paper for this activity can be found at the end of the lesson.

The Skittles will represent the following:

- Purple = Trash
- Red = Pesticides
- Green = Fertilizers
- Yellow = Oil and Gas
- Orange = Toxic Waste

WHAT STORY DOES YOUR SAMPLE TELL?

Upon completion, have each group try to determine what type of land-use practice may have caused that type of pollution. For example, a sample bag with mainly Sediment and Pesticides could indicate that the land was used for Agriculture.

A sample bag with mainly Oil/Gas and Trash could indicate an urban setting.

PONDER

Discuss how pollutants can affect the food web within an ecosystem. What might happen if the plants within the food web were negatively impacted by pollution? What might happen to the animals that rely on those plants for food?

RESOURCES

- Gambier20. (n.d.). Rainbow Pollution, [photograph]. Retrieved August 12, 2013, from <http://www.flickr.com/photos/gambier20/3208414588/>.
- Bugs Don't Bug Me, Retrieved from <https://extension.usu.edu/waterquality/files-ou/Publications/Bugs-dont-bug-me.pdf>
- Vacation Hot Spots Ruined By Trash: <https://www.loveexploring.com/gallerylist/86221/vacation-hot-spots-ruined-by-trash-and-tourism>

TEKS

Science, Adopted 2021:

- 2nd: (a) 1D, 5. (b) 1A, 1C, 1D, 1E, 1F, 1G, 2A, 3B, 3C, 4A, 5B, 5G, 11A, 11B, 12A.
- 3rd: (a) 1D, 5. (b) 1A, 1C, 1E, 1F, 1G, 2A, 3B, 3C, 4A, 5B, 5D, 5F, 5G, 11A, 11B, 11C.
- 4th: (a) 1D, 5. (b) 1A, 1C, 1D, 1E, 1F, 1G, 2A, 3B, 3C, 4A, 5B, 5D, 5F, 5G, 10A, 11A, 11B, 11C.
- 5th: (a) 1D, 5. (b) 1A, 1C, 1D, 1E, 1F, 1G, 2A, 3B, 3C, 4A, 5B, 5D, 5F, 5G, 11, 12C.



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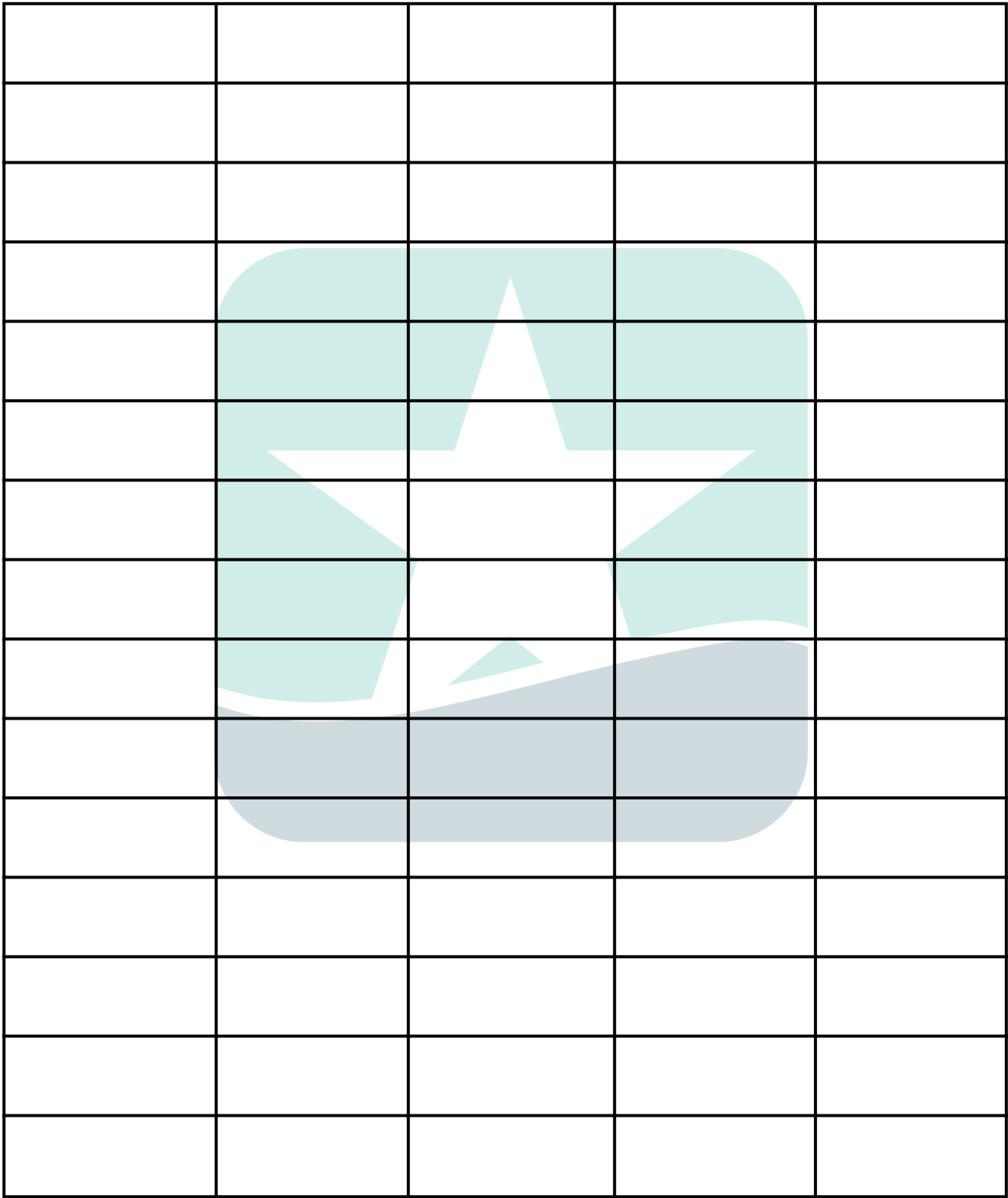
06/2023

Name: _____

Date: _____

Water Pollution Graphing Activity

Amount of Pollution



Trash Fertilizer Pesticide Gas/Oil Toxic Waste