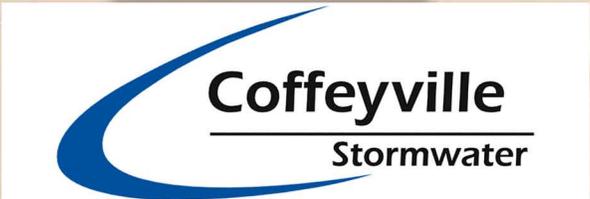
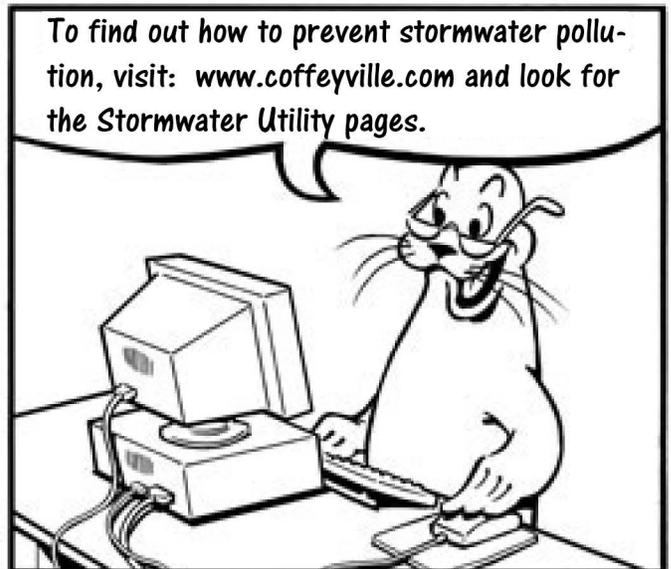
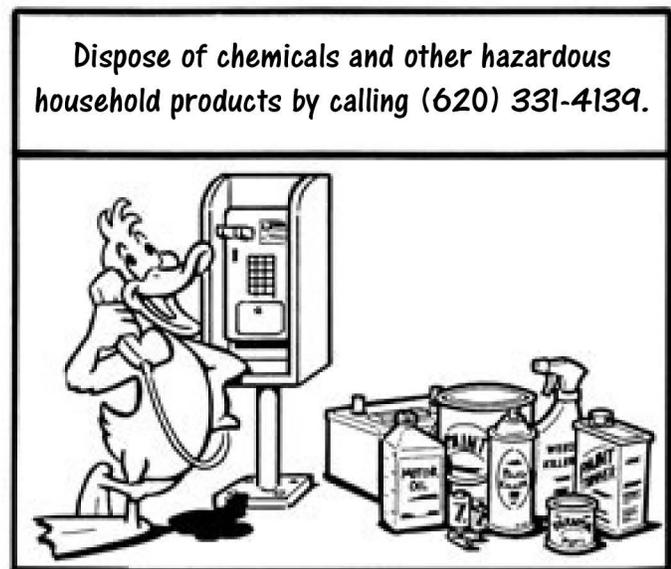


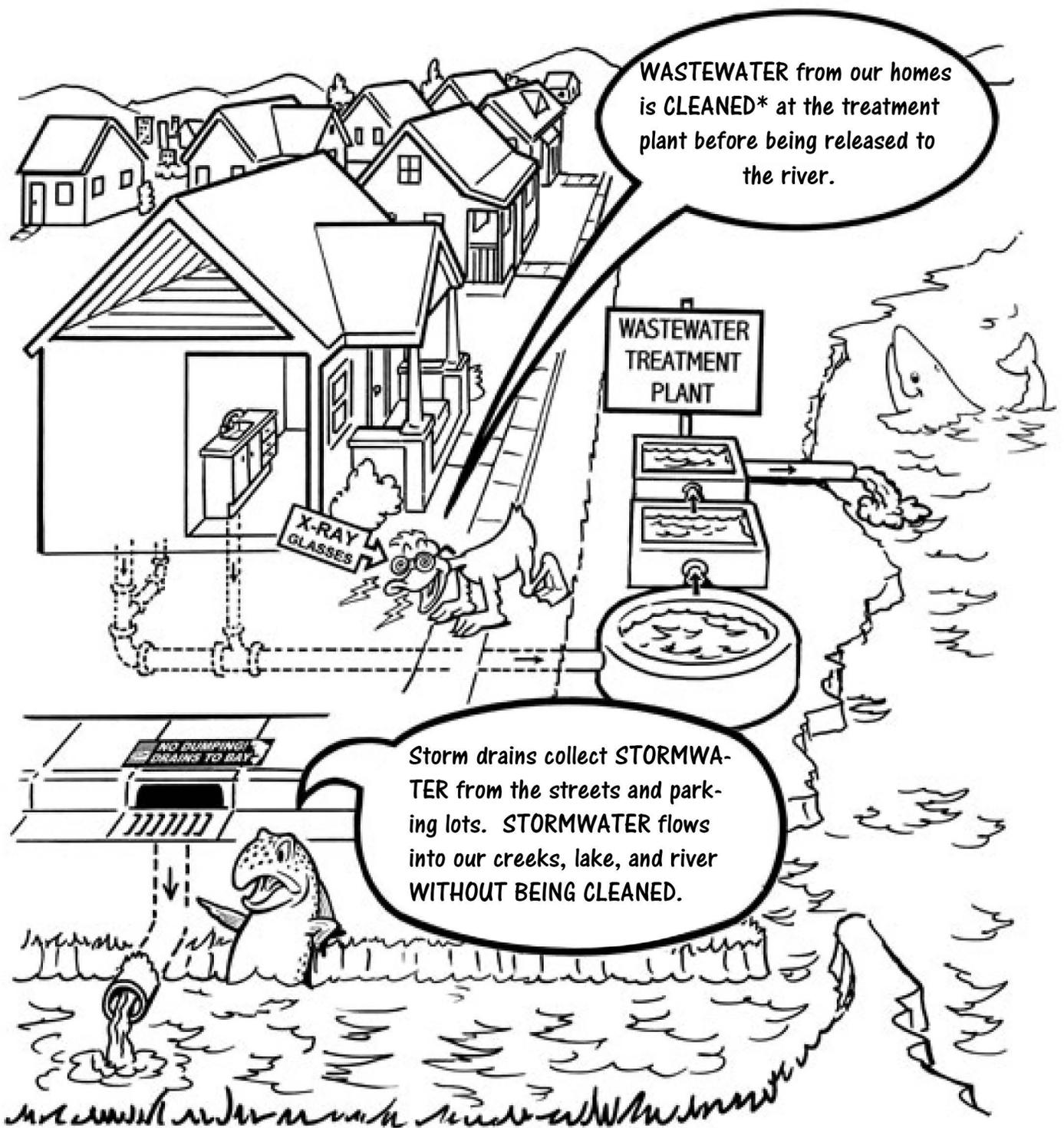
The CLEAN WATER ACTIVITY BOOK

with Slappy & Quackers





WHAT IS THE DIFFERENCE BETWEEN "STORM" WATER AND "WASTE" WATER?



ACTIVITY:

Color the path of the STORMWATER from the storm drain to the creek and the Verdigris river **BLUE**.
Color the path of WASTEWATER from the house to the treatment plant **RED**.

* Not all chemicals (like paint, pesticides and medications) that are found in households can be cleaned through the wastewater treatment process. Such chemicals should be properly disposed of at a household hazardous waste facility.



Take your car to a **CAR WASH** or wash it over ground that can soak up the water to keep soapy water out of the storm drain.



Soapy water flows into local creeks, and the river through the storm drain.

NO!



YES!

Soapy water is recycled or sent to the waste water treatment plant.

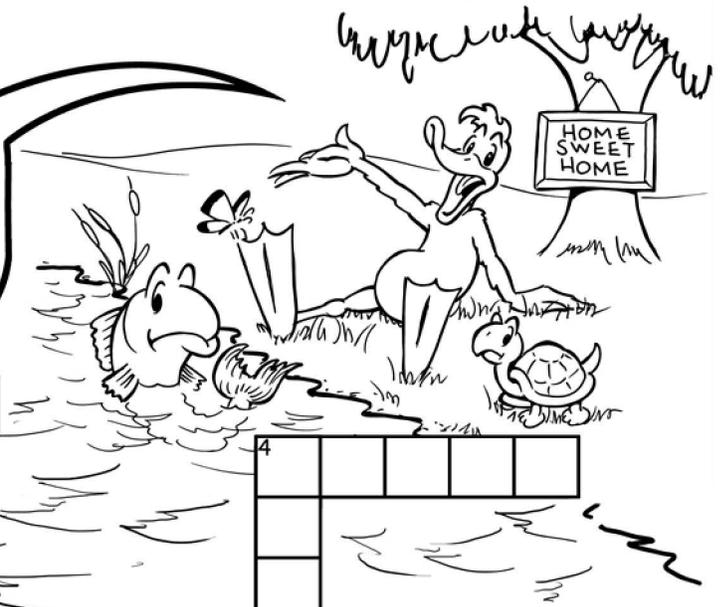


YES!

Soapy water is soaked up by grass, dirt, or gravel and does not flow into a storm drain.

IT'S YOUR PLAYGROUND--
BUT IT'S OUR HOME!

Do what you can to keep
 your watershed clean.



A crossword puzzle grid with 20 numbered starting points for clues. The grid is composed of white squares for letters and black squares for empty space. The numbers are: 1 (top left), 2 (top middle), 3 (top right), 4 (middle right), 5 (left side), 6 (left side), 7 (middle left), 8 (middle right), 9 (left side), 10 (middle left), 11 (middle right), 12 (left side), 13 (left side), 14 (right side), 15 (right side), 16 (left side), 17 (left side), 18 (middle right), 19 (left side), and 20 (bottom left).

ACROSS:

1. The area of land that drains into an estuary, lake stream, or groundwater is known as a ____.
4. The ____ of speeding boats can erode shorelines.
5. Maintaining your ____ tank will help to prevent bacteria and nutrients from leaking into groundwater and surface waters.
7. Wetland plants act like a natural water ____, removing harmful pollutants from stormwater runoff.
8. Leave your grass clippings on your ____ to reduce the need for commercial fertilizers.
9. A single quart of motor ____, if disposed of improperly, can pollute 2 million gallons of water.
10. Fertilizers and animal wastes contain ____ that "feed" algae and other aquatic plants harmful to water quality.
12. Polluted runoff from both rural and ____ sources has a significant impact on water quality.
16. Storm ____ don't connect to sewage treatment plants, so runoff can flow directly to rivers, lakes, and coastal waters.
17. Follow directions carefully when applying ____ on your lawn --- more isn't always better.
19. Polluted runoff (also called ____ source pollution) comes from so many places that it's hard to "pinpoint" a source.
20. Yard and vegetable food waste are suitable additions to a ____ pile.

DOWN:

2. Don't dump used motor oil into storm drains: ____ it!
3. ____ of soil from barren land can cloud nearby streams.
4. ____ prevent flooding, improve water quality, and provide habitat for waterfowl, fish, and wildlife.
5. Marking "Do Not Dump, Drains to Bay" on a ____ is one way to educate people about polluted runoff.
6. Excess sediment, nutrients, toxics, and pathogens are all types of runoff ____.
11. Polluted ____ is the nation's #1 water quality problem.
13. The cattail is one wetland ____ that helps purify polluted runoff.
14. Too much ____ in water can harm aquatic life.
15. Proper crop and animal management on ____ helps to control water pollution.
17. ____ impact development helps control stormwater pollution through conservation approaches and techniques.

CHOICES

- compost
- drains
- erosion
- farms
- fertilizer
- filter
- lawn
- Low
- nonpoint
- nutrients
- oil
- plant
- pollution
- recycle
- runoff
- sediment
- septic
- storm drain
- urban
- wakes
- watershed
- wetlands



NO WATER OFF QUACKERS' BACK

Ducks keep their feathers waterproof by spreading oil from a special gland onto their feathers. However, if excess oil gets into streams, lakes or oceans, as in an oil tanker spill or when stormwater carries oil off streets, it can be harmful to ducks and other water birds.

Oil is one of the most common pollutants in our water. Most of the oil in oceans gets there when oil tanks on ships are rinsed while at sea. When ducks and other waterfowl come in contact with oil, their feathers become matted. Oily, matted feathers lose their ability to insulate. Because of this, the birds can die from the cold. When a bird tries to clean the oil off of its feathers, it may swallow some of the oil which can lead to stomach ulcers. The only way to save the oil-covered bird is to scrub it with a detergent, like you might scrub a greasy pan. This is not a perfect solution. It is very expensive and takes a long time to clean birds.

In this activity you will try several ways to clean the oil from the water. These ways are similar to the ones used by clean-up crews in real life spills. Although oil spills do not happen in all areas, it's good to know how hard it is to clean one up.

Materials:

one large bowl
one measuring cup
water
cooking oil
different dishwashing detergents
paper towels or a piece of cloth
sponges
string

Procedure:

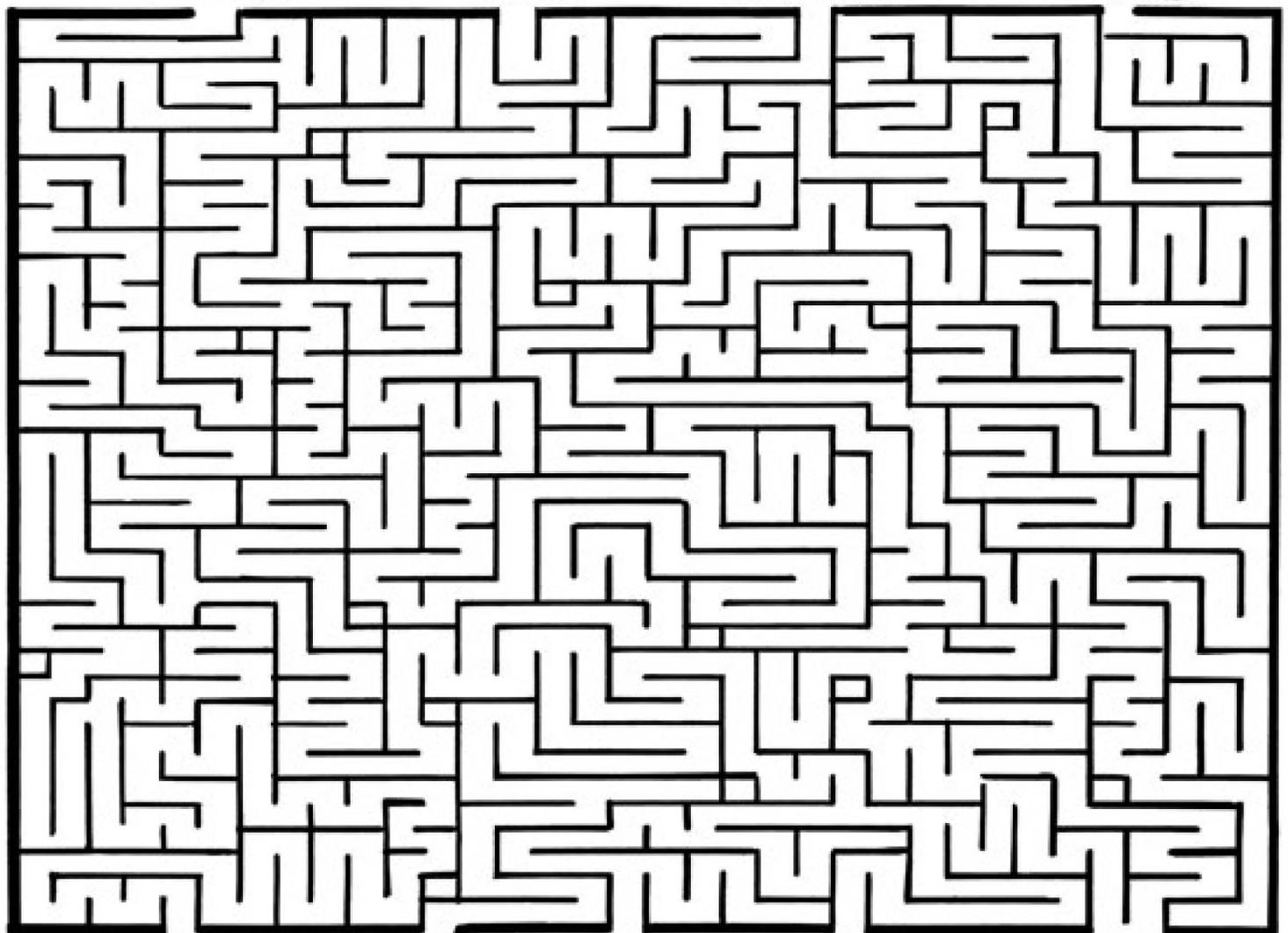
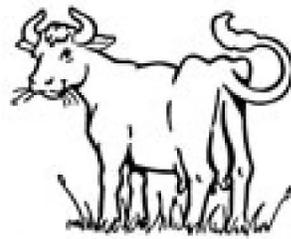
1. Fill half of the bowl with water.
2. Measure 1/4 cup of oil and pour into the bowl of water.
3. Gently shake the bowl to create "waves".
Did the oil and the water mix?
4. Now try to clean up the oil using:
 - Paper towel or cloth.
 - Use string to make a border around the oil and try to drag the oil to one side of the bowl.
 - Use the sponge to try to soak up the oil.



TRY TO CLEAN UP THE OIL WITH EACH METHOD!

Thanks to the EPA for the contents of this page.

EVERYBODY POOPS, but not in the creek! Make sure the poop from these animals finds its way to the trash instead of the creek!



NO

NO

NO

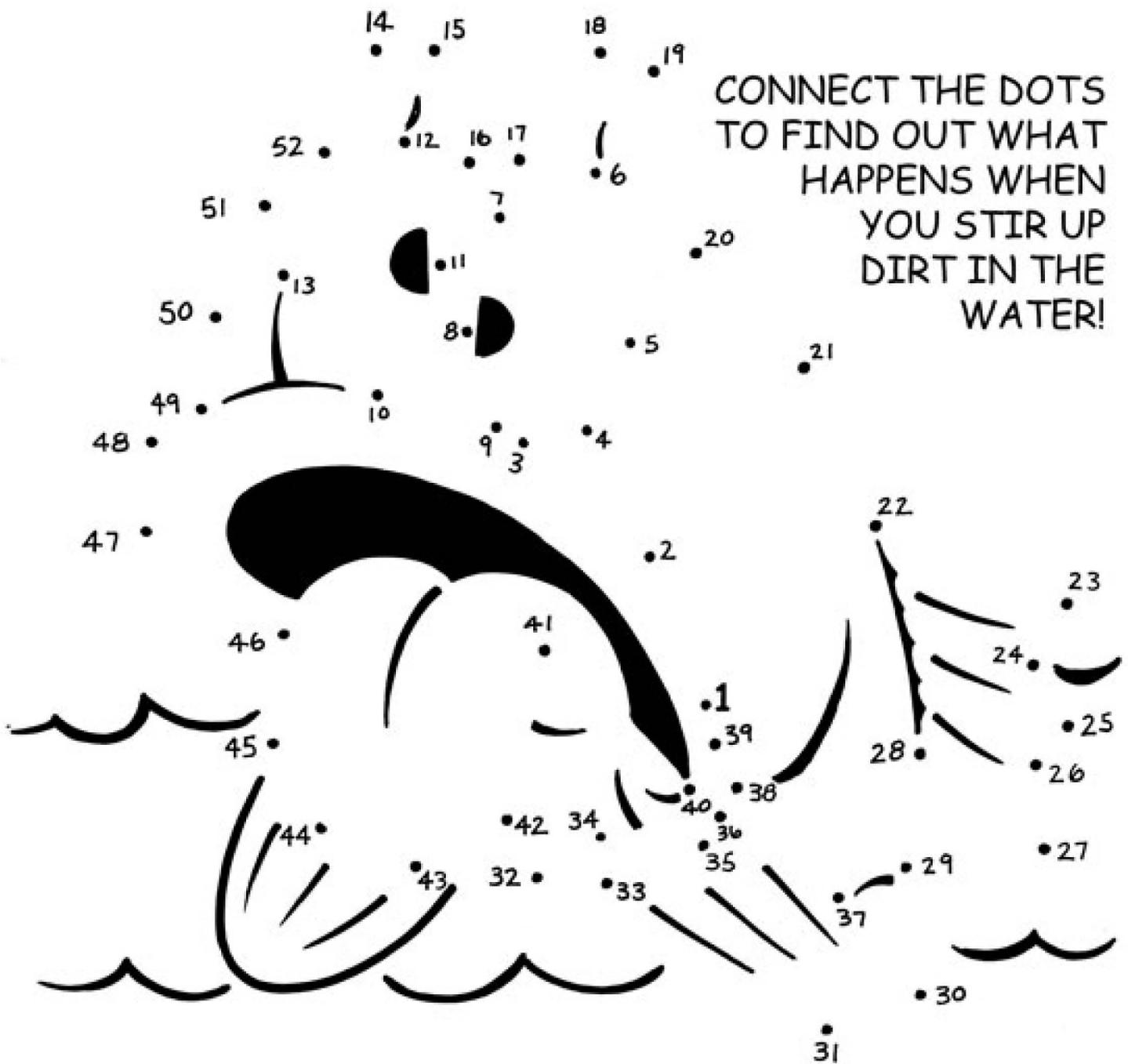
NO!!

YES!



ACTION: Pick up after your pet! Your pet's poop can contain bacteria and viruses which could spread to other wildlife. Animals should not poop in or near creeks or other bodies of water. Their poop contributes to algae growth, which uses up oxygen in the water that fish need to survive.

Dirt is a natural part of a creekbed; however, when dirt is disturbed, tiny dirt particles can muddy the water. This can clog the gills of fish, making it difficult for them to breathe.



HERE'S WHAT YOU CAN DO:

1. If you're walking your dog near a creek, stay out of the water to avoid stirring up dirt and disturbing habitat.
2. Avoid walking in deep pools where fish take refuge during the summer.
3. When hiking or biking, stay on the marked trails. This helps prevent erosion and protects our native plants from being trampled.

WHAT'S WRONG WITH THIS PICTURE?

Never dump clippings and leaves from your yard into creek banks or into the creek. Although organic, this material can pile up and kill native creek vegetation which protects the bank from erosion. Instead, compost your yard clippings away from the creek. If your garbage company offers green waste recycling, ask your parents to participate.



To see how many mistakes you correctly identified, refer to the inside back cover.



MAKE A PROMISE, MAKE A DIFFERENCE!

Draw a picture of an activity you can do to keep water clean. Make a promise to do it and help protect animals from pollution. Write your promise below.

I promise to _____

I can make a difference in my home, school, and community by keeping my promise above.

NAME _____ DATE _____

Cut and hang to remind you to keep our creeks, lake, and the river clean.

BACK OF

**"MAKE A PROMISE--
MAKE A DIFFERENCE"**

TEAR-OUT PAGE

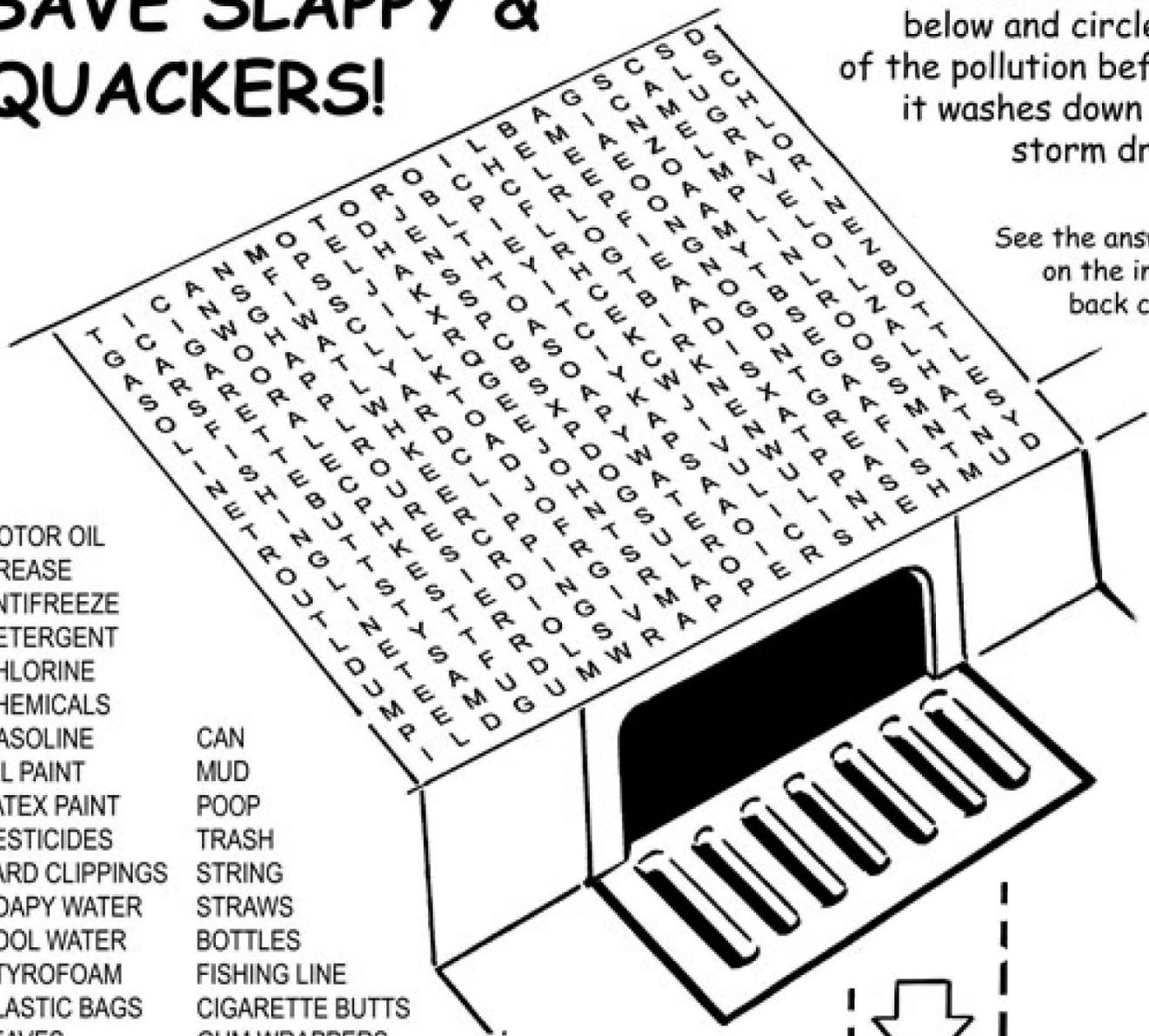
SAVE SLAPPY & QUACKERS!

Look at the list below and circle all of the pollution before it washes down the storm drain.

See the answers on the inside back cover

- MOTOR OIL
- GREASE
- ANTIFREEZE
- DETERGENT
- CHLORINE
- CHEMICALS
- GASOLINE
- OIL PAINT
- LATEX PAINT
- PESTICIDES
- YARD CLIPPINGS
- SOAPY WATER
- POOL WATER
- STYROFOAM
- PLASTIC BAGS
- LEAVES
- DIRT

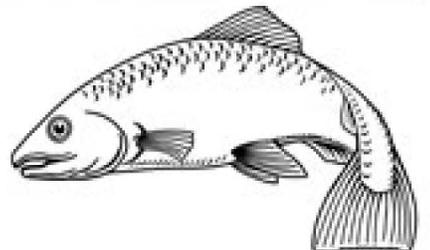
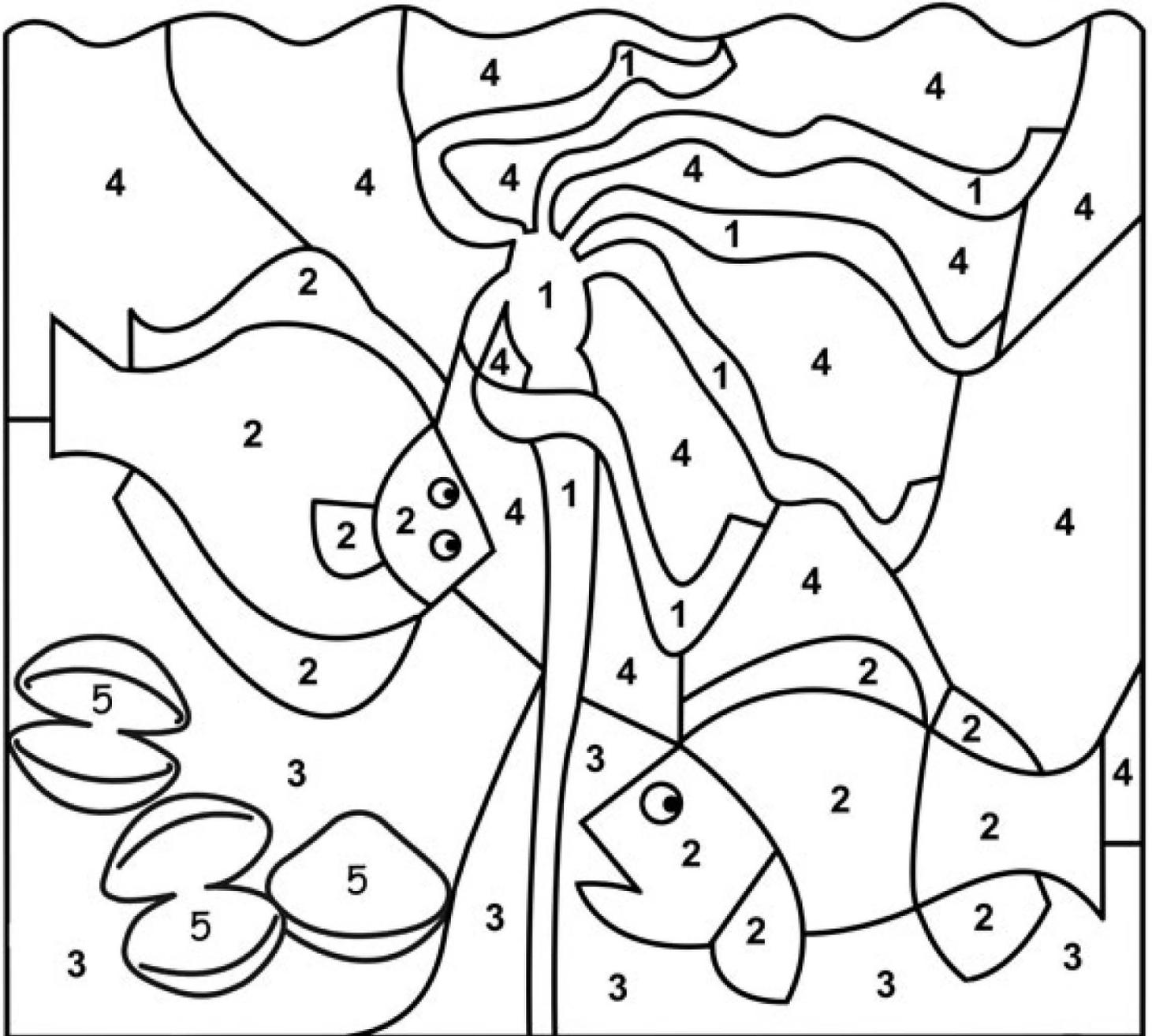
- CAN
- MUD
- POOP
- TRASH
- STRING
- STRAWS
- BOTTLES
- FISHING LINE
- CIGARETTE BUTTS
- GUM WRAPPERS
- SIX PACK RINGS



WHAT NEEDS CLEAN WATER?

Look at the color for each number. Color the numbers in the picture. See what needs clean water.

1 Green 2 Orange 3 Brown 4 Blue 5 Gray

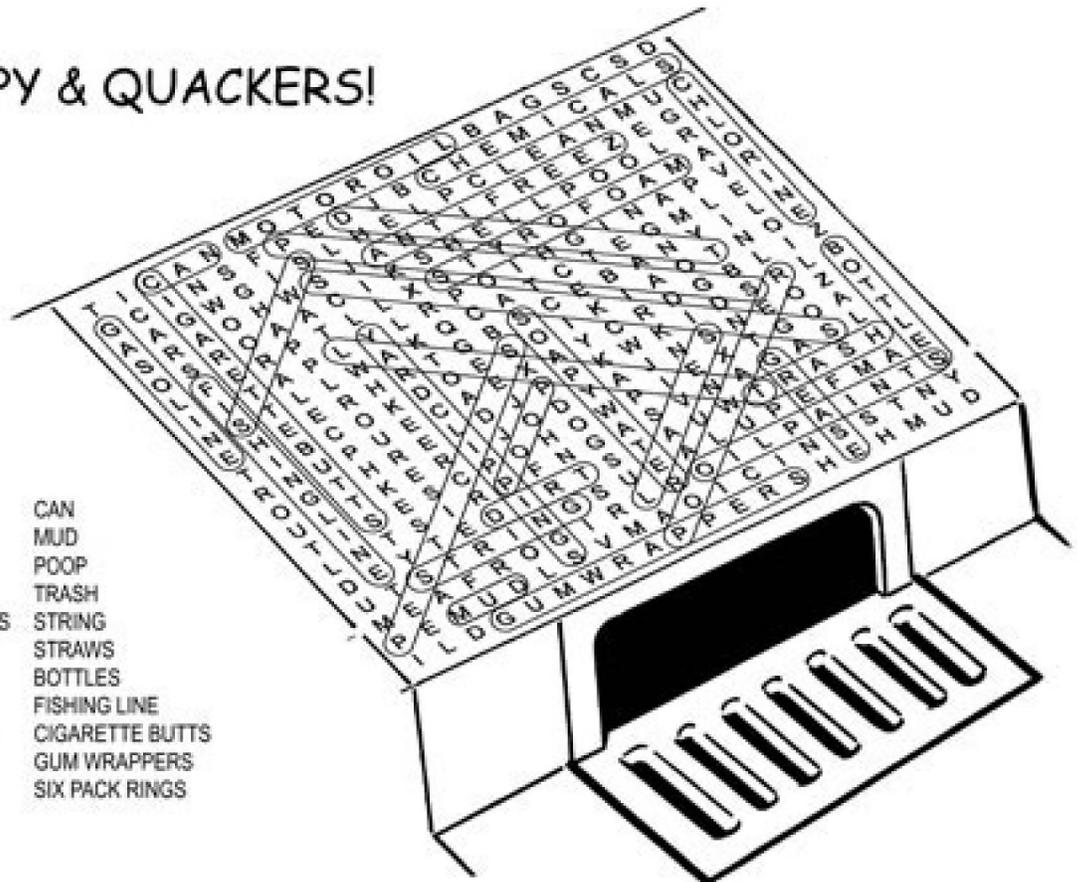


Answers to: WHAT'S WRONG WITH THIS PICTURE?

- Several trees that lined the creek bank and provided shade have been chopped down. Since fish need cool water to live and spawn, the creek no longer provides suitable habitat.
- Someone is chopping tree limbs and letting them fall in the creek. They can be washed downstream and block the flow of water.
- Someone is tossing a stick for his dog and letting the dog run through the creek. This stirs up the creek bottom and muddies the water, making it difficult for fish to breathe. Sediment from the bottom of the creek could settle over fish eggs, smothering them. If you or your animal run through the creek, you could be destroying the eggs.
- The woman is applying a pesticide close to the creek. The spray can be washed into the creek where it can pollute the water and kill aquatic insects.
- Someone piled a bunch of leaves on the creek bank and they are falling into the creek. This can affect the oxygen level of the creek and kill fish and other aquatic life. (Leaves and other organic waste give off nitrogen as they decompose. The more nitrogen in the water, the less oxygen there is for the fish and aquatic life.)
- The man is cutting his lawn and the clippings are going into the creek. Decomposing lawn clippings have the same effect on the water as decomposing leaves.
- A bundle of woody debris has lodged under the bridge--potentially blocking the flow of the creek and causing a flood. However, woody debris isn't always a bad thing. For example, when a tree falls in a creek, it can provide habitat for creek critters and slow the flow of rushing water. For information on managing woody debris properly, call your local public works department.

Answers to: SAVE SLAPPY & QUACKERS!

- | | |
|----------------|-----------------|
| MOTOR OIL | CAN |
| GREASE | MUD |
| ANTIFREEZE | POOP |
| DETERGENT | TRASH |
| CHLORINE | STRING |
| CHEMICALS | STRAWS |
| GASOLINE | BOTTLES |
| OIL PAINT | FISHING LINE |
| LATEX PAINT | CIGARETTE BUTTS |
| PESTICIDES | GUM WRAPPERS |
| YARD CLIPPINGS | SIX PACK RINGS |
| SOAPY WATER | |
| POOL WATER | |
| STYROFOAM | |
| PLASTIC BAGS | |
| LEAVES | |
| DIRT | |





ACTION: Don't release balloons into the environment and do toss your plastic lunch bags into the trash (You can save and re-use them).

Why: Balloons and plastic bags can wash hundreds of miles downstream. Deflated balloons and bags are mistaken for food by some animals (e.g. turtles and fish) that end up starving because the plastic interferes with their digestive systems.

ACTION: Cut up 6-pack rings, always properly dispose of trash, and remember to recycle.

Why: Wildlife can become injured in plastic debris, including 6-pack rings, fishing lines, water bottles and Styrofoam.

Action: Pick up pet waste. Ask your parents to take their car to the car wash.

Why: Dirty water can contaminate a creek or river and be harmful to fish and other aquatic life.

Action: Prevent erosion by staying on marked trails when hiking or biking.

Why: Erosion can create loose dirt in creeks. The dirt clouds the water and makes it difficult for fish to breathe. Erosion can also cause the creek & river banks to crumble into the water.

Action: Learn the difference between good bugs and pests.

Why: Not all bugs are bad. Bugs such as spiders and ladybugs will eat house and garden pests such as ants and aphids and reduce the need to use pesticides.

All storm drains in Coffeyville lead to local creeks, LeClere Lake, and the Verdigris river where wildlife like Slappy and Quackers live. Help keep their homes clean by putting litter in the trash where it can't enter storm drains.



stormwater@coffeyville.com
620.252.6019