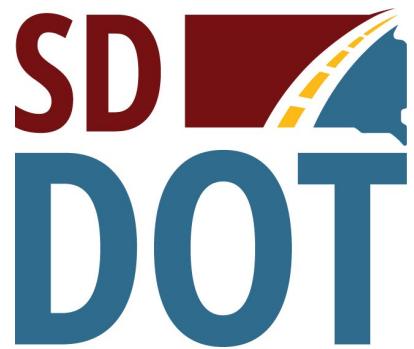


Storm Water

Activity Book



South Dakota Department of Transportation

Storm Water Activity Book

An activity guide for storm water education

This book belongs to:

Acknowledgements

The Storm Water Activity Book was created by
the South Dakota Department of Transportation Environmental Office.

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STORM WATER

WHAT IS STORM WATER?

Storm water is water that falls from the sky in the form of rain, sleet, or snow in the process called precipitation. Both wet and dry climates have storm water.

When rain falls or when the snow melts, where do you think the water goes? Does it soak into the ground? Does it sit in puddles until it disappears?

Much of the rainfall and snow melt seeps into the ground and becomes groundwater that fills in **permeable** spaces in soil and rocks. As water flows into the ground, the soil can act as a filter that catches and holds onto most anything that the rain water brought with it. Plants and trees can even capture the nutrients that the water brings along.

If the rain falls onto frozen ground or **impervious surfaces**, such as paved streets, parking lots, and building rooftops, the water does not soak into the ground creating storm water **runoff**. Storm water runoff picks up chemicals, dirt, and other **pollutants** that travel above ground until it flows into a lake, river or other body of water. Since storm water runoff has no opportunity to deposit whatever it grabbed along the way, it deposits those pollutants into the water body, where it can begin to have negative effects on the environment.

While sometimes storm water runoff runs directly into a body of water, other times the runoff is channeled into a man-made storm water pond. These ponds remove the pollutants from the water so the water can be absorbed back into the ground.

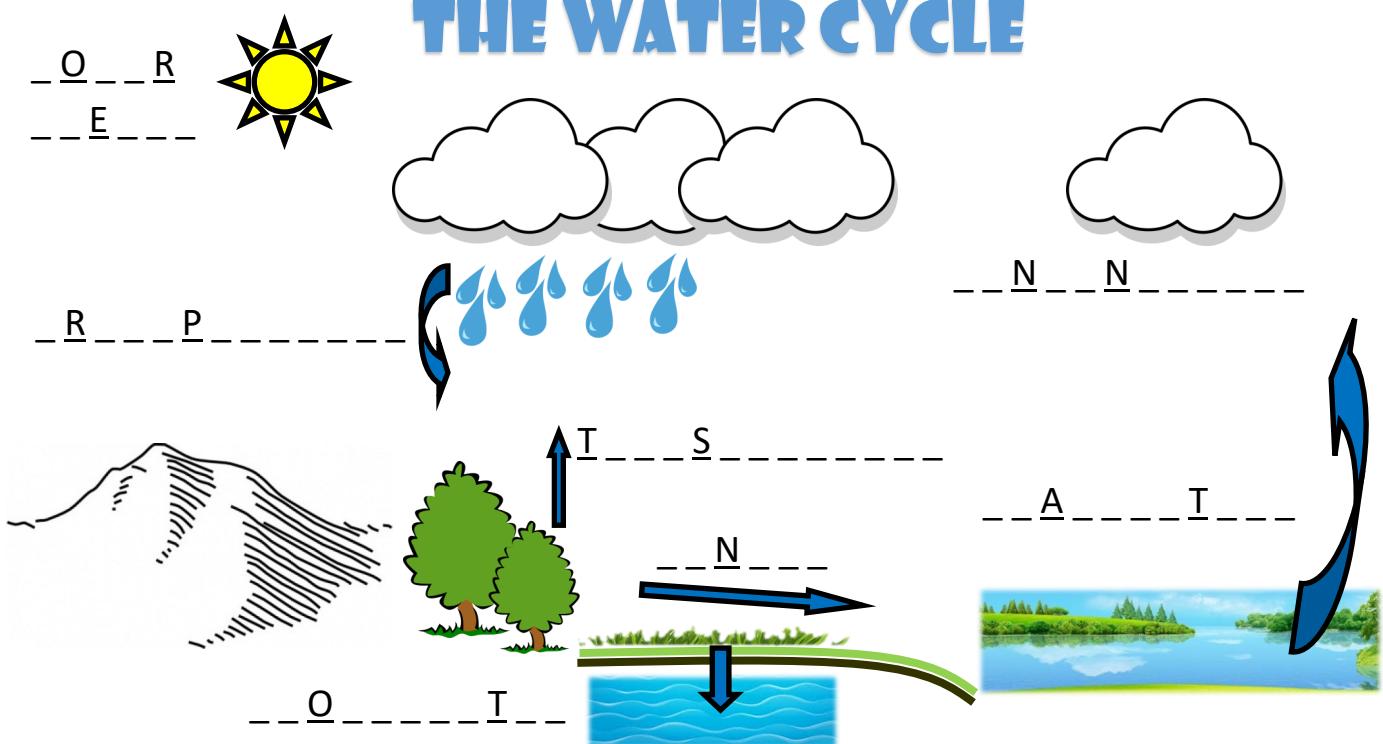
Definitions:

Impervious surfaces: surfaces that do not allow water to pass through or be absorbed

Permeable: having small spaces that water can soak into

Pollutants: materials that harm the given use of the water

Runoff: water that flows over the land after precipitation



Fill in the blanks in the diagram above with the words listed below:

Evaporation: When water is heated by energy from the sun, it causes the water to turn into vapor and rise into the air.

Precipitation: The water in the clouds falls to the earth as rain or snow.

Runoff: The water falling to the ground through precipitation that runs back into the lakes, rivers, and oceans over the surface of the ground.

Transpiration: Water that plants give off as vapor.

Condensation: The process by which water vapor in the air is changed into tiny drops of water that forms clouds.

Groundwater: Water stored in the ground that comes from precipitation that infiltrates downward from the ground surface.

Solar Energy: Radiant light and heat from the sun

Did you know?

- ⇒ Only about 3% of the water on Earth is freshwater or water that we can drink.
- ⇒ Water is constantly being recycled so the water you drink today could be the same water dinosaurs drank millions of years ago.
- ⇒ About 70% of the Earth's surface is covered with water.

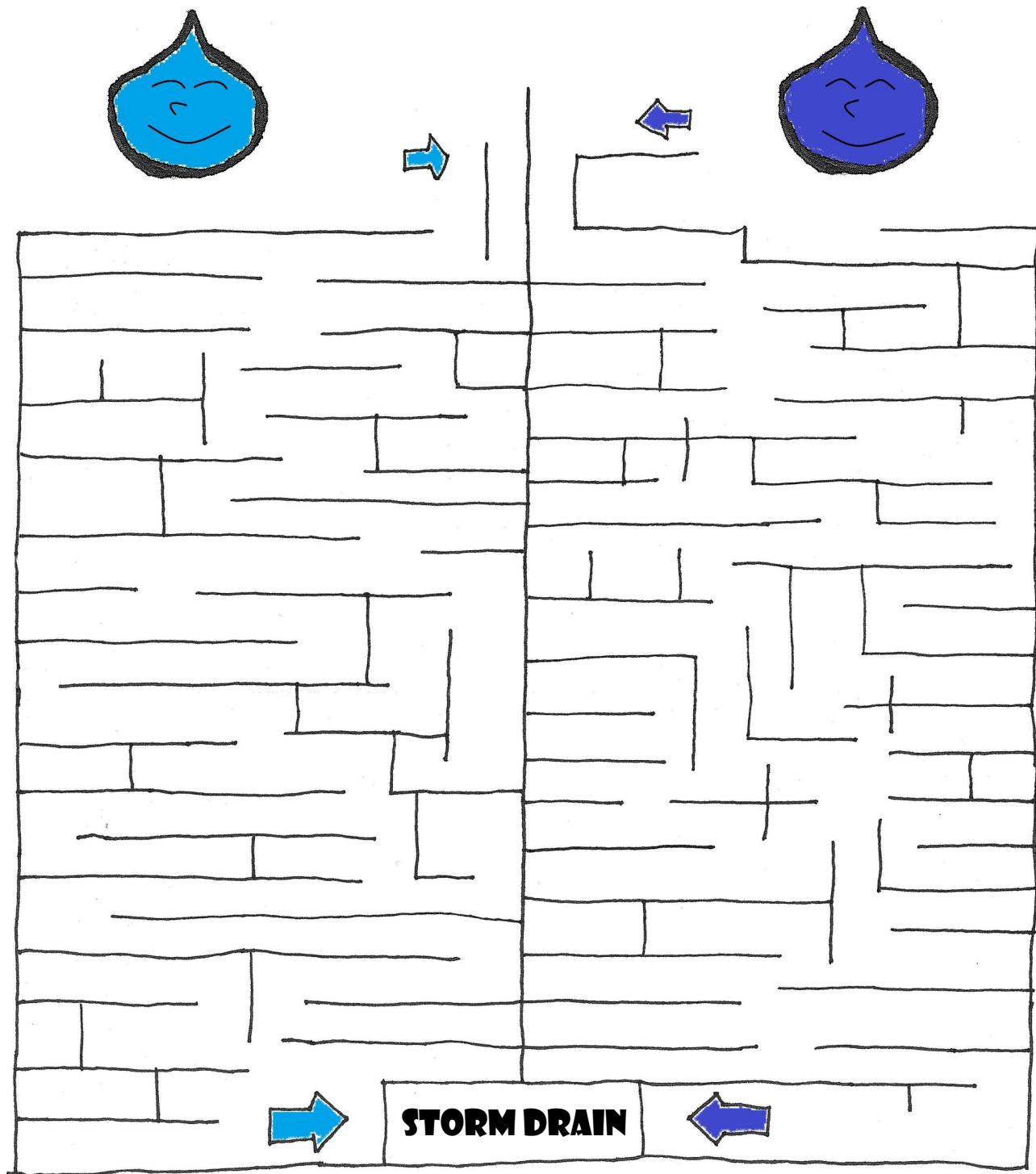


A RACE TO THE STORM DRAIN

A game for two players

Cities and towns have more storm water runoff than areas out in the country because they have more paved streets where water cannot soak into the ground.

Race to see which raindrop reaches the storm drain first!



STORM WATER POLLUTION

WORD SEARCH

F C L M A V S X D W Q E L Q C
P L A A O P X K P Q K D R B C
E A A R W T Q V Q K Q M E O L
T W N L W N O J E G F Y J I Y
W N T I L A C R Z C C H F G K
A F I T G V S L O Q Q P P A Z
S E F T A F D H I I M E T R C
T R R E S R I D S P L X S B U
E T E R O T R P B O P E C A Y
R I E T L R T A Z Q A I N G E
K L Z X I A C I O X W P N E V
J I E F N S Q N D M N E H G E
Z Z W T E H P T H L V G I N S
G E I X Z Z C A Q G V E K V E
M R M E Y D L O T I D E N I A

Lawn Fertilizer

Lawn Clippings

Car Wash Soap

Antifreeze

Motor Oil

Gasoline

Pet Waste

Trash

Litter

Garbage

Paint

Dirt

ENVIRONMENTAL IMPACTS FROM STORM WATER POLLUTION

- ⇒ Antifreeze and motor oil can harm pets, wildlife and plant life. A little bit can pollute surface water and ground water.
- ⇒ Construction sites can discharge sediment into streams harming fish and water quality.
- ⇒ Lawn fertilizer and grass clippings can cause algae and aquatic weeds to grow in lakes and streams.
- ⇒ Litter and pet waste can carry bacteria into local waterways.
- ⇒ These pollutants can also reduce the quality of recreational activities like fishing and swimming.

WHAT CAN YOU DO TO HELP PREVENT STORM WATER POLLUTION?

Sweep dirt onto your lawn instead of hosing off the driveway.

Recycle used motor oil.

Take left over paint and chemicals to your local household hazardous waste facility.

LEAVE GRASS CLIPPINGS ON THE LAWN.

Reduce use of fertilizer, sweep up and dispose of excess.

Wash vehicles on vegetated areas.

Pick up pet waste and litter, put in the trash.

BE A STORM WATER HERO!

Below are some tips to help prevent Storm Water Pollution

Shopping Smart

Buy products with the least amount of packaging. This helps by reducing water pollution from manufacturing and trash disposal problems. Bring reusable bags with you when you go grocery shopping in order to avoid using plastic bags.

Recycle!

Recycling is the process of collecting and processing materials that would otherwise be thrown away as trash and turning them into new products. Find out what is recyclable in your community. Buy products in recyclable containers or products made from recycled materials.

Don't Dump Everything Down the Drain

Be thoughtful about what you put down your household drains. You should never put the following things down the drain: paints, varnishes, pesticides, drain cleaners, motor oil and other automotive fluids, cooking oils and grease, cat litter, diapers, paper towels.

Conserve Water

As a valuable resource, water should be conserved both outdoors and indoors. We cannot make new water, so we need to conserve the water that we have available to us. Some ways in your home that you can help conserve water includes not letting the water run while you are brushing your teeth and taking shorter showers.

Getting Around

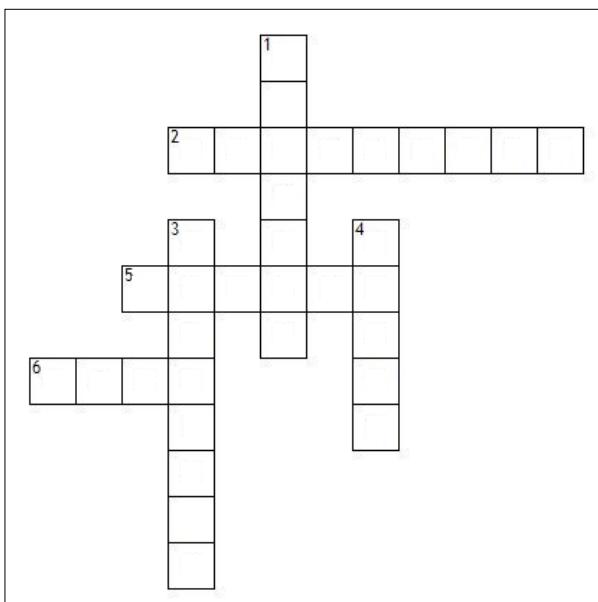
You may not think of cars as a source of water pollution, but they can be. Think of a parking lot or street. All that oil, grease, and other fluids that stain the pavement are washed into the local waterways when it rains or as snow melts. When appropriate, ask your parents to fix leaks from your car and recycle used motor oil.

Lawn Maintenance

Many people like the look of the healthy landscape around their home. Landscaping can have environmental benefits such as preventing soil erosion and filtering pollutants from runoff. The right combination of plants can even attract wildlife, butterflies, and birds. Unfortunately using too many fertilizers and pesticides on lawns and gardens can be a source of pollution. It is important to use these products at the right time and in the right amount. Make sure the products are needed and if so, use them according to the label directions.

Place your sprinklers so that the water lands only on the lawn and not on the driveway or sidewalk. It is best to water your lawn or garden during the cooler times of the day and not on windy days. The water may blow away in the wind and be wasted.

CROSSWORD PUZZLE



Across

2. Buy products with the least amount of _____ to help reduce excess trash.
5. Water your lawn only during the _____ times of the day.
6. Oil and grease from _____ can act as a source of storm water pollution.

Down

1. Common household items that you can _____ include newspapers, aluminum, plastic, and steel cans.
3. Using less water is a way to _____ water.
4. Paint is just one example of something that should not be dumped down the _____.

Certificate of Completion

Congratulations! You have now completed the South Dakota Department of Transportation Storm Water Activity Book. You are now an expert on detecting and preventing storm water pollution. Be sure to tell your parents, friends, and neighbors what you have learned. Everyone needs to help protect the water that we all need.

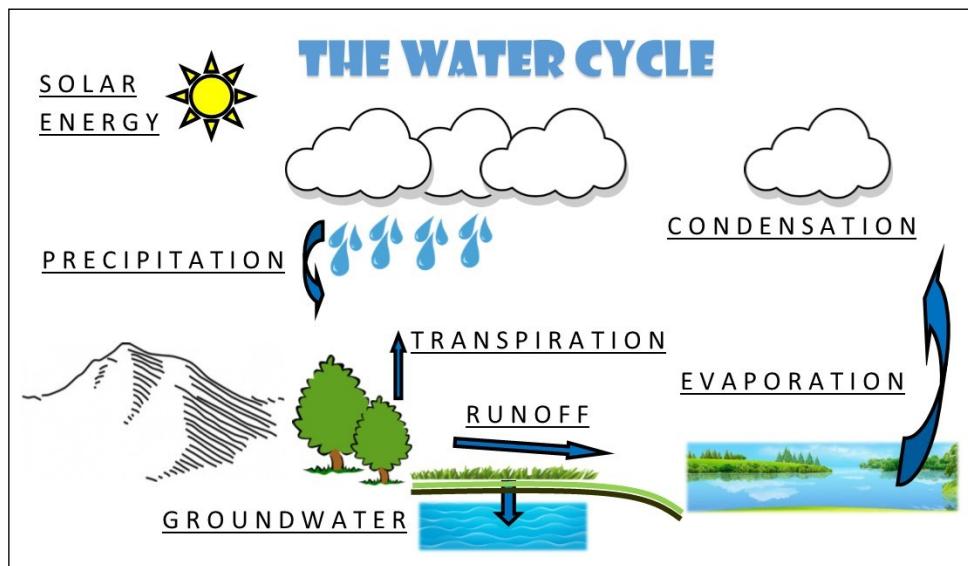
I, _____, have completed this

(Sign your name here)

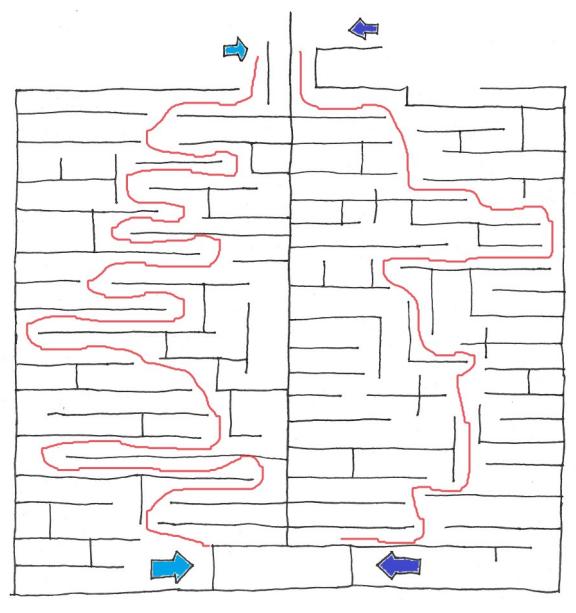
activity book and will protect the water around me by not wasting water, not dumping anything into a storm drain, and by telling people about the dangers of storm water pollution.



Answer Page



A Race to the Storm Drain

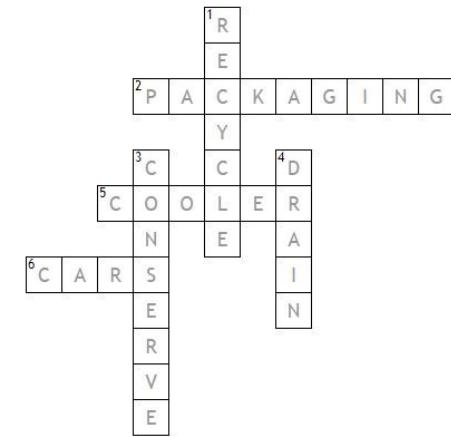


Storm Water Pollution Word Search

F	C	L	M	A	V	S	X	D	W	Q	E	L	Q	C
P	L	A	A	O	R	X	K	P	Q	K	D	R	B	C
E	A	A	R	W	T	Q	V	Q	K	Q	M	E	O	L
T	W	N	L	W	N	O	J	E	G	F	Y	J	I	Y
W	N	T	I	L	A	C	R	Z	C	C	H	F	G	K
A	F	I	T	G	V	S	L	O	O	Q	P	P	A	Z
S	E	F	T	A	F	D	H	I	M	E	T	R	C	
T	R	R	E	S	R	I	D	S	P	L	X	S	B	U
E	T	E	R	O	T	R	P	B	O	P	E	C	A	Y
R	I	E	T	L	R	T	A	Z	Q	A	I	N	G	E
K	L	Z	X	I	A	C	I	O	X	W	P	N	E	V
J	I	E	F	N	S	Q	N	D	M	N	E	H	G	E
Z	Z	W	T	E	H	P	T	H	L	V	G	I	N	S
G	E	I	X	Z	Z	C	A	Q	G	V	E	K	V	E
M	R	M	E	Y	D	L	O	T	I	D	N	I	A	

Lawn Fertilizer	Lawn Clippings	Car Wash Soap
Motor Oil	Gasoline	Pet Waste
Litter	Garbage	Paint
		Dirt

Crossword Puzzle



Across

2. Buy products with the least amount of packaging to help reduce excess trash.
5. Water your lawn only during the cooler times of the day.
6. Oil and grease from cars can act as a source of storm water pollution.

Down

1. Common household items that you can recycle include newspapers, aluminum, plastic, and steel cans.
3. Using less water is a way to conserve water.
4. Paint is just one example of something that should not be dumped down the drain.