

# Hi

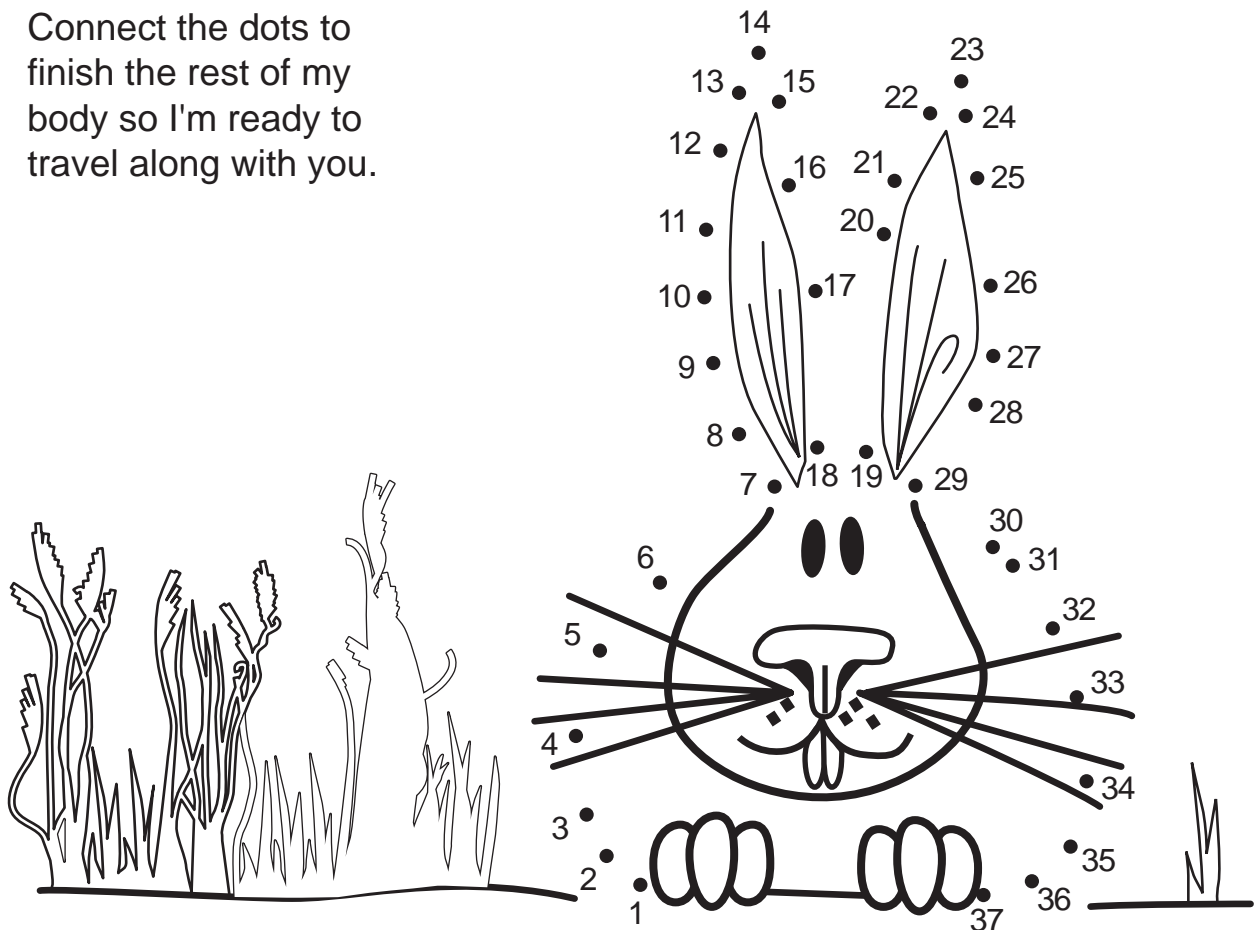
My name is Dust E. Bunny. I dig dirt. You know, the stuff humans call "soil". I live in a watershed in Montana, and my home just wouldn't be the same without soil.

A watershed is an area in which all the water flows into one larger body of water, such as a river or lake. When the water gets to the river or lake it needs to be clean for fish to live in and for farmers and ranchers to irrigate with. A watershed needs plenty of healthy vegetation, not just for me to eat, but also to keep the soil from eroding and making the water dirty.

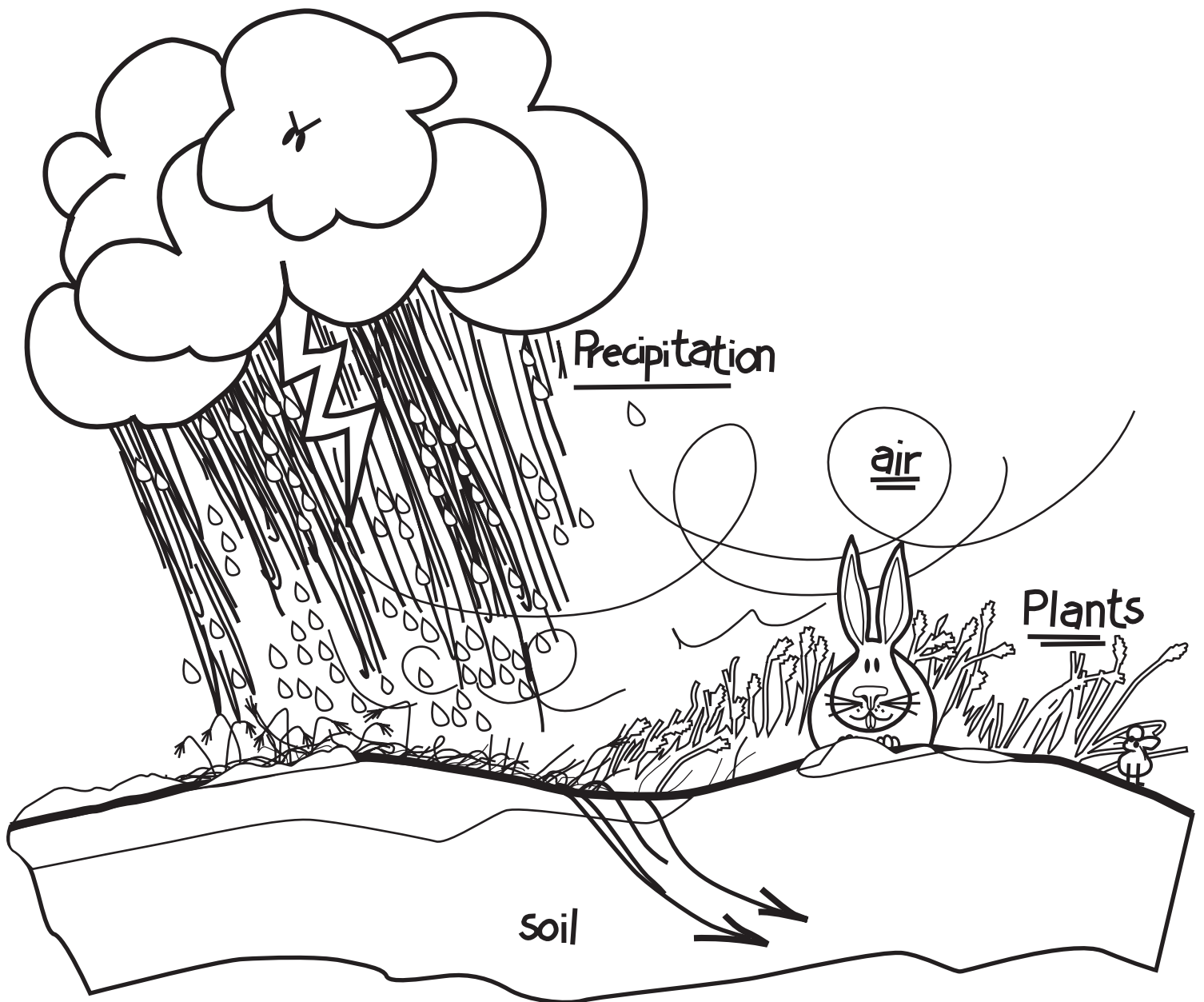
This activity book will explain what is needed to make a watershed healthy, how plants grow, and ways to keep the soil from eroding. Hop along with me and let's learn more about watersheds, plants, and soil. I'll be on every page of this activity book.

Can you find me?

Connect the dots to finish the rest of my body so I'm ready to travel along with you.

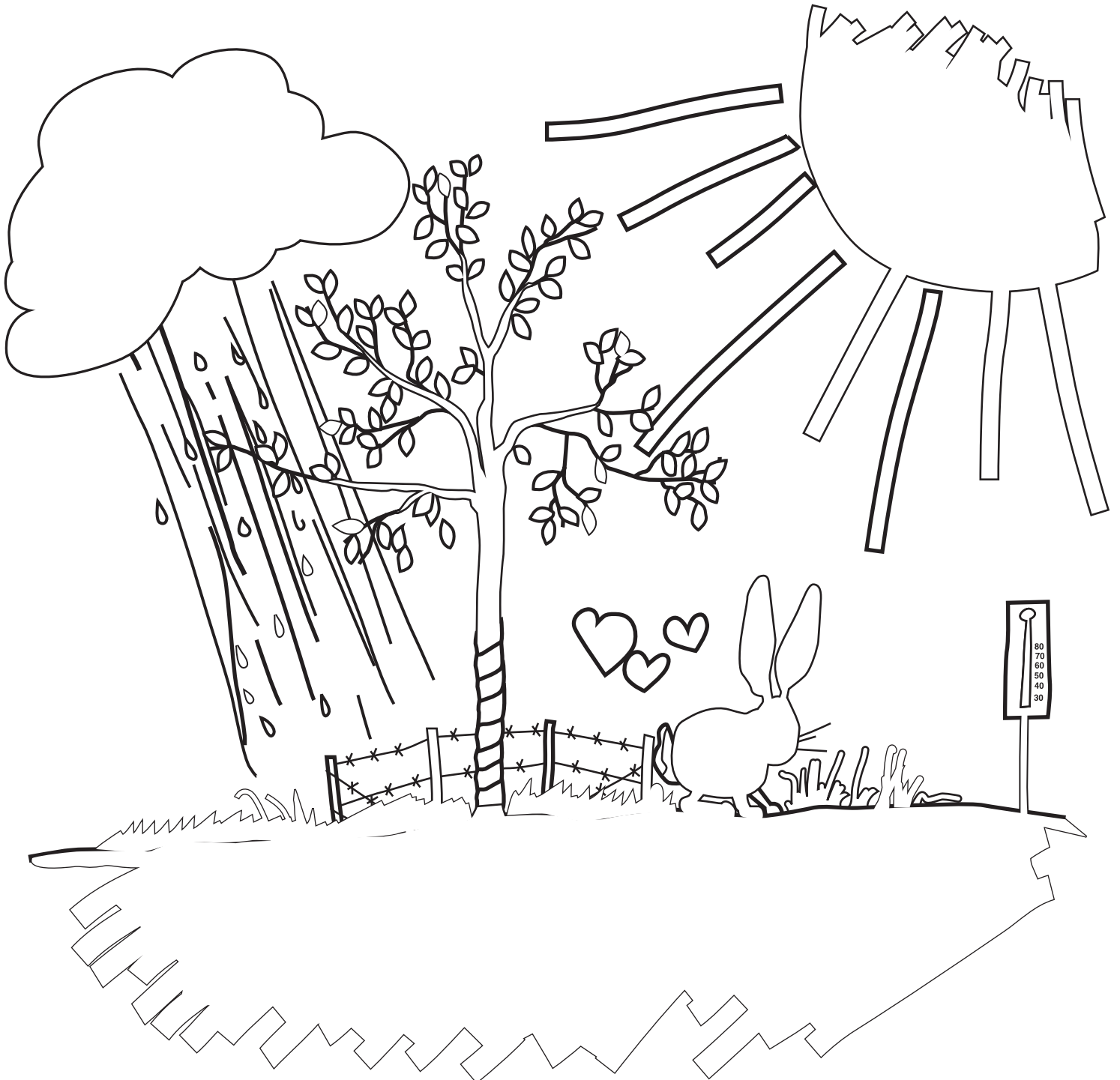


# Watershed components



# watershed component: plants

What is needed to make plants  
**GROW** ??



# Plants need:

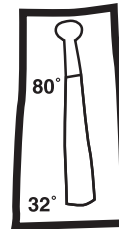
1. Soil

2. water

3. air

4. light

5. temperature



6.

7. organic matter



8. nutrients

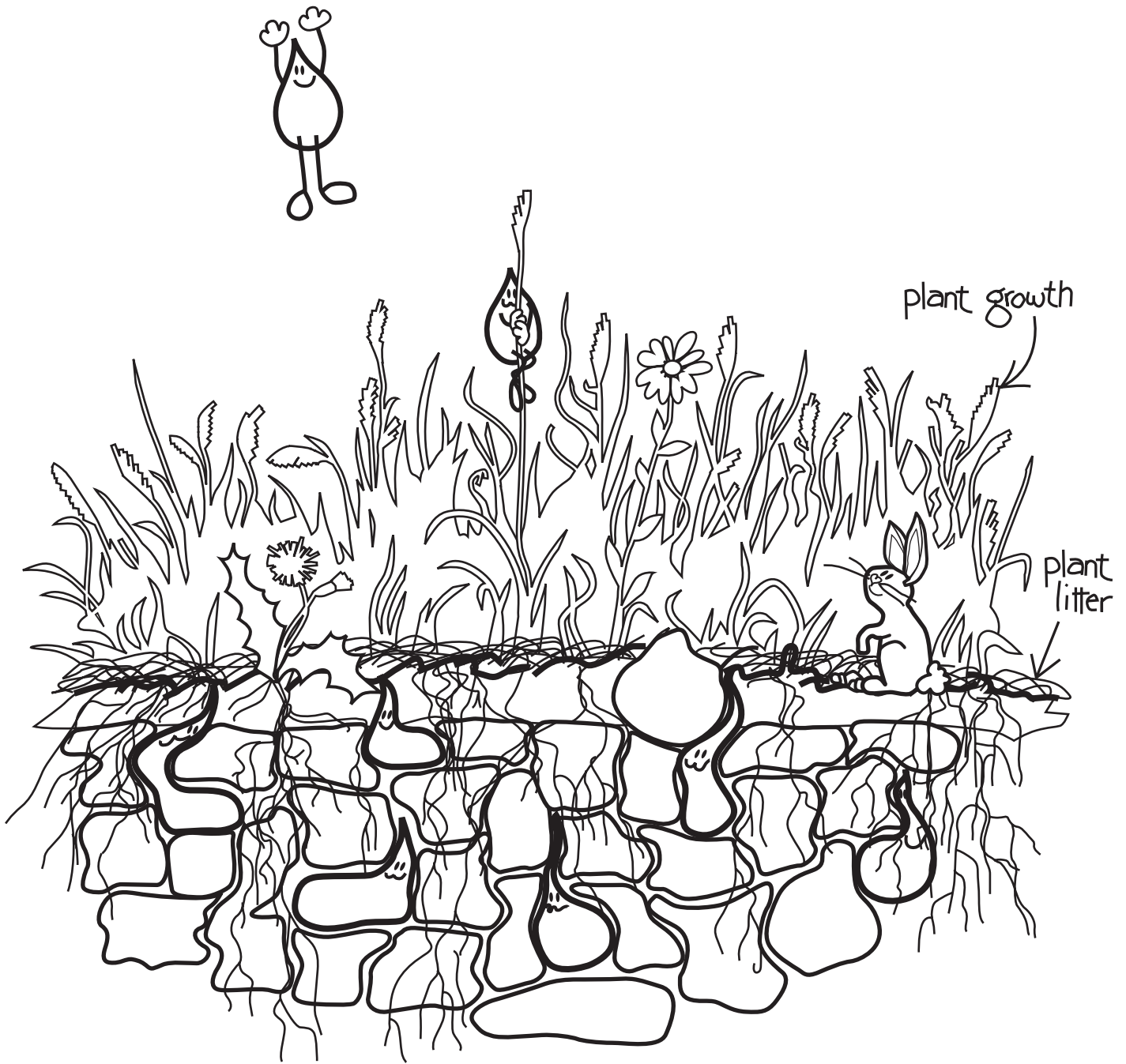
9. care





# The effect of Plants on watershed stability





ground cover is needed for:

rainfall interception  
good infiltration  
erosion control

water Quality  
grazing  
Wildlife Habitat

reduced ground cover, from overgrazing, insect damage and/or drought, results in increased runoff & reduced available soil water.



reduced plant growth & plant litter  
increases wind & water erosion

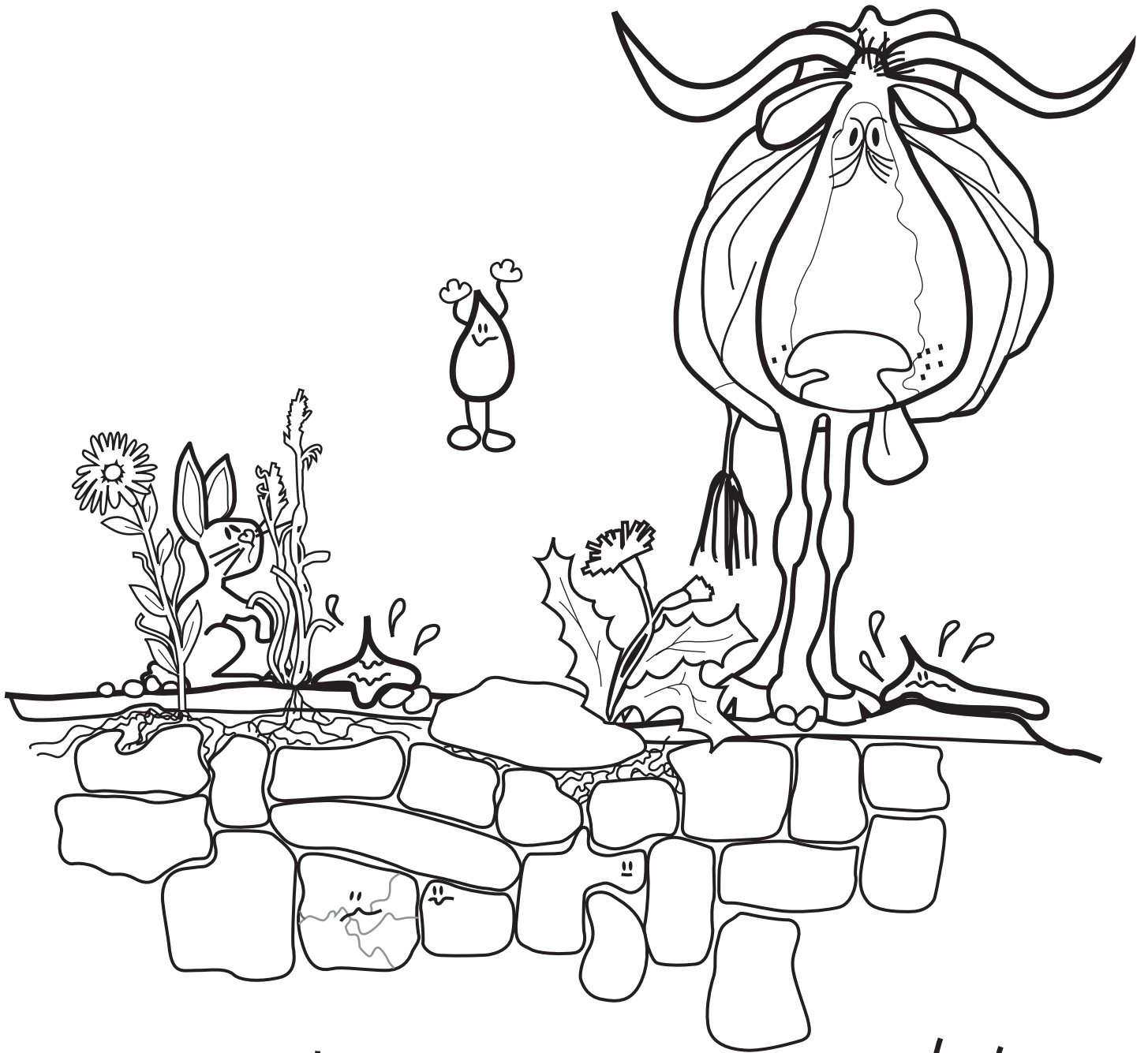




erosion reduces  
water quality and  
Soil Productivity by  
increasing sediment  
problems and by carrying  
away plant nutrients

STREAM

nutrient



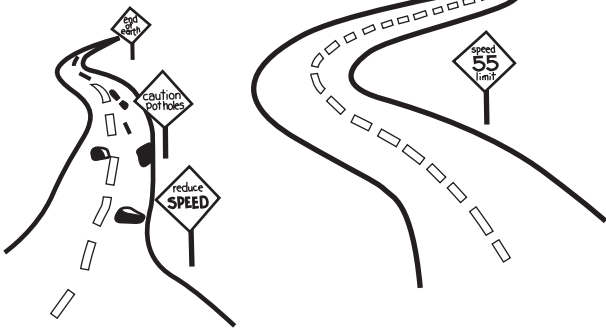
... and results in less vegetation  
for livestock, wildlife and  
watershed stabilization

# Watershed component: soil

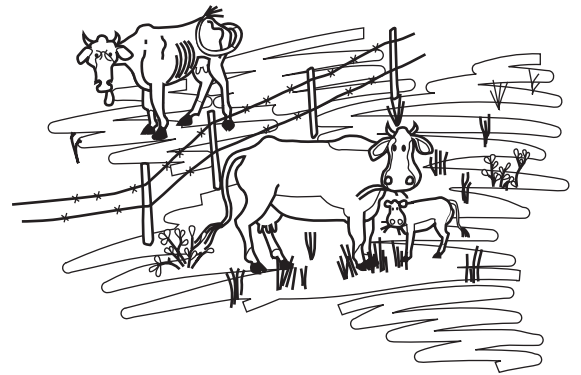
**Soil** characteristics  
& climate vary.

So do Land Use opportunities!!

## Roads



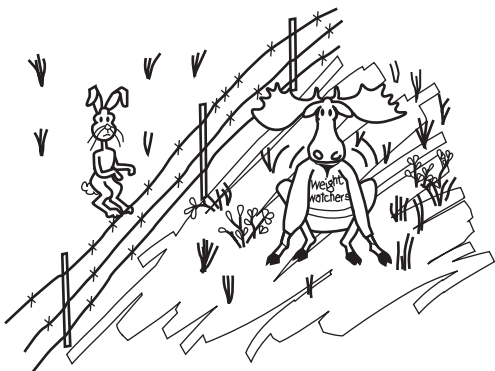
## Livestock



## Farming



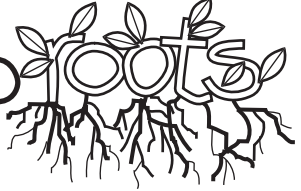






## Wildlife



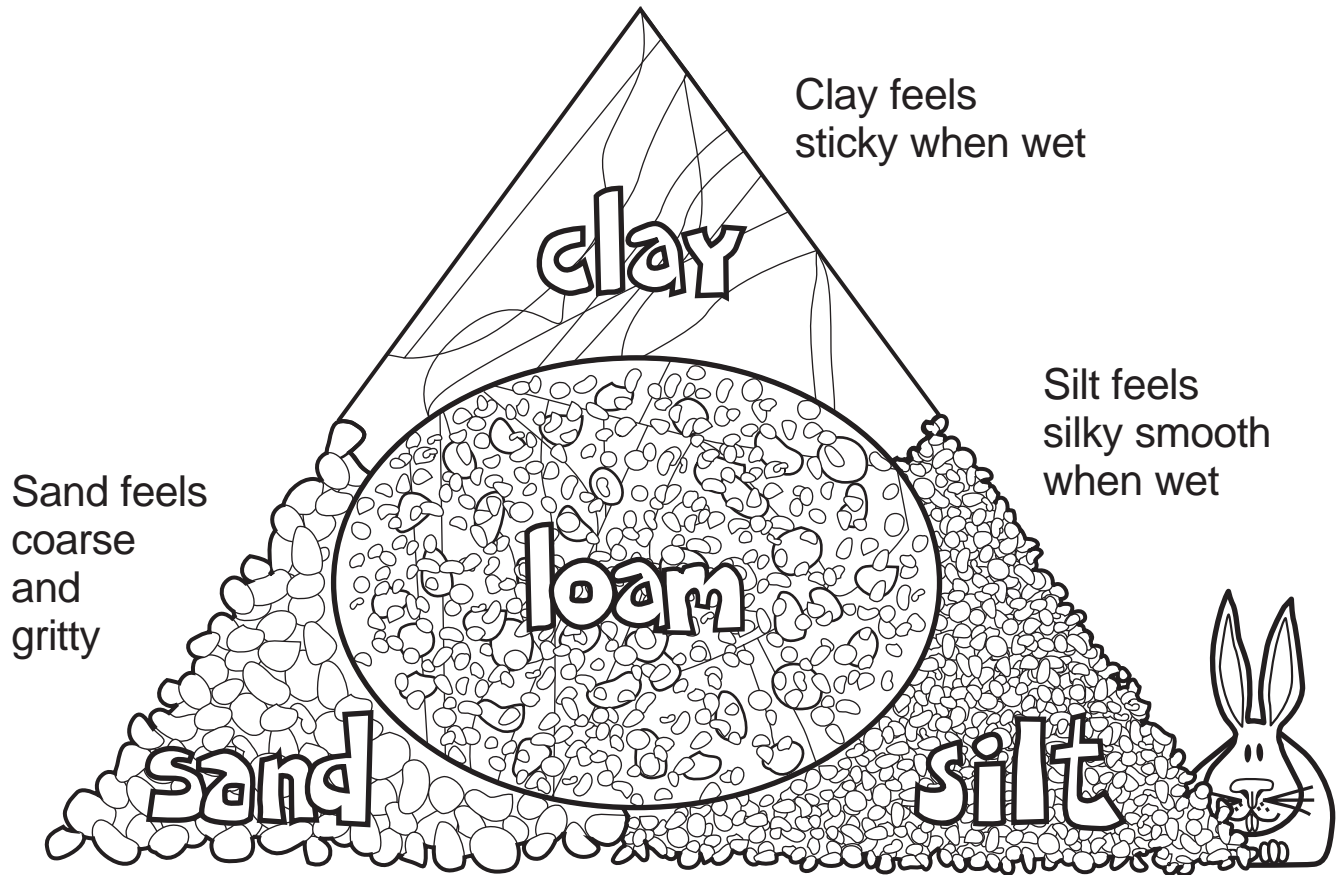
## Homes



# Soil Factors

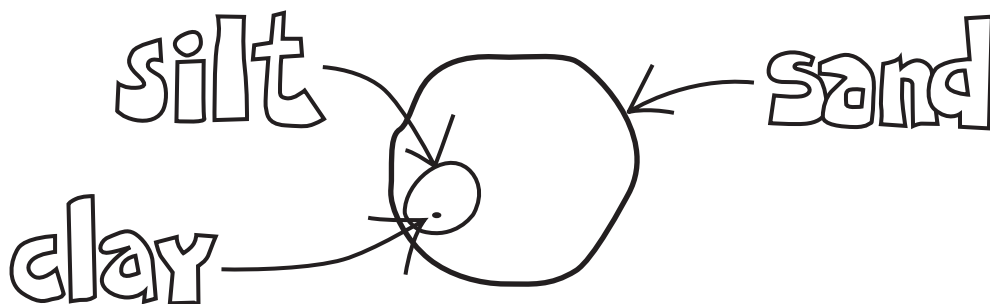
1. Natural soil drainage & overflow conditions
2. Soil depth favorable to roots 
3. Texture 
4. Structure 
5. Permeability 
6. Good stones & other rock fragments 
7. Slope & shape of land 
8. Salinity or sodium problems 
9. Strongly Calcareous  
(which means it has lime in it)

# Soil Textures



Loam is a combination of sand, silt, and clay.

Relative size of sand, silt, and clay particles:





# Plants

need all kinds of things to grow and be healthy. Fill in the blanks with words from the list below to continue learning about what makes plants healthy.

1. \_\_\_\_\_ falls from the sky and helps plants grow.
2. Your lawn grass needs \_\_\_\_\_ to hold the roots.
3. There are four basic soil textures, one of them is \_\_\_\_\_.
4. The soil texture with the largest particle size is \_\_\_\_\_.
5. Name one kind of soil erosion \_\_\_\_\_.
6. \_\_\_\_\_ help reduce soil erosion into streams.
7. Three-fourths of the earth is covered by \_\_\_\_\_.
8. \_\_\_\_\_ is a home for wildlife.
9. Protection of our natural resources is called \_\_\_\_\_.
10. Plants need \_\_\_\_\_ to make their leaves green.
11. The water \_\_\_\_\_ is nature's way of recycling water.

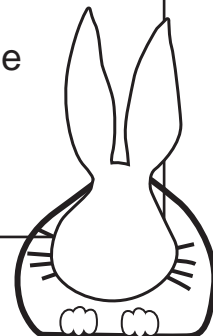
## Word List

rain  
sheet  
clay

buffers  
sand  
water

topsoil  
habitat  
conservation

sunshine  
cycle



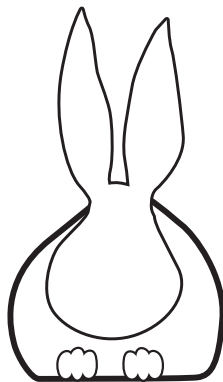
**Many** things are needed to make a watershed healthy.  
Find the following words which help describe a healthy watershed.  
(Hint: some words may be spelled backwards.)

Plants  
Grow  
Watershed  
Soil  
Water

Air  
Light  
Temperature  
Nutrients  
Climate

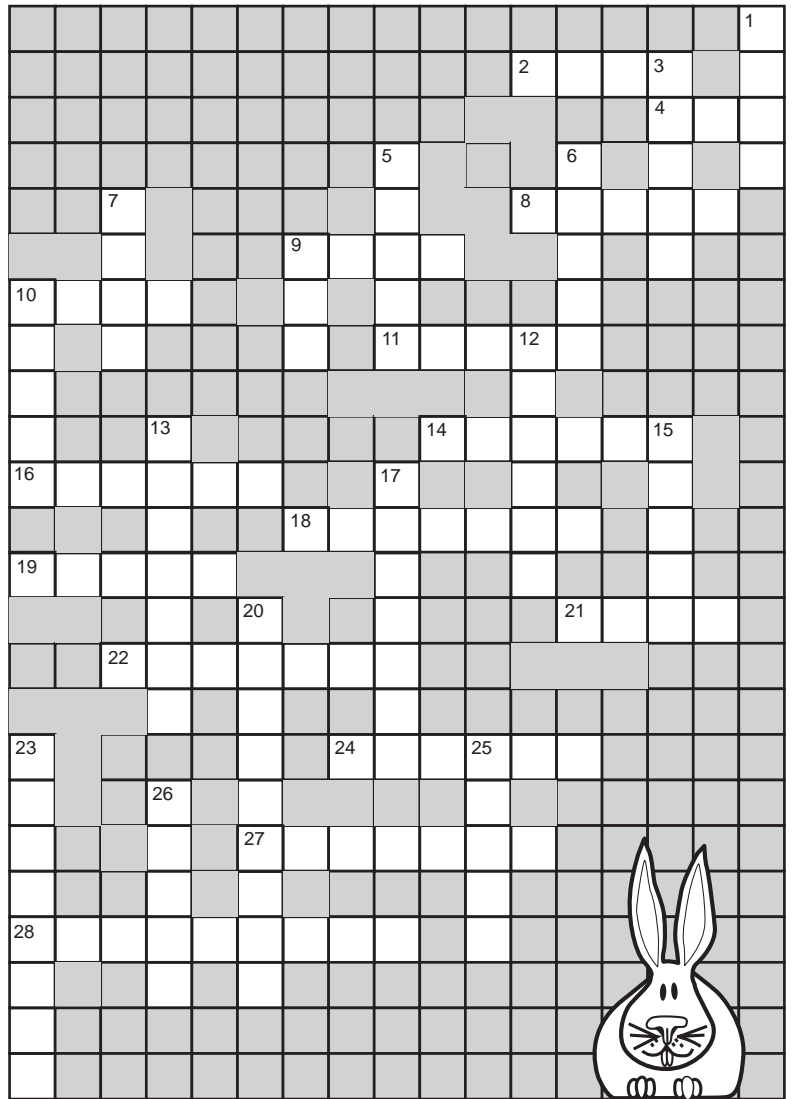
Rainfall  
Erosion  
Wildlife  
Livestock

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



## Across

2. Nutrients, organic matter, and temperature are some more things that help plants \_\_\_\_.
4. Wind, or moving \_\_\_\_, can cause soil erosion.
8. Forests are full of \_\_\_\_.
9. Soil is also called \_\_\_\_.
10. \_\_\_\_, sleet, and snow are all forms of precipitation.
11. A \_\_\_\_ or hillside, would be a great place for sledding in the winter.
14. Organic matter can be sticks, \_\_\_\_, or mulch on the soil surface.
16. A small body of water that flows and meanders is called a \_\_\_\_.
18. Erosion reduces water \_\_\_\_.
19. \_\_\_\_ are the part of the plant that helps it to get water and nutrients from the soil.
21. An animal that lives in the water, such as a trout, is a \_\_\_\_.
22. Lack of moisture and severe heat cause a \_\_\_\_.
24. Clay is a type of soil that can be very \_\_\_\_ when wet, and very hard when dry.
27. When soil is blown or washed away, it is called \_\_\_\_.
28. Agriculture is the process of growing crops and \_\_\_\_ to provide food and other products for the world.



## Down

1. A \_\_\_\_, or burning, is one way to manage vegetation.
3. When \_\_\_\_ infiltrates soil, it moves through the soil where it can be taken up by plant roots.
5. Crops are grown and livestock are raised on \_\_\_\_.
6. Livestock \_\_\_\_ plants that grow in watersheds.
7. Plant roots increase \_\_\_\_ stability by binding it together.
9. Some animals, like gophers, \_\_\_\_ burrows in the soil for their homes.
10. \_\_\_\_ break down slowly over time to form soil.
12. Rain, sun, and good soil are needed for \_\_\_\_ to grow.
13. Soil \_\_\_\_ is based on the types of particles in the soil and can be determined by the feel of the soil.
15. Farmers plant \_\_\_\_ in the soil that grow into crops.
17. Wildlife's homes can also be called their \_\_\_\_.
20. Nitrogen, phosphorous, and potassium are just some of the \_\_\_\_ plants need to grow.
23. \_\_\_\_ like rabbits, elk, and frogs can all share the habitat found in a watershed.
25. Farmers grow and harvest \_\_\_\_ to feed the world.
26. Where people build \_\_\_\_ depends on soil factors such as texture, structure, and drainage.

# Complete

each blank by matching the number to the letter to figure out the message below:

|   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| A | B | C | D | E | F | G | H | I |

|    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|
| 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
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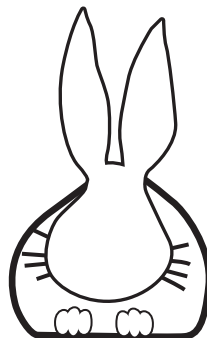
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| 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| S  | T  | U  | V  | W  | X  | Y  | Z  |

19   15   9   12   9   19   20   8   5

6   15   21   14   4   1   20   9   15   14

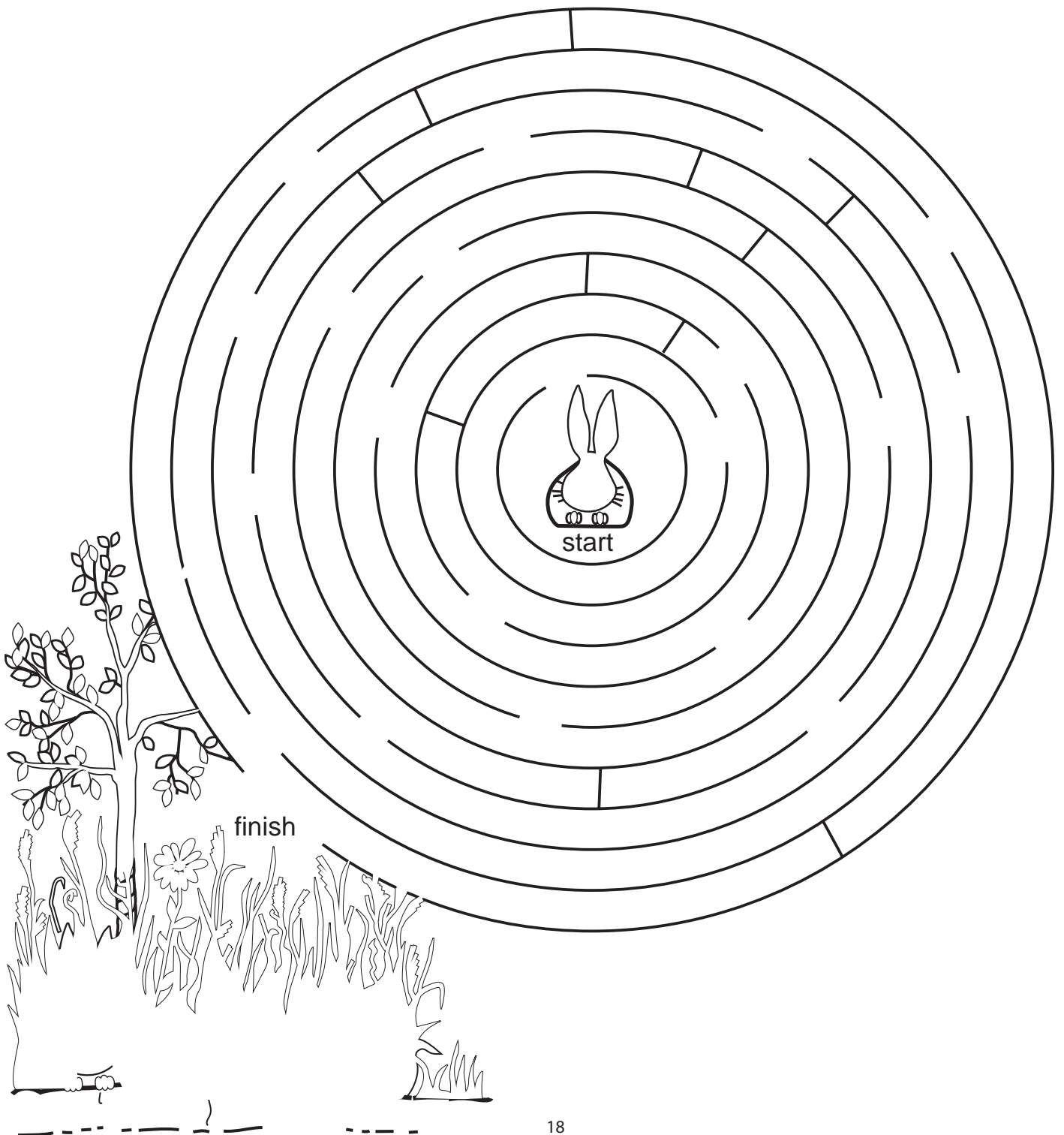
15   6   1   12   12   12   9   6   5

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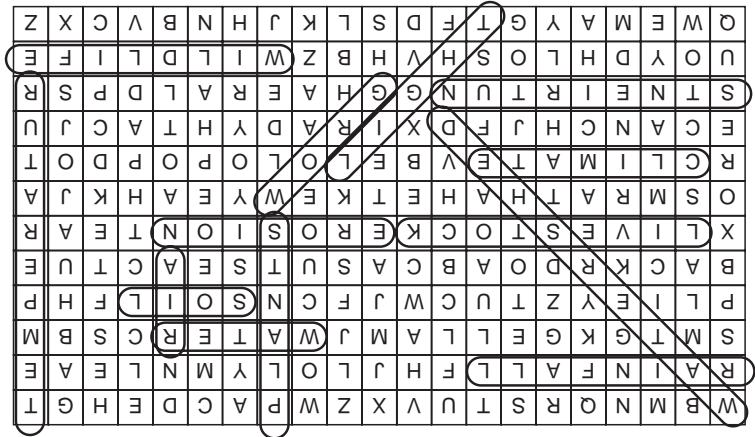
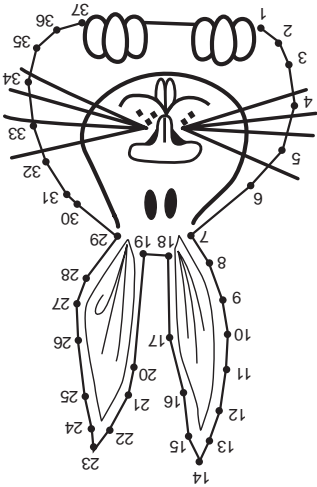
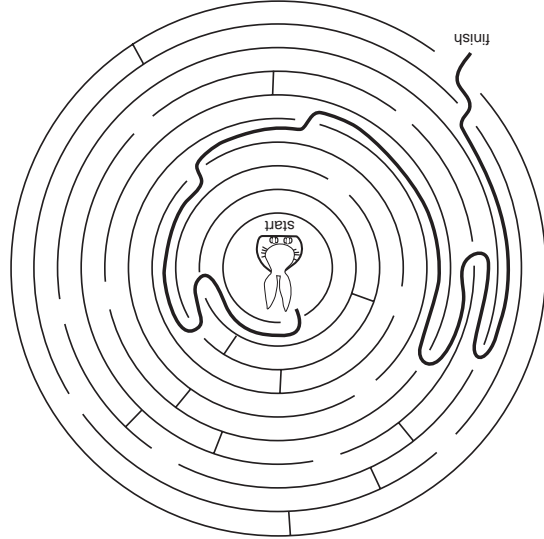
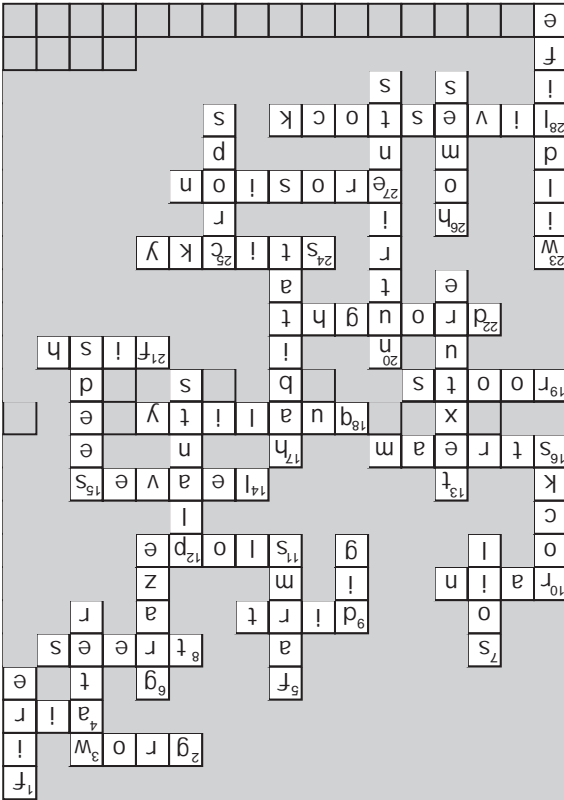
**We** have learned a lot throughout this activity book about how conserving our natural resources makes a healthy watershed and makes my home in Montana a great place to live.

Help me make my way through this maze to my healthy watershed.



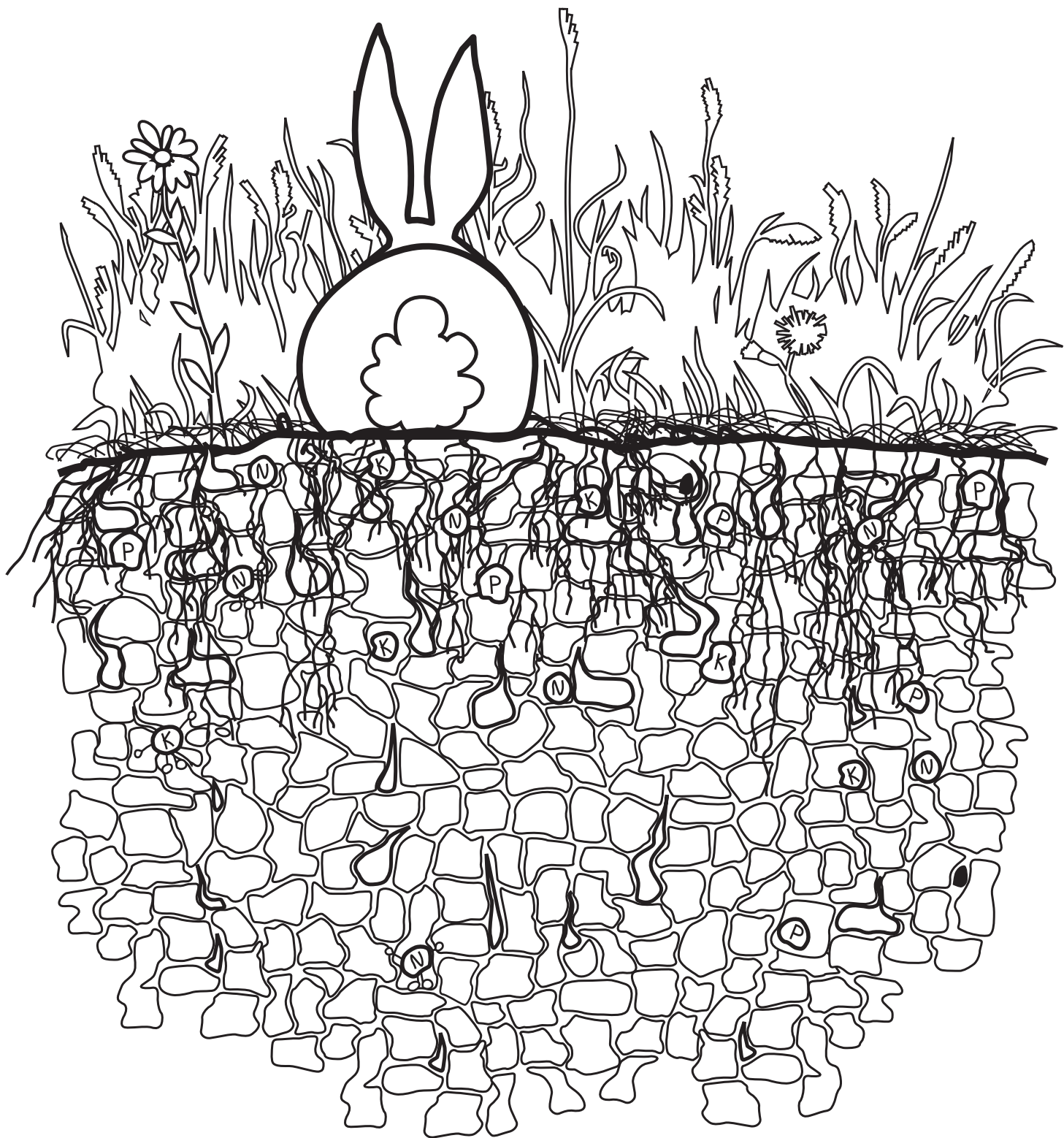


# Answer Page



|    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|
| 15 | 14 | 5  | 1  | 18 | 20 | 8  |
| O  | N  | E  | A  | R  | T  | H  |
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| O  | F  | A  | L  | L  | L  | F  |
| 6  | 15 | 21 | 14 | 4  | 1  | 14 |
| F  | O  | U  | N  | D  | A  | O  |
| 19 | 15 | 9  | 12 | 9  | 19 | 20 |
| S  | O  | I  | L  | S  | T  | H  |

1. Rain falls from the sky and helps plants grow.
2. Your lawn grass needs topsoil to hold the roots.
3. There are four basic soil textures, one of them is clay.
4. The soil texture with the largest particle size is sand.
5. Name one kind of soil erosion: sheet.
6. Buffers help reduce soil erosion into streams.
7. Three-fourths of the earth is covered by water.
8. Habitat is a home for wildlife.
9. Protection our natural resources is called conservation.
10. Plants need sunshine to make their leaves green.
11. The water cycle is nature's way of recycling water.



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