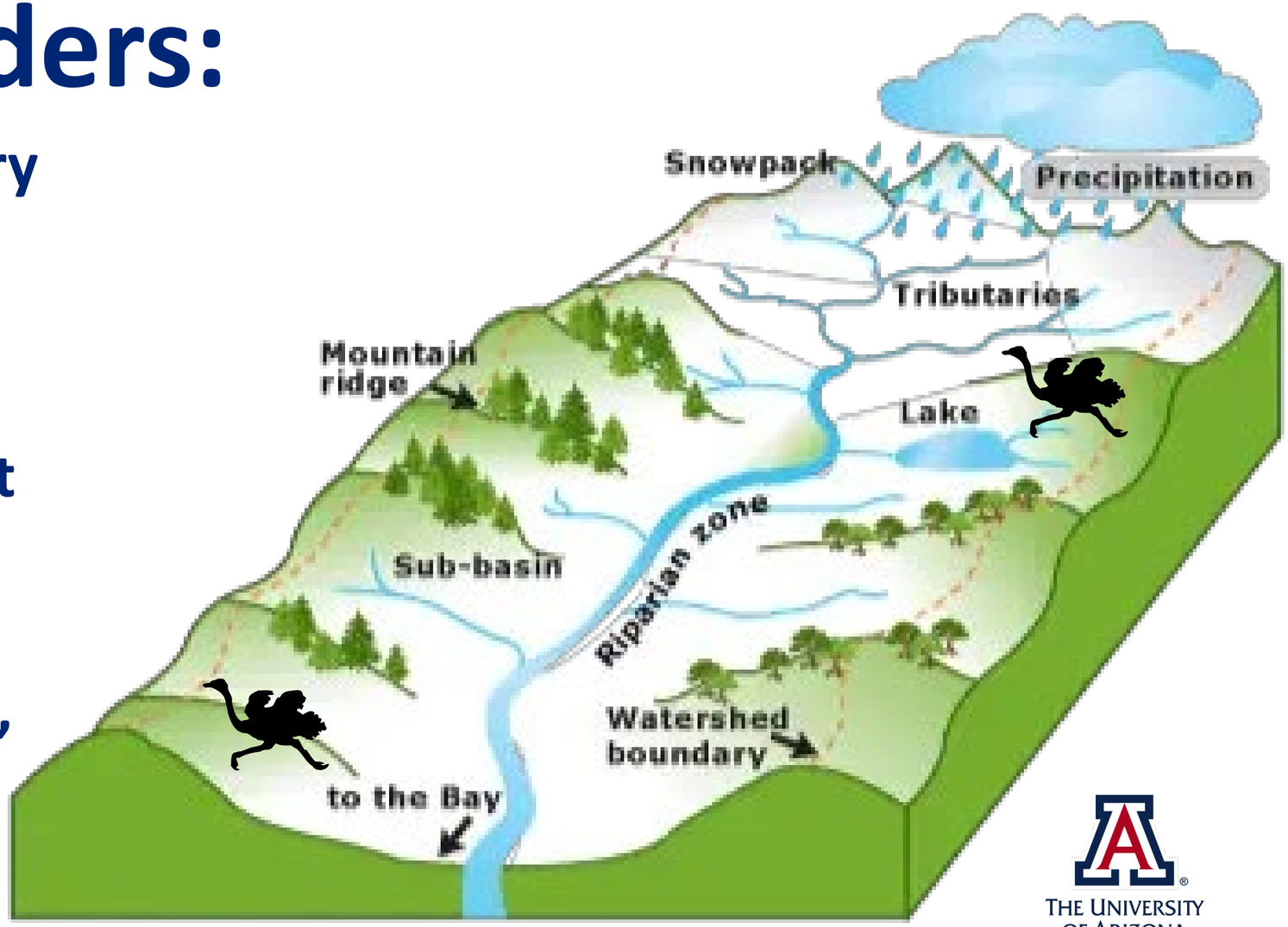
WATERSHED: Lesson 2

Watershed Wonders:

1. Did you know that with every step that you take, you are always in a watershed?
2. You probably know what state and city you live in, but do you know which watershed you live in?
3. What exactly is a watershed, and why should you care about it?



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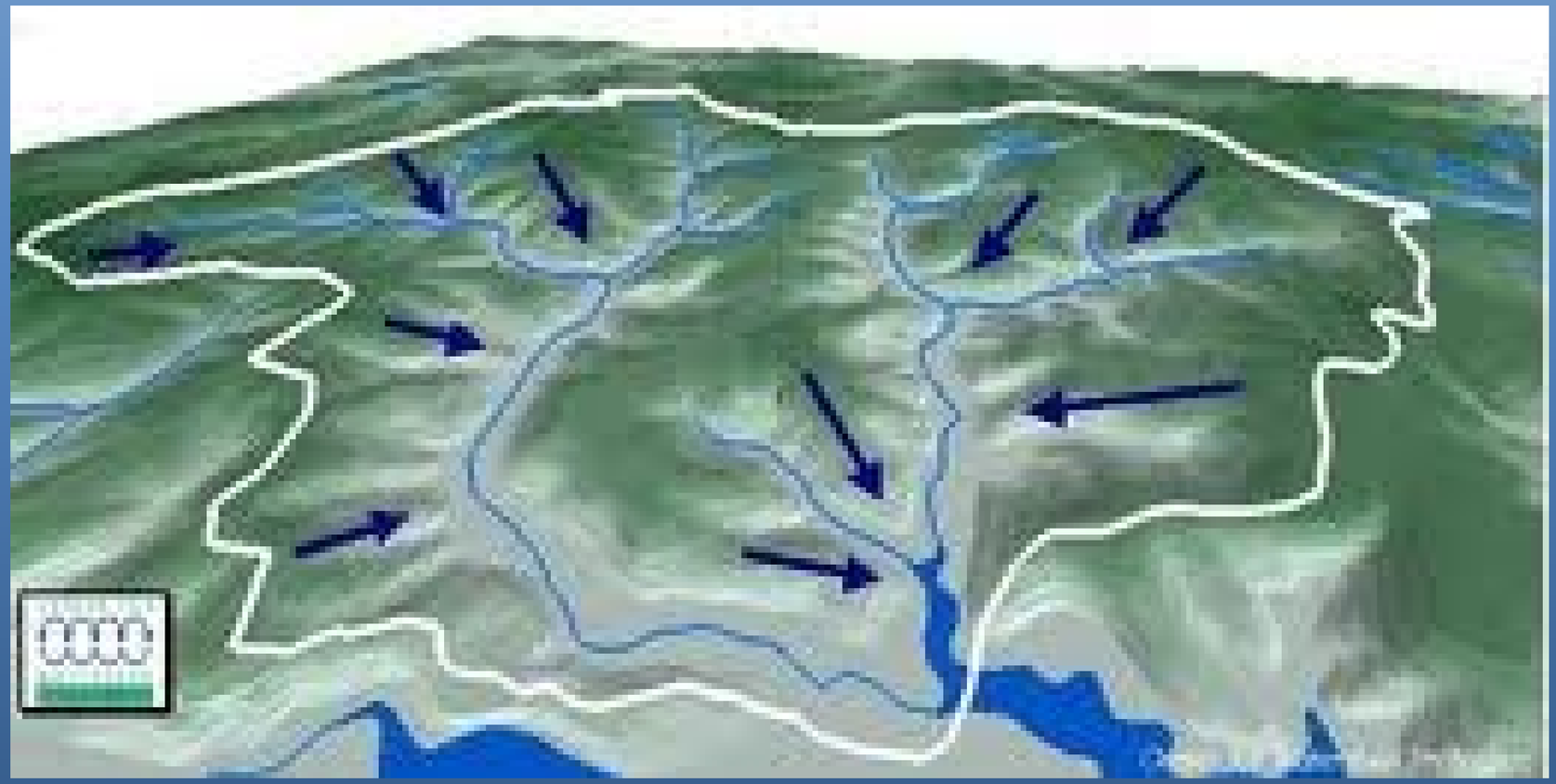
WATERSHED: Watersheds Work

What is a Watershed?



A watershed is: a land area that DRAINS to the low points.

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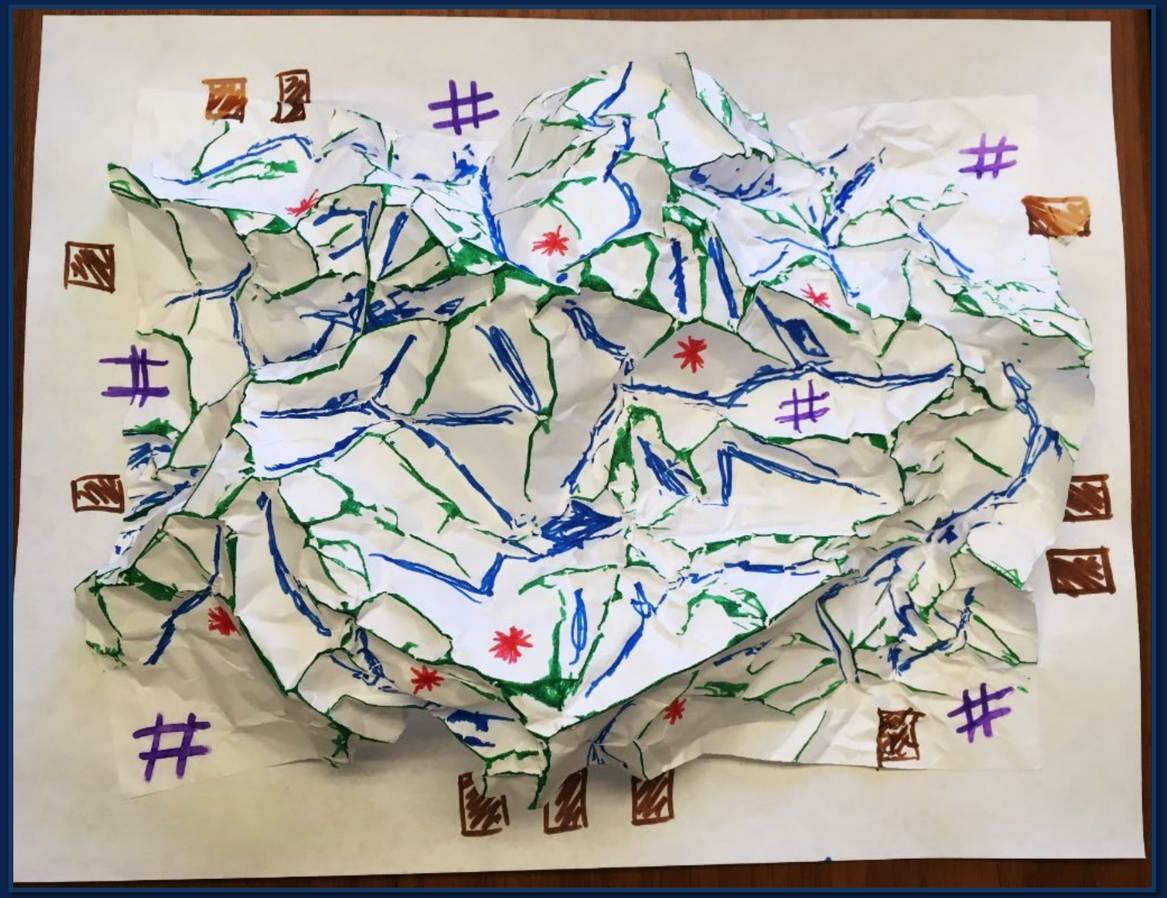
WATERSHED: Watersheds Work



The Activity:

Key/Legend:

- Ridges (along upfold) = Green
- Valleys (along downfold) = Blue

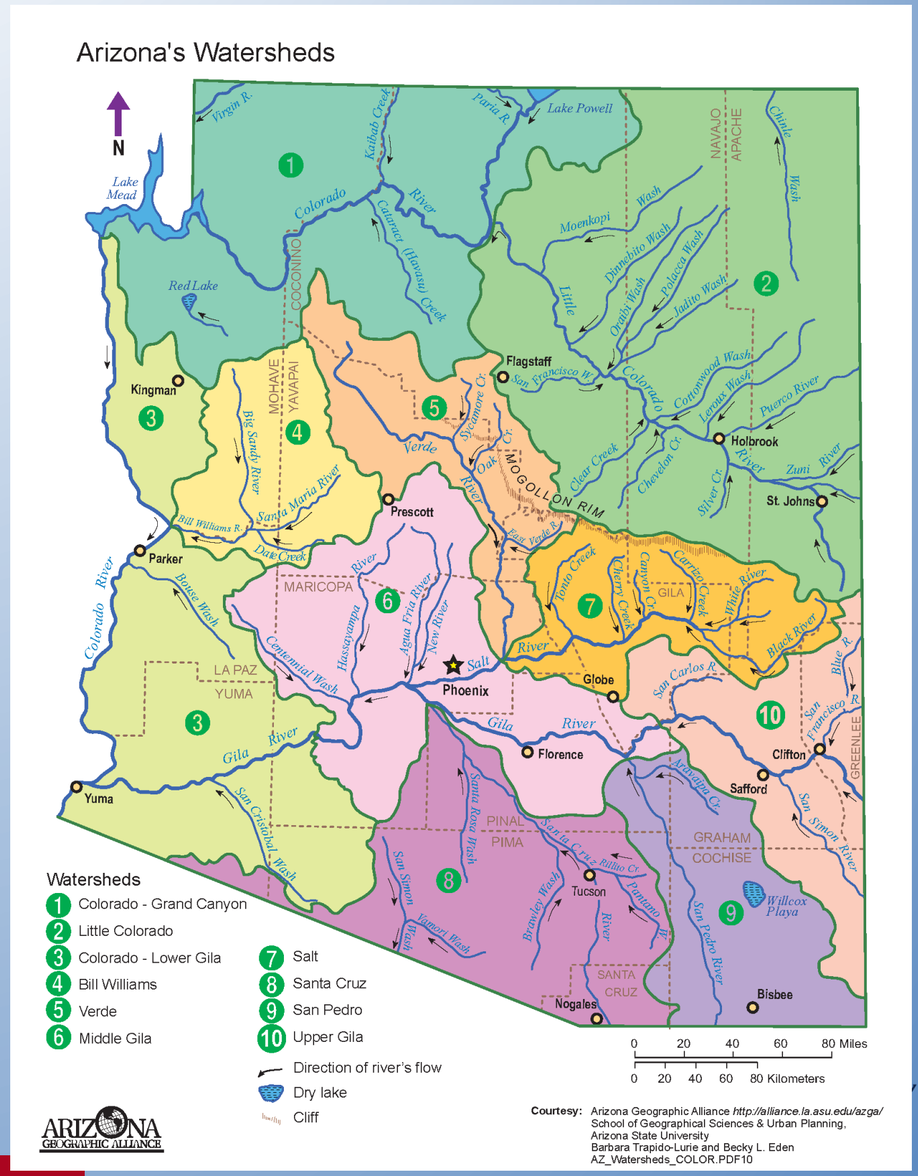
Optional:

- Farms (colored area) = Brown
- Old Mines (*) = Red
- Cities (#) = Purple

WATERSHED: Watershed Works

What are we managing when we talk about watershed management?

The land and water in that area.



WATERSHED: Lesson 2

Watersheds Work

Investigative Questions

- How does human impact on the land affect water and heat within a watershed?
- How can we reduce urban runoff and the flow of contaminants in water throughout a watershed?

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WATERSHED: Watersheds Work

Following the Flow

- When rain falls or when snow melts, does the water just sit there? Or does it move? Why?
- We know some of it may percolate down through earth materials into the ground, but most of it flows downhill as what?

Runoff is important as it keeps our rivers, lakes and groundwater flowing. But…?

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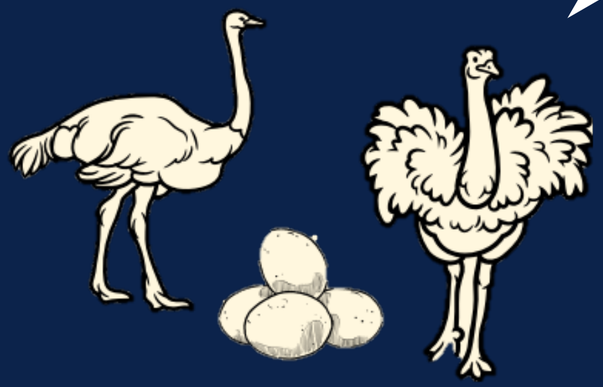
Watershed: Watersheds Work

What's on the surface matters

- What happens when rain falls on:
  - fields, meadows, and pastures?
  - a forest or woodland?
  - a desert landscape or dunes?
  - the city and suburbs?



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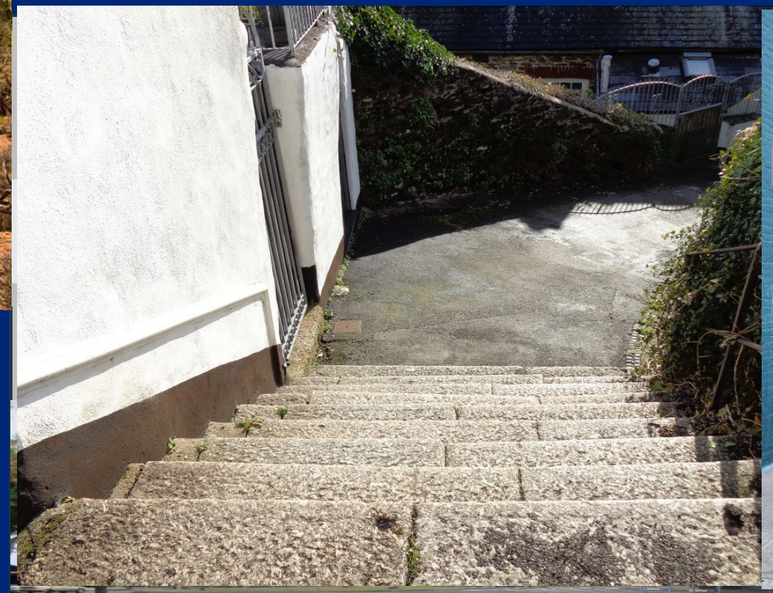
PERMEABLE

Water can sink in or percolate into the earth materials, where plants can use it, or it keeps traveling further down to reach groundwater (infiltration).

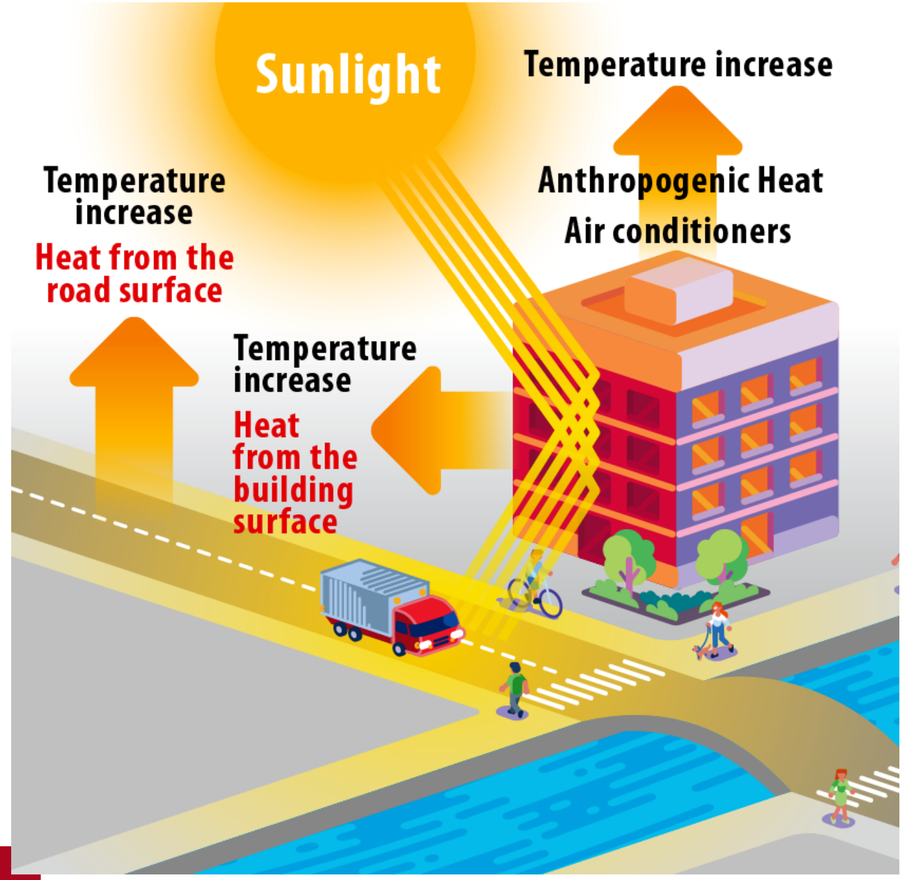


IMPERMEABLE

Water cannot penetrate or percolate, but rather pools or runs off the surface. These are also called impervious surfaces.

Too Hot to Handle!

What else happens when we have impermeable surfaces?



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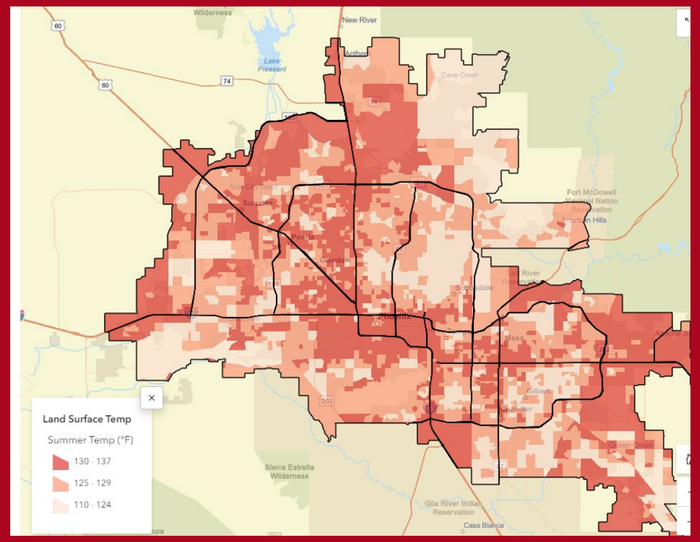
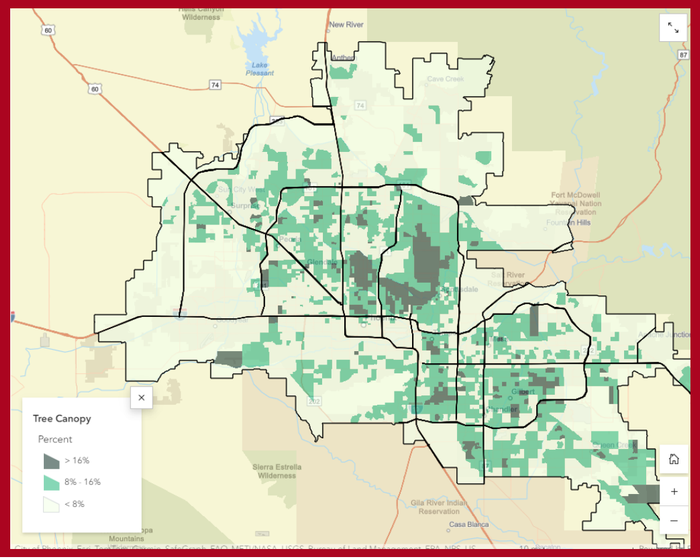
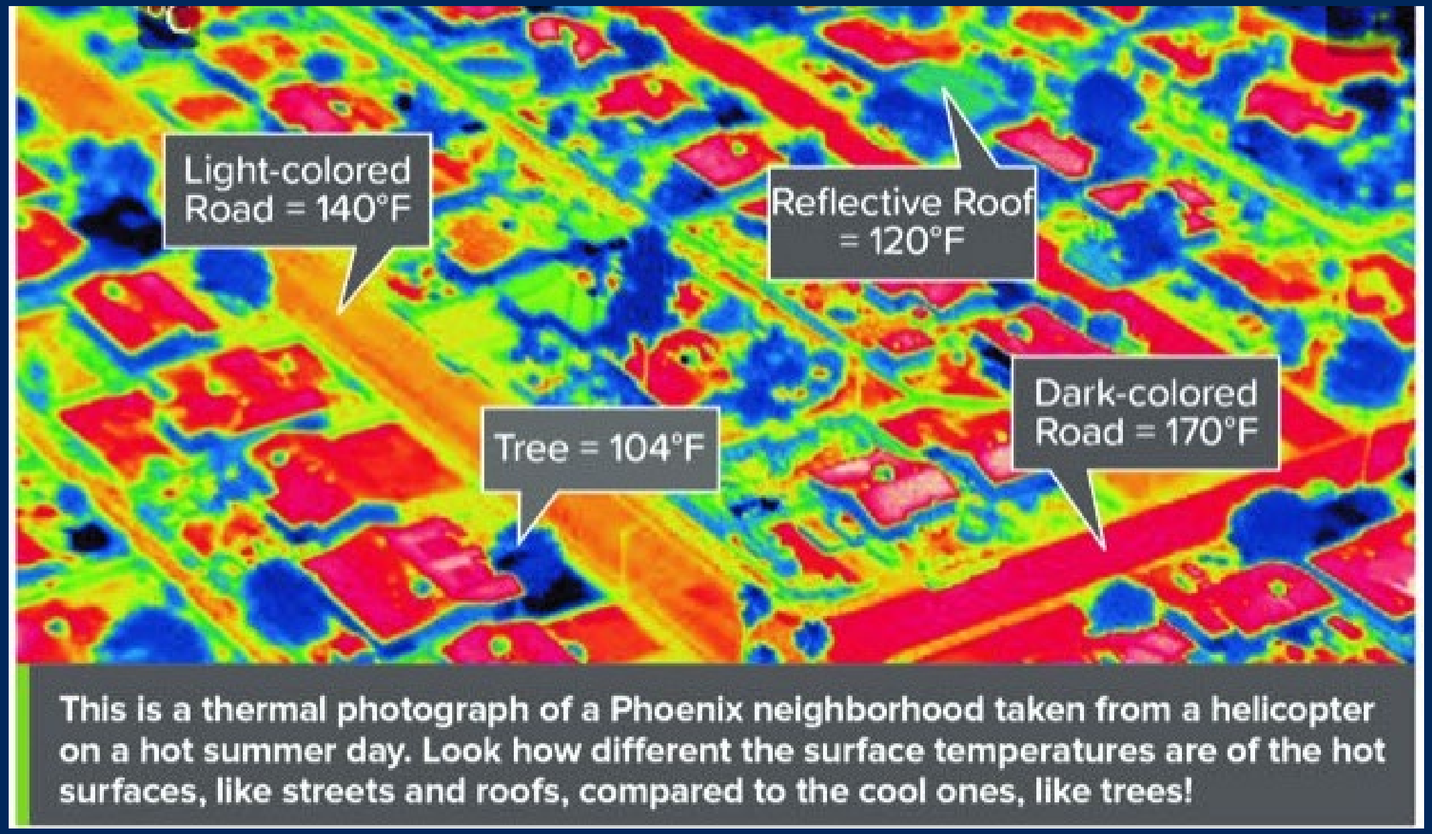
Urban Heat Island Effect







This is a thermal photograph of a Phoenix neighborhood taken from a helicopter on a hot summer day. Look how different the surface temperatures are of the hot surfaces, like streets and roofs, compared to the cool ones, like trees!

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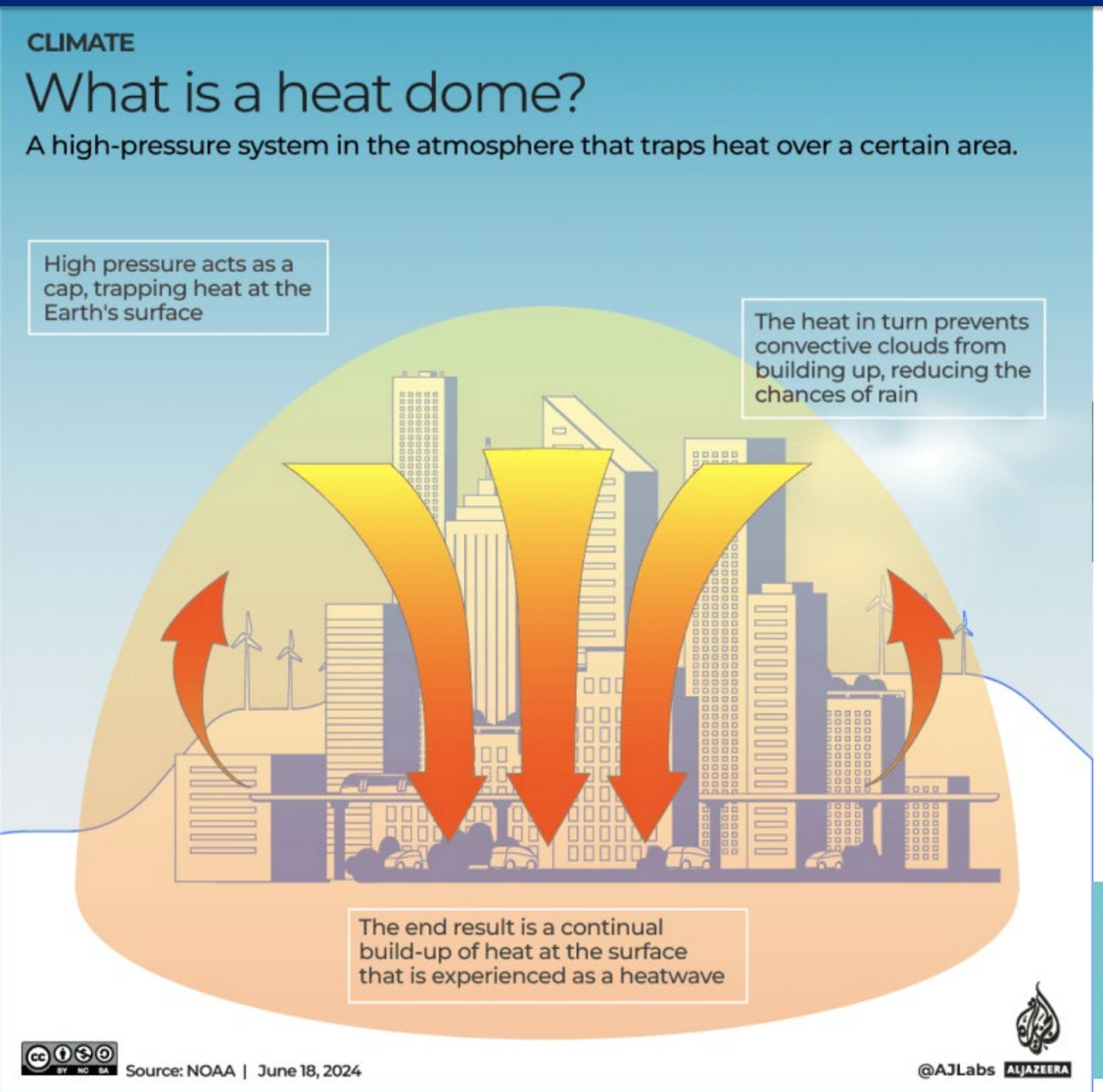
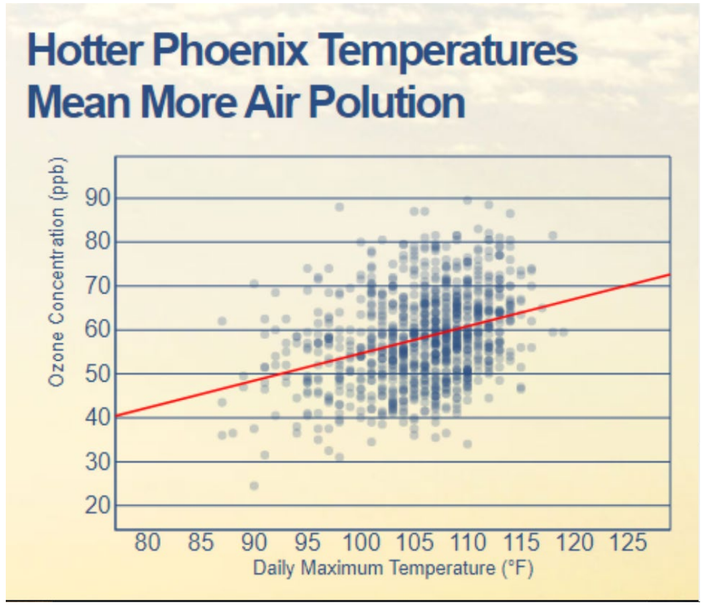
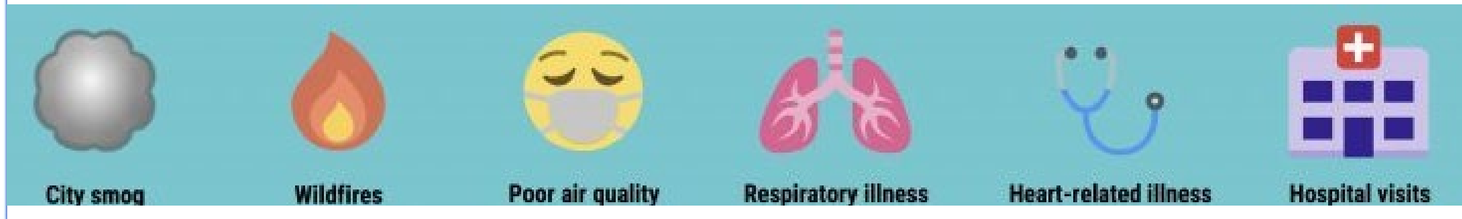
Air Temp, Quality & Rain Changes Too!

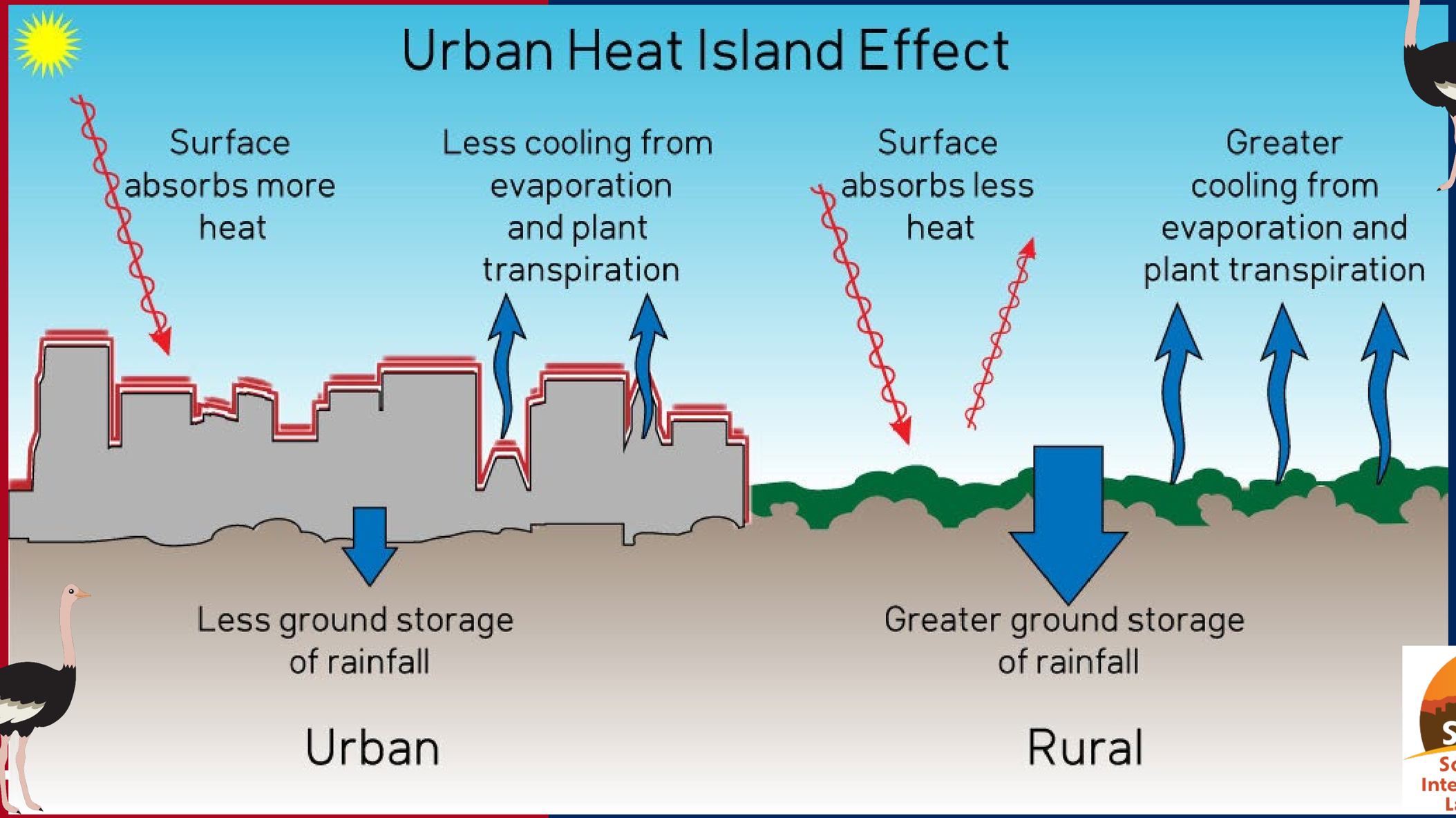


What else happens when city temps are warmer?





Urban Heat & Water



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Watershed: *Watersheds Work*

In our city centers and neighborhoods what happens to that runoff?

Rain becomes storm water!

What makes storm water a bad thing?






SOIL – SEDIMENTS – ROAD SALT – VEHICLE SPILLS – FERTILIZERS – PET WASTE – HEATED WATER – GREASE – TRASH – DETERGENT – SOLVENTS

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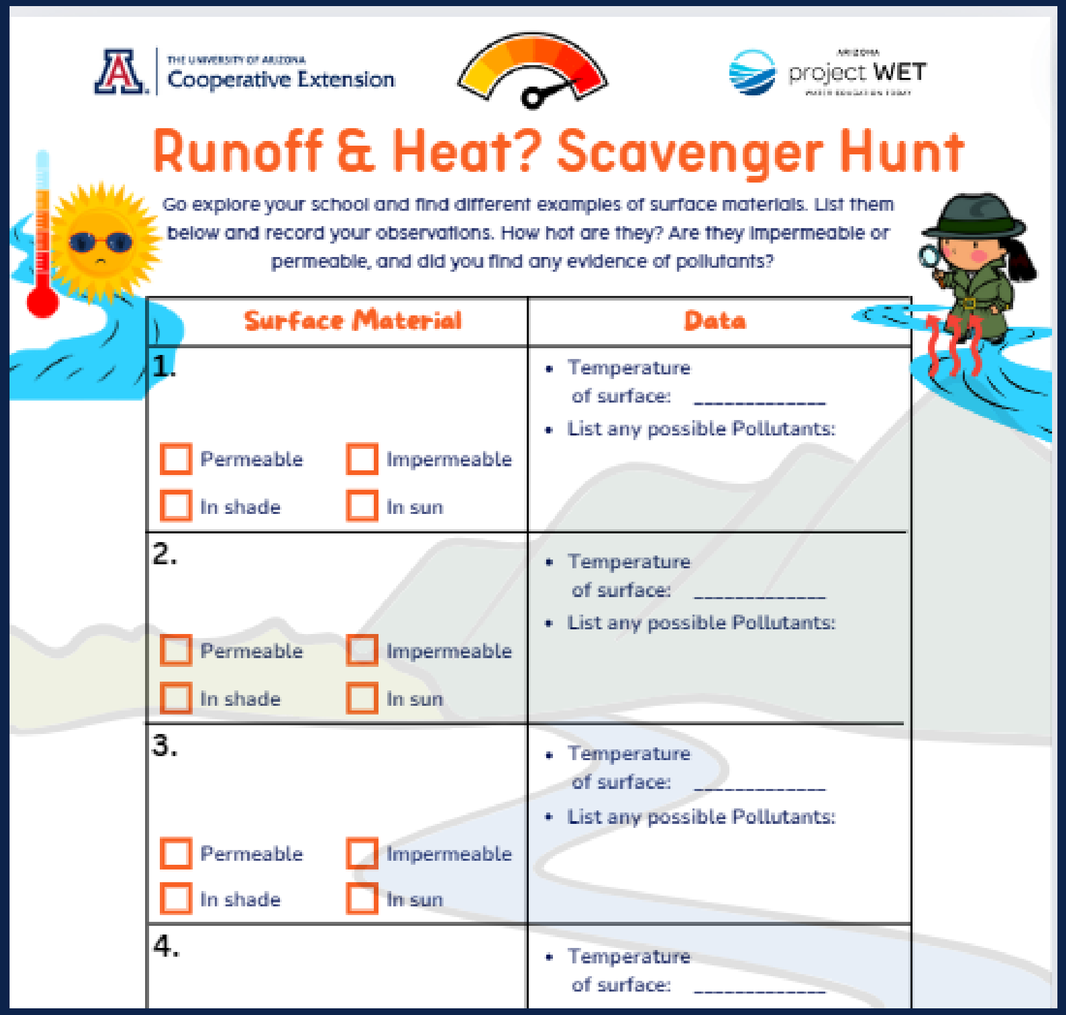
Where does storm water go?

To our rivers, lakes, and natural environment.

WATERSHED: Watersheds Work



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ARIZONA project WET

Runoff & Heat? Scavenger Hunt

Go explore your school and find different examples of surface materials. List them below and record your observations. How hot are they? Are they impermeable or permeable, and did you find any evidence of pollutants?

Surface Material	Data
1. ☐ Permeable ☐ Impermeable ☐ In shade ☐ In sun	• Temperature of surface: _____ • List any possible Pollutants:
2. ☐ Permeable ☐ Impermeable ☐ In shade ☐ In sun	• Temperature of surface: _____ • List any possible Pollutants:
3. ☐ Permeable ☐ Impermeable ☐ In shade ☐ In sun	• Temperature of surface: _____ • List any possible Pollutants:
4.	• Temperature of surface: _____

Activities:

Activity 1:

Small student groups can do a Runoff & Heat Scavenger Hunt.

Activity 2:

Simulate with a maze activity, urban runoff in a storm drain system.

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Check out Green Stormwater Infrastructure

Lesson 2

Systems and System Models & Cause and Effect

Wrap-Up

- Now we know changes we make to the land affect the water and even the temperature within our watersheds.
  - So how do those changes interact with the water in the water cycle and groundwater?
  - Can we reduce the flow of runoff and contaminants?

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Now think about how this activity might play into the case file?

CWC FILE: #33788DD

DESERT DAISY'S OSTRICH OASIS

NEW LEAD: #3

- Another eye witness came forward. A farm worker from the alfalfa farm on the adjoining property to the ostrich farm has provided evidence that the alfalfa farm does spray with a lot of pesticides and herbicides and that her family hasn't been feeling well recently.
- Also noted was that while the stream from the alfalfa farm is drying up, there are still some deep enough areas/pools of water that some of the ostriches use to drink from.

- **Provide Lead #3 after lesson**

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