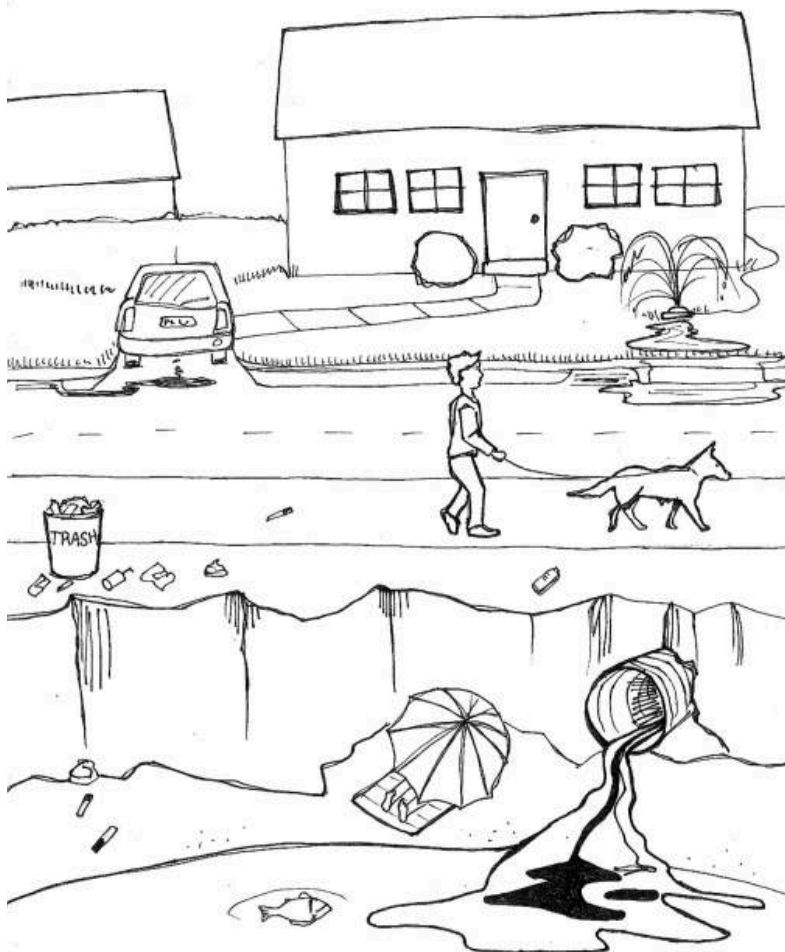


Watersheds and Water Pollution Activity Book



SAN DIEGO
COASTKEEPER



think **BLUE**
SAN DIEGO

Trace The Waterway

San Diego's watersheds are home to geographical features—including mountains, valleys, hills and waterways. **Waterways** are navigable bodies of water that boats can sail along, such as rivers or canals. The map below shows different waters that run through San Diego. Each river's **headwaters** (where they start) are near mountains or lakes, and the **river mouth** (where it ends) drains into different places along the coast. For example, some of San Diego's waterways drain into the San Diego Bay, Mission Bay, wetland habitats, or the Pacific Ocean.







DIRECTIONS: Begin at the "start here" arrow and trace each waterway from its source to the area it drains into. Notice how many of the rivers begin around smaller lakes or mountains. Then, fill in where each river starts (its headwaters) and where it drains to (its river mouth) in the table.



Waterway	Headwaters	River Mouth
San Luis Rey River		
San Dieguito River		
San Diego River		
Sweetwater River		
Otay River		

Pollution Matching

DIRECTIONS: Below are some ways that urban runoff can affect ecosystems. Draw a line to match the type of pollution (in bold) to its effect on the environment.

 <p>Pet waste contains harmful bacteria</p>	 <p>Sediment from construction sites makes water cloudy</p>	 <p>Garden fertilizer causes algal blooms, which depletes oxygen in water</p>
 <p>Sunlight cannot get into water, stunting plant growth</p>	 <p>Species cannot survive in low oxygen environment</p>	 <p>Water with harmful bacteria is not safe for swimming</p>

Biodiversity in Watersheds

Scientists use **biodiversity** to measure the variety of living organisms in a habitat. Habitats are made up of complex systems of plants and animals. In healthy habitats, these systems tend to stay intact, leading to high levels of biodiversity. On the other hand, low biodiversity levels can be caused by pollution, habitat loss, or other challenges.

For example, **pollinators** like bees and hummingbirds play an important role in plant reproduction.



When pollinators die off, many plants have no way to reproduce-- including major food crops. This leads to lower levels of biodiversity, which can warn scientists that habitats are in trouble.

Because biodiversity is complex, it should not be considered a perfect measure. Scientists use it along with many other tools to understand ecosystems. Regardless, these patterns are still helpful clues about the health of our habitats.

Biodiversity Clues



DIRECTIONS: Which of these indicators are typically found in high biodiversity habitats, and which are found in low biodiversity habitats? Sort the indicators from the word bank into the correct columns below.

Word Bank

Many plants, animals, and insects present Water is clean, with few harmful bacteria

Water polluted with harmful bacteria Very few plants, animals, and insects present

Many species present are tolerant to pollution, like certain types of leeches, snails, and worms Water has low oxygen levels, creating a "dead zone" where organisms cannot breathe

Water has high oxygen levels Very few species present that are tolerant to pollution

High Biodiversity (indicator of a healthy habitat)	Low Biodiversity (indicator of an unhealthy habitat)

Urban Runoff in Watersheds

Think of a body of water that's near you. It could be a lake, bay, or ocean. Have you ever wondered how the water got there? Water moves and travels through our environment every day. Before water can get to our lakes, bays, and ocean, it has to travel through a watershed. A **watershed** is an area of land where all water flows to the same place. For example, all water in the Pueblo Watershed drains into the San Diego Bay, which later connects to the Pacific Ocean. Watersheds help us understand how water travels from areas of higher elevation (like the mountains) to areas of lower elevation (like the ocean) in our environment.



Have you ever wondered where trash on the street ends up? When water flows over streets, gutters, and sidewalks, it can pick up trash along the way. **Urban runoff** is a term we use to describe water that flows over human-made surfaces and drains into bodies of water. This water can come from many sources, like the rain or excess water from a watering hose.

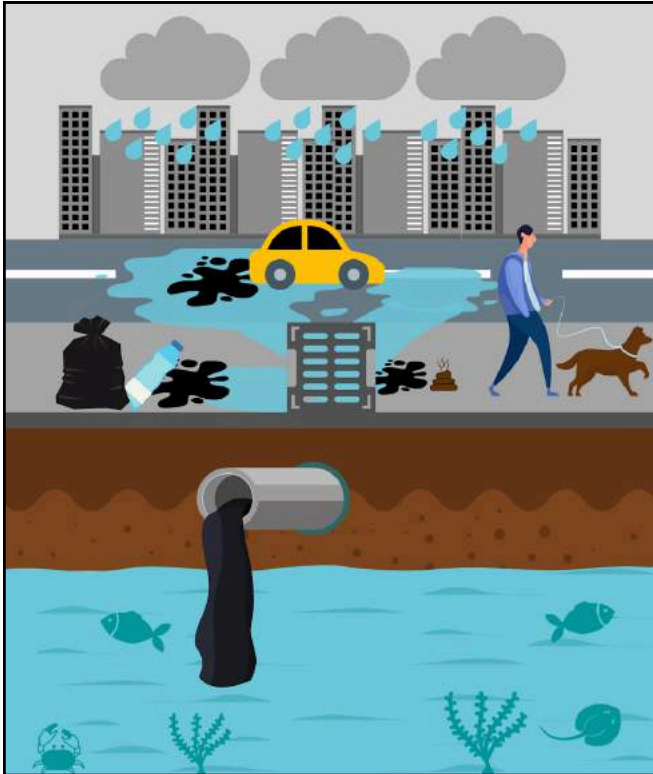
When this water runs over impermeable surfaces like concrete and asphalt, it cannot soak into the soil. This means that as it moves, the water picks up any pollution that is on the ground. **Pollution** is something that is toxic or harmful to the environment and includes things like trash, pet waste, motor oil, and lawn fertilizers. When urban runoff picks up pollution, it often goes into nearby storm drains, which then flow into creeks, rivers, and the ocean without being cleaned. The next time you see trash on the ground, think about where that trash could end up. Is there a storm drain or creek nearby? Even if you don't live close to the beach, that pollution could easily make its way to our waterways and, eventually, the ocean. That's why it's important for all San Diegans to pick up our trash and throw it away properly: so it does not contribute to polluted urban runoff.

Fill in the Blank



DIRECTIONS: Look at the diagram of urban runoff below. Use the word bank to complete the missing words in the diagram.

Word Bank			
Pollution	Ocean	Runoff	Rain



1

2

3

1. Storm clouds drop _____ from the sky which falls over buildings and collects on streets and sidewalks.
2. The water starts to move and picks up _____ in its path like trash, pet waste, and motor oil.
3. The polluted water travels through the city as urban _____ and makes its way to the _____.

Scavenger Hunt

Everyone lives in a watershed and it's important to know which one you live in. Knowing your watershed can tell you more about where your water comes from and where it flows to. In turn, this help us figure out how and where urban runoff impacts our watersheds the most.

DIRECTIONS: Explore your watershed in our interactive watershed map at: <https://www.sdcoastkeeper.org/watersheds>. Type in the address of your school and home. What watershed are they located in? Is your school in the same watershed as your home? Using your cursor, drag the map around to find where your watershed drains to.



1. What watershed do you live in? _____

2. Where does that watershed drain into? _____

3. Is your school in the same watershed as your home?

4. If it is in a different watershed, where does that watershed drain into?



DIY Cleanup

Now that you've learned about watersheds and water pollution, try your own DIY cleanup. Find a nearby creek, park, street, or beach and spend 15 minutes cleaning up litter. **Litter** is trash that is left in a public space. On your cleanup, make observations of any pollution you see, but only pick up trash items that aren't sharp or dangerous. Items such as sharp metal or glass, pet waste, and dead animals should be left on the ground.



Wear gloves



Have a bucket
or bag for
the trash



Go with
an adult



Be cautious
of your
surroundings



Find a
waterway
to help clean



Dispose of
trash properly

Put a checkmark next to the types of pollution below that you found/observed:

Trash

Plastic item

Wrapper

Container

Metal item

Other Pollution

Pet waste

Slick Looking Roads
(Signs of motor oil)

Foamy water
(signs of chemicals)



WATERSHEDS AND WATER POLLUTION PLEDGE

We've learned all about watersheds. Now we need your help to keep them clean and free of water pollution. Sign the pledge below.

I promise to protect watersheds and prevent water pollution. I will help by:

- Keeping pollution out of my watershed
- Not littering
- Picking up trash
- Protecting animal and plant homes
- Sharing what I know with others

Signed,

(your name)

