NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DATE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ CLASS PERIOD: \_\_\_\_\_\_\_

**NOTES SHEET: WATERSHEDS AND HUMAN IMPACTS**

Hellbender Education



**How do we define the scale of a watershed?**

* Generally, the larger a waterway, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ its watershed
* Smaller waterways, like \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and small \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, also have watersheds, but they are smaller!
* Think of it like nesting bowls: the watershed of a tiny stream is a small part of the watershed of a large river.

**Where is the closest watershed to me?**

* You’re in one \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_!
* ****Everyone lives in a watershed - rainwater that falls right here will flow into a body of water (which likely flows into another)
* Everything we do to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ has the potential to affect the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ because of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ through watersheds

**Where does all the rainwater go?**

* Much of it ends up in the oceans
* A lot of rainwater can soak into, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, the ground to become part of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* This depends on soil type – hard clay soils are less \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, so water tends to flow over them toward lower ground
* The movement of this water connects large areas of land
* Impacts that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ have on water in one area can greatly affect water in another.

**Human Impacts in Watersheds**

**Deforestation:**

* Removal of trees \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* More \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ flows into waterways (not held in place by tree roots anymore!)
* **Think**: What would this mean for hellbender salamanders?For other organisms living in streams and rivers?

**Urban construction:**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and construction of large buildings – how does this affect water flow?
	+ Water can’t \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and therefore lots of runoff is generated
	+ Can lead to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Runoff from urban areas picks up all kinds of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as it moves across these hard surfaces
* Ends up in surface *and* groundwater \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Farming:**

* Farmland must be cleared of \_\_\_\_\_\_\_\_\_\_ first!
* Carried by rainwater into streams:
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**:** can cause overgrowth of algae and a reduction in dissolved oxygen
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**:** toxic to many organisms
* Animals grazing in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (the interface between a waterway and the surrounding terrestrial environment)
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ banks
	+ Direct deposition of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



**Mining:**

* Construction of mines:
	+ creates impervious surfaces like \_\_\_\_\_\_\_\_\_\_\_\_
	+ often involves the use of explosives for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which can drastically alter water flow patterns
* Introduction of toxic \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to water
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from mines can disrupt the \_\_\_\_\_ of waterways



**Hydroelectric dams**

* Alter flow patterns, often flooding large areas
* Slower-moving water resulting from dam construction is often much \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Can limit the flow of important \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to downstream areas
* Prevent movement of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_