

Watershed Connections

Activity 1: Pre-Colonial and Colonial Era 1600-1700s

Part 1: Pre-Colonial Era – before the 1600s

When Captain John Smith first explored Maryland’s rivers in the early 1600s, the landscape was very different than today.

- From the mountains to the Chesapeake Bay, the land was covered with dense forests. Trees shaded streams and protected their banks from erosion.
- Our major rivers, such as the Potomac, Anacostia, and Patuxent, were deep enough for ocean-going ships. The water was clear, and there were huge schools of fish, even 10-foot long sturgeons.
- Low-lying areas along streams, rivers, and the Chesapeake Bay were covered by wooded swamps, bogs, or tidal marshes.
- Native Americans lived in small villages and cleared meadows for hunting and farming. They farmed small areas and rotated their farming plots to allow the land to “rest” periodically (grow back with natural plants and trees), so their farming practices did little harm to the natural environment.

Part 1 Activity: Your group will model a landscape that represent Maryland watersheds before European settlers arrived.

1. Use the forest and wetland pieces in your box to show what the watershed was like before European settlers arrived. Forests should cover **90-95%** of your watershed. Marshes should border the streams, rivers, and coastal areas. Use stick pins so your land-use pieces will stay on.
2. Do you think pollutants went into the streams during this time period? If so, which ones? Pick the appropriate containers of pollutants, and put 4 drops (or 4 pinches) of each in the areas where the pollution comes from. **Record this information on part 1 of your Pollutant Table.**
3. Fill your measuring cup with **1000 ml** of water. Now, you will make it rain on the watershed model. One person will **slowly** pour the water over your entire watershed, starting near the mountains, and going back and forth towards the bay. The rest of your team should observe where the water flows, where it flows the fastest, and where it is absorbed.
4. Drain the water in the bin back into the measuring cup, and record the amount of water collected. Observe the color of the water and whether it is transparent (clear), cloudy, or opaque. **Record your data on the Data Table.** Save the water, so you can show it to the rest of the class.

Answer the observation questions on your answer sheet.

Part 2: The Colonial Era -- mid 1600s through the 1700s

From the mid 1600s into the 1700s, European colonists settled along the Patuxent and Potomac Rivers. They cleared areas of forests to grow crops for food and tobacco (their big cash crop) and to use the wood for housing and fuel. Small port towns were built along the rivers so that tobacco could be sent back to England.

During the 1700s, as their population boomed, the colonists needed more and more land for food and crops like corn and wheat. They continued to clear forests from the land, and by 1800, 95% of the old growth forests in Maryland were harvested. During this time, the colonists expanded their settlements further upriver into the hillier areas (the piedmont) and the mountains. To increase crop production, they started using plows to till the soil (instead of hoes). When it rained, the loose soil washed off the bare land (eroded) into the streams and rivers. So much sediment washed off the land that it clogged smaller rivers and shipping channels.

Part 2 Activity: You will make your model now represent the changes to the land that occurred during colonial times.

1. Remove forests from **75%** of the land to represent the **deforestation** described above.
2. Replace the forests with farms or plantations. Place the farms, so that the tilled rows slope towards the river.
3. Place small port towns in areas where **tributaries** (small streams) join the large river.
4. What types of pollutants would have entered the rivers and streams from this watershed during this time period? **Write your answer on part 2 of your Pollutant Table.**
5. Now, pick the appropriate containers of pollutants, and put 4 drops (or 4 pinches) of each in all the areas where pollutants would come from). **Make sure this data is recorded in your Pollutant Table.**
6. Now, for the rain. Fill the measuring cup with **1000 ml** of water. Have one person **slowly** pour it over your entire watershed, starting near the mountains, and going back and forth towards the bay. The rest of the team should observe any differences in the **volume and rate of runoff** (how much and how fast the water flows).
7. Drain the water back into the measuring cup and measure the amount of water collected. Observe the color and **turbidity** of the water. **Record this on the Data Table.** Save your water to show to the rest of the class.

Answer the observation questions on your answer sheet.

Answer Sheet

Pollutant Table

	Pollutants	Where do the pollutants come from?
Part 1		
Part 2		

Data Table

	Amount of runoff (ml) (collected water = runoff)	Color of water	Water Clarity (Transparent, Cloudy, or Opaque)
Part 1			
Part 2			

Observations

Part 1

1. When it rains on the model, where does the water flow the fastest and where is it absorbed?

2. What contributed to or affected the water clarity in this scenario?

Part 2

1. How did your land use changes affect the volume (amount) of runoff and how fast it moved?

2. What factors affected the water clarity in this scenario?

Summary: What are your conclusions from these two activities?