**Name:**

**Date:**

**Instructor’s Name:**

**Assignment: SCI103 Unit 4 Individual Project (Lab Report)**

**Soil Infiltration and Runoff**

**Instructions:** Enter the Virtual Lab, and conduct the lab tests. Please record your answers on this Lab Report form. When your Lab Report is complete, submit it to the Submissions area of the Virtual Classroom. Note: Hints are in blue.

**Part I: Virtual Field Research – Data Collection and Calculations**

**Section 1:** Gather the following information from the Virtual Lab environment. Notice that each site you visit has a distinctly different surface, which could affect runoff.

**Table 1 Hint:**

**You know that the total percent will be 100%. Therefore, you will add what water is already accounted for and then find the difference.**

**Example for Vegetation:**

**25% (shallow infiltration) + 25% (deep infiltration) + 10% (runoff) = 60% of water that’s accounted for. To find the evaporation that occurred, you would take the original total 100% – 60% = 40% water evaporation.**

**Table 1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **1 Inch of Rainfall** | | | |  |
|  | Shallow water infiltration | Deep water infiltration | Runoff water | Evaporation water |
| Vegetation |  |  |  |  |
| Mountain |  |  |  |  |
| Bare soil |  |  |  |  |

**Section 2:** One inch of rainfall deposits 144 cubic inches (0.623 gallons) of water per square foot of surface area. Use the following formula to calculate the amount of water after 1 inch of rainfall (in gallons) for each section:

(0.623) x (square feet of surface area) x (% from the Virtual Lab) = gallons of water

Remember that 40% is written as “0.40” in an equation.

**Table 2 Hint:**

**One inch of rainfall deposits 144 cubic inches (0.623 gallons) of water per square foot of surface area. In this lab, all research sites are 100 square feet in area.**

**Use the following formula to calculate the amount of water after 1 inch of rainfall (in gallons) for each section:**

**(0.623) x (square feet of surface area) x (% from Virtual Lab) = gallons of water**

**Remember 40% is written as “0.40” in an equation because you must convert from a percent to a decimal number.**

**Example:**

**If 40% of water at one of the sites ends up as runoff, how many gallons of water end up as runoff?**

**0.623 x (surface area) x (% from Virtual Lab) = Gallons of water  
  
  
0.623 x 100 sq. ft. x 0.40 = 24.92 gallons**

**Table 2**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **1 Inch of Rainfall** | | | |  |
|  | Shallow water infiltration | Deep water infiltration | Runoff water | Evaporation water |
| Vegetation |  |  |  |  |
| Mountain |  |  |  |  |
| Bare soil |  |  |  |  |

**Part II: Data Analysis –** For the following questions, provide your response in short-answer format (3–5 sentences each).

* 1. How does the vegetation surface type affect the amount of runoff? Speculate why this happens.

In the vegetation surface type, the runoff is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Data from Part I also show that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

(Mention, discuss, and compare the values)

* 1. How does the smooth mountain rock surface type affect the amount of runoff? Speculate why this happens.

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In the smooth mountain rock surface type, the amount of run off is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Data from Part I also show that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

(Mention, discuss, and compare the values)

* 1. How does the bare soil surface type affect the amount of runoff? Speculate why this happens.

In the bare soil surface type, the amount of run off is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Data from Part I also show that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

(Mention, discuss, and compare the values)

* 1. How does vegetation slow and prevent sediment loss?

* 1. How does vegetation allow greater infiltration?

* 1. How do pavement or smooth rock runoff affect waterways?

* 1. How do heavy sediment deposits affect waterways?
  2. How does sediment loss affect land and soil quality?