



# How do ecosystem characteristics impact changes and resources available to humans in the event of heavy rainfall?

## Introduction:

How do ecosystem characteristics impact changes and resources available to humans in the event of heavy rainfall? In this task you will make predictions about the results of excessive rainfall on four samples of land and their ecosystems, as well as resources available to humans. Then, you will develop a model to explain the impacts of change in the ecosystem and for resources available to humans.

[Watch this video of a rainfall simulation.](#)

Fill in the chart below with your observations:

I Notice...	I Wonder...



## Prompt A:

Consider these four scenarios from the state of Washington. Describe your predictions on the impact of excessive rainfall to these ecosystems.

### Scenario 1:

Crops grow in this field for part of the year. After the crop is harvested, the soil is tilled and left with nothing covering the bare soil until the next growing season.



Infiltration



Runoff



### Scenario 2:

A small herd of 75 sheep graze on this land almost continuously. Above the ground, the grass is very short; if we could look below the surface we would see small roots and compacted soil.



Infiltration



Runoff



**Scenario 3:**

This grassland area is managed with rotational cattle grazing. There plant matter covering the soil, high plant biodiversity, and a water source on the land.



Infiltration



Runoff



**Scenario 4:**

This forested area has native plants growing, and is preserved as a wildlife area.



Infiltration



Runoff



## Prompt B:

Consider these four scenarios from the state of Washington. Describe your predictions on the impact of excessive rainfall to resources available to humans.

### Scenario 1:

Crops grow in this field for part of the year. After the crop is harvested, the soil is tilled and left with nothing covering the bare soil until the next growing season.



### Scenario 2:

A small herd of 75 sheep graze on this land almost continuously. Above the ground, the grass is very short; if we could look below the surface we would see small roots and compacted soil.





### Scenario 3:

This grassland area is managed with rotational cattle grazing. There is plant matter covering the soil, high plant biodiversity, and a water source on the land.



### Scenario 4:

This forested area has native plants growing and is preserved as a wildlife area.





## Prompt C:

Select one of the three scenario examples:

- Grassland used for cattle grazing is converted to row crop farmland.
- Native/wild grassland is now managed with rotational grazing.
- Due to the growing population in a suburban area, many acres of grassland used for cattle grazing are converted to land for the development of homesites.

Using drawings, develop a model to explain how this example of human action/interaction can have impacts on the soil and on the ecosystem.





## Prompt D:

Write an explanation for the model you created in Part C. Then, predict the impacts this change would have on resources available to humans.