Section 5.3 Mass Movements

This section describes situations in which large amounts of soil are moved naturally.

Reading Strategy

Previewing As you read the section, rewrite the green topic headings as what questions. Then write an answer to each question. For more information on this Reading Strategy, see the Reading and Study Skills in the Skills and Reference Handbook at the end of your textbook.

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
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<tbody>
<tr>
<td>a. What triggers mass movements?</td>
<td>b. saturation of surface materials with water, oversteepening of slopes, removal of vegetation, and earthquakes</td>
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<tr>
<td>c. What are the types of mass movement?</td>
<td>d. rockfalls, slides (or rockslides), slumps, flows (or mudflows and earthflows), and creep</td>
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1. ☐ The transfer of rock and soil downslope due to gravity is called mass movement.

Triggers of Mass Movements

2. ☐ What are the factors that commonly trigger mass movements?

- saturation of surface materials with water, oversteepening of slopes,
- removal of vegetation, earthquakes

3. Circle the letter of each sentence that is true about water triggering mass movements.

a. ☐ Heavy rains and rapid melting of snow can trigger mass movements by saturating surface materials with water.

b. ☐ When the pores in sediment become filled with water, the particles slide past one another more easily.

c. ☐ If there is sufficient water, sand grains will ooze downhill.

d. ☐ Saturation of the ground with water makes slopes more susceptible to the force of gravity.

4. Is the following sentence true or false? If the steepness of a slope exceeds the stable angle, mass movements become more likely.

true

5. What are three possible causes of oversteepened slopes?

- stream undercuts a valley, waves pound against the base of a cliff, human excavations
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**Types of Mass Movements**

*Match each description with its term.*

<table>
<thead>
<tr>
<th>Description</th>
<th>Term</th>
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<tbody>
<tr>
<td>6. a flow that moves relatively slowly—from about a millimeter per day to several meters per day</td>
<td>a. rockfall</td>
</tr>
<tr>
<td>7. the downward movement of a block of material along a curved surface</td>
<td>c. slump</td>
</tr>
<tr>
<td>8. a quickly moving mass of material that contains large amounts of water</td>
<td>d. mudflow</td>
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<tr>
<td>9. when rock or rock fragments fall freely through the air</td>
<td>e. earthflow</td>
</tr>
<tr>
<td>10. slides that include bedrock that move suddenly along a flat, inclined surface</td>
<td></td>
</tr>
</tbody>
</table>

11. Identify each of the forms of mass wasting illustrated in the figures below by writing the name of the process on the lines provided. Choose earthflow, slump, or rockslide.

A. ___________  B. ___________  C. ___________

A. slump  
B. rockslide  
C. earthflow
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WordWise

Test your knowledge of vocabulary terms from Chapter 5 by completing this crossword puzzle.

Clues across:

1. the part of the regolith that supports the growth of plants  
6. soil usually found in drier western United States in areas that have grasses and brush vegetation
8. a layer of rock and mineral fragments produced by weathering
9. occurs when rocks or rock fragments fall freely through the air
11. the transfer of soil and rock downslope due to gravity
13. a vertical section through all of the soil horizons
15. downward movement of a block of material along a curved surface

Clues down:

1. zones of soil that have similar composition, texture, structure, and color
2. flows that move quickly
3. a type of weathering in which physical forces break rock into smaller pieces without changing its composition
4. soil that forms in hot, wet tropical areas
5. flows that move relatively slowly
6. soil that usually forms in temperate areas
7. slides that include segments of bedrock
10. large piles of rock
12. the slowest type of mass movement
14. slabs of rock separating like layers of an onion