1. Vocabulary: Complete the following crossword puzzle
2. Watershed Delineation.

(a) Draw the watershed boundary for the Ocmulgee River on the attached map.

(b) How long would it take for water to go from the top to the bottom of the watershed if the average velocity is 3 miles/hr? ____________

(c) What is the watershed area in square miles? ____________

(d) What is the average streamflow in in/yr if the mean flow is 5,600 cfs? ____________

3. Hillslope Processes. Adrian lives in a valley with steep hills above her, as shown below.

(a) Explain how an increase in rainfall affects overland flow, soil moisture in the unsaturated zone, the location of a perched water table, the position of the water table, seepage along the slope, and slope stability.

(b) How would harvesting trees on the hillslope affect the water budget and slope stability?
4. Stream Discharge.

(a) Alex collected the following data, but needs you to complete the following table:

<table>
<thead>
<tr>
<th>Station ID</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance (ft)</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Depth (ft)</td>
<td>0</td>
<td>1.3</td>
<td>0.7</td>
<td>3.4</td>
<td>5.8</td>
<td>2.2</td>
<td>0</td>
</tr>
<tr>
<td>Velocity (ft/s)</td>
<td>0</td>
<td>0.5</td>
<td>0.4</td>
<td>2.8</td>
<td>3.9</td>
<td>1.7</td>
<td>0</td>
</tr>
<tr>
<td>Width (ft)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area (ft²)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discharge (cfs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- What is the total stream cross-sectional area (ft²)?
- What is the total stream discharge (cfs)?
- What is the average stream velocity (ft/s)?

(b) For most streams:
- Is a stream with a higher Manning’s n faster/slower?
- Are sands/clays more likely move faster in a stream?
- Does the velocity increase/decrease with increasing stage?
- The specific conductance is a measure of:
- The turbidity is a measure of:

5. Erosion and Sedimentation

(a) Write the Universal Soil Loss Equation (USLE) and briefly describe each variable.

(b) What is the T factor in the USLE, and how can it be used to guide land-use planning.

(c) Briefly compare today’s soil-erosion problems from those of a century ago.