# **FFL Principle 9- Protect the Waterfront** UF CPETUF CPETUF CPET

# **Erosion Simulation Worksheet**

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**Names:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
**Date:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
**Class/Period:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### ***Guiding Questions***

What causes soil erosion, and why is it harmful to water ecosystems?

How does slope angle affect erosion and runoff?

Which ground covers are most effective at protecting waterfronts?

**Materials (Per Group)**

| 4 trays/pans | Paper Towels |
| --- | --- |
| Sand or Soil | Grass Sod, Mulch, Rocks/Graven |
| Books/Blocks (to create slope) | Spray bottle or cup of water |
| Ruler and Protractor | Optional (food coloring) |

### **Procedure**

1. **Set Up Landscapes:** Prepare 4 trays with soil. Leave one tray with *bare soil*, and cover the others with *grass*, *mulch*, or *rocks*.
2. **Adjust Slopes:** Prop up trays at different angles (flat, 15°, 30°). Measure with a protractor.
3. **Simulate Rain:** Slowly pour or spray the same amount of colored water over each tray to simulate rainfall.
4. **Observe and Record:** Watch for erosion and collect runoff (if possible). Note how fast water moves, how much soil is displaced, and how clear the runoff is.
5. **Clean Up:** Carefully dispose of materials and clean your space.

### 

### **Data Table**

| **Tray #** | **Ground Cover** | **Slope Angle** | **Soil Loss (Low-Med-High)** | **Water Clarity (Clear-Cloudy-Muddy)** | **Runoff Speed (Fast-Slow)** |
| --- | --- | --- | --- | --- | --- |
| 1 | Bare Soil |  |  |  |  |
| 2 | Grass |  |  |  |  |
| 3 | Mulch |  |  |  |  |
| 4 | Rocks |  |  |  |  |

### **Analysis Questions**

1. Which ground cover resulted in the most erosion? The least?
2. How did slope affect the amount of erosion and runoff?
3. Why is erosion a problem for water quality and aquatic life

1. What Florida-Friendly Landscaping practices could help prevent this erosion?
2. Based on what you observed, how would you design a landscape to protect a Florida waterfront property?

### **Conclusion / Real-World Application**

Write a short paragraph explaining how your experiment helps people make better landscaping choices to protect Florida's waterways.