



## SOIL AND PLANT SCIENCE DIVISION

# Technical Soil Services

## South Central Region

### Kerrville, Texas Soil Survey Office

### Hal Peterson Outdoor Ed

#### Purpose

The purpose of this outdoor educational activity was to expose the Kerrville 6th graders to learning in an outdoor environment.

#### Background

On Tuesday, October 3rd, and Thursday, October 5th, Travis Waiser from the Kerrville, Texas, Major Land Resource Area (MLRA) Soil Survey Office (SSO) traveled to the H.E. Butt Foundation Camp in Leakey, Texas to present at the Hal Peterson Outdoor Ed event. Over the course of two days and 16 presentations, Travis presented to a total of 176 students and 32 parents. The presentations began with asking students to describe what an ecosystem is. Once students understood that an ecosystem is comprised of linkages and interactions between both abiotic and biotic components, Travis shifted gears to talk about precipitation and its influence on an ecosystem. Travis explained that when it rains, the main goal is for water to infiltrate the soil. This may be influenced by a variety of different site characteristics, most notably vegetation and soil.

Travis then made distinctions between different soil textures and how this influences infiltration. Travis compared sand to a beach ball, silt to a baseball, and clay to hole punches. This illustrated the similar shape sand and silt have and how clay is both flat and smaller than the former. From there, Travis explained how different soil textures will influence the way water moves into and through soil, causing some soils to have higher infiltration rates or greater water holding capacities.

To help convey how vegetation affects water infiltration, Travis set up an experiment for students to conduct across three sites, all with different vegetation. One site was placed under a juniper canopy, another in a patch of king ranch bluestem, and the last was on bare ground. At each site, a hollow cylinder was partially inserted into the soil, and students were asked to pour a cup of water into the cylinder and time how long it takes



for all the water to infiltrate into the soil. The two vegetated sites took between 5 seconds and 5 minutes for water to infiltrate into the soil; however, the bare ground site took over 30 minutes for all the water to soak in. Travis explained that the major difference between the water infiltration rates has to do with the amount of vegetation on each site. He described the valuable role roots play in increasing pore space and limiting compaction, both of which aid in water infiltration. Travis highlighted why infiltration is important by making connections to groundwater recharge, runoff, pollution, and the many ways humans and wildlife depend on water infiltrating into the soil.

### **Key Outcomes**

Many students do not get the opportunity to learn in an outdoor setting, so Travis took the opportunity to teach within a micro-ecosystem what happens in a rainfall event. He then connected the dots on how a raindrop that falls at our current location could end up being beneficial to people who live in cities such as San Antonio, Texas. The students were also exposed to how management decisions will affect that raindrop and the role that plants and soils play as well.



Figure 1.—Students measured infiltration rate at different sites to see how vegetation affects water infiltration.