Indicator number 10 is plant community composition and distribution relative to infiltration and runoff. I read that entire title to you to really emphasize that what we're looking at here is how the plant cover and composition will affect what happens to water when it reaches the soil surface. We've talked about this a little bit earlier, but, this becomes a really important part of our puzzle. If you have a situation where you have a lot of bare ground and we talked about bare ground, you have a lot of bare ground in between plants or litter on the ground from plants, then, you have places where the raindrops can in fact fall creating splash erosion and start the overland flow process. You also have with that raindrop the ability for it as the soil particles are exploded into the air and then come down into the water that's on the surface of the soil, you'll have the sand soil particles immediately fall to the ground because they're heavier and you'll float the clay part and then finally as it begins to dry out, soil as runoff or infiltrated and/or stood for a while, what's on the top of the soil becomes the clay and so that then has an ability to help seal the soil and make induce the infiltration rate even farther so that how the vegetation is what's on the landscape and how it's arranged on the landscape has a huge affect on what happens relative to infiltration. If a leaf intercepts the raindrop or the base of the plant intercepts the raindrop, or a twig, litter, intercepts the raindrop, then, it basically reduces the energy from the raindrop, it does not cause the raindrop splash and so you don't start the process of runoff erosion and reduce infiltration. The thing that we know is that if we have areas where the vegetation is fairly evenly and uniformly distributed across the landscape and you have water that

does begin to flow down a hill, then, it has to flow around everyone of those plant bases and when it flows around the plant base, it takes time and the longer it's on the surface the more time it has to infiltrate, so, if we can basically cause water to slowly move across the landscape, we're giving it more time to infiltrate into the soil. This is all affected by the plant composition and how the plants are distributed on the surface of the soil, so, we're looking at morphology and cover and we're looking at plant spacing when we're trying to evaluate this particular indicator. You've seen many of us have worked in the pinyon juniper type, this is in Northeastern New Mexico out of Las Vegas, New Mexico and you've seen these situations on the right-hand side where that you have the juniper trees and pinyon trees that have become competitive with the plant community which is illustrated on the left and as the roots of the trees extend into the interspaces, they start taking the water, you start having very few plants and a result if you could think about looking towards those gentleman and then off to the right down the slope, you could basically see how the water could be flowing down that area and you see almost no impediment, no plant there that would cause that water to slow down and have time to infiltrate. The same site on the left-hand slide gives you real evidence that water would have to move across that very slow because it's going to have to trickle around each one of those grass plants roots and crown to be able to move from place to place, so, I think you'll be able to see that the plant community can have a big impact on infiltration and runoff. This affects the attribute of hydrologic function and what I'd like to do now is have you look at a short video that illustrates this process.

As the composition and structure of the plant community changes, areas of bare ground increase allowing for increased raindrop splash, decreasing infiltration and increasing overland flow and soil erosion.