

Indicator number nine is soil surface loss or degradation and this is the indicator that actually helps us understand whether or not we've already started to see major problems with the soil surface, including the fact that we are beginning to see loss of the soil surface, loss of organic matter, the upper horizons that contain the organic matter, but, able to in fact in many ways evaluate whether or not we've really begun to lose the character of the soil that provides aside a great deal of its productive capacity. The slide you have in front of you is from Southern New Mexico and it's a situation where you have an arrow there pointing to the buried A. horizon and that is an old soil that had developed prior to much of the European settlement occurring in the area and you see the picture to the lower right-hand side indicating that in that buried horizon you have a relatively good soil structure, it's nice and crumbly, each one of those aggregates would possibly, we'd have to run the slate test, the aggregate test on this, but, the aggregates might have some ability to hold together fairly well because of that structure that you see there even though the soil has been buried for a long period of time in this mesquite dune field which we talked about earlier with the wind scour and deposition. The picture on the left-hand side of that is an interspace where you're looking at the surface of the soil that was previously buried on the other side by the sand and at this particular surface you basically have had wind blowing away the organic matter accumulating under maybe under the mesquite, you've had water washing away organic matter and soil particles and so you've probably lost some of the, certainly lost the A. horizon here on the left-hand side of the slide and you're down into what would be a

subsurface horizon of the soil and you see the structure, the picture of a soil pad there, you have a very blocky hard pad or aggregate of material there that doesn't break down very easily and so it's gonna be difficult for the roots to penetrate and it's gonna be difficult to water and filtrate with the soil that has this kind of structure. So, as we look at this picture we see that there are, in fact significant changes that have occurred in the surface of this soil, both in terms of loss and in terms of degradation so that the soil is not going to be as productive as it was prior to these changes occurring and our comparison slide shows, on the left-hand side you can see the material at the surface of the soil, the organic matter, the darker layer of material, just before the surface, the layer and all the roots and all the organic matter that has stained that surface material down to just above the pen and actually in some ways extending further down and then the picture on the right-hand side you can see has a very light color, you can see there is very little organic matter accumulation or looks like organic matter hasn't stained that very top surface of the soil, we've probably lost, we've certainly lost organic matter from the soil on the right and we've probably lost some of the surface soil from the picture on the right-hand side of this slide and so this loss of soil surface and degradation of the soil surface is very important to us again for all three of our attributes, soil site stability, hydrologic function and biological integrity and we're going to look at a short video that will help us better understand this particular indicator.

M04t07_SoilLoss

As litter and organic matter input is reduced and surface soil is lost to erosion, soil quality and productive capacity declines.