

The Monthly Dirt

A Monthly Newsletter on the California Construction General Permit
By WGR Southwest, Inc.

Erosion on a Grand Scale

April 2018

Last month, the WGR Film & Media team traveled to Arizona to produce its latest educational film project. It was a perfect setting for the series “**Lessons on Erosion Theory from the Grand Canyon**” which will premiere this May during PDU Week 2018. *The Monthly Dirt* interviewed on-location members of the production team to find out more about the film series and why the Grand Canyon was selected as a backdrop for teaching erosion theory.

MD: *Why did you feel it necessary to film this project in the Grand Canyon?*

John Teravskis, (Instructor appearing in the series): There is no better place to learn about erosion and sedimentation! Every principle I teach to my QSP/QSD students and farmers is not only present here but is magnified on a grand scale. Sometimes erosional features can be subtle or nuances, but there is nothing subtle about the Grand Canyon and the lessons it has for us.

MD: *How has it been filming here this week?*

Andrew Teravskis, (Video Director): Amazing! The National Park Service has been incredibly accommodating to our project, helping us through the permitting process, suggesting locations, and allowing us to be flexible with weather conditions. We have captured absolutely stunning images ranging from a sunrise over Pima Point to sunsets over Navajo Point and Hermit's Rest. You couldn't ask for better weather, at least for the camera ... but it has been cold, really cold! The footage we got while talking about soil cover and the C Factor was a highlight for me. We were walking through a majestic Ponderosa Pine forest with snow flurries falling all around us.

MD: *What erosion principles are you illustrating with this unique location?*

JT: It is a 5-part video series in which we begin by looking at the definitions of erosion and sedimentation and then move on to identify the five stages of erosion. We use the RUSLE soil loss equation to guide our tour through the Grand Canyon stopping at various points of interest to, not only take in the sights, but also address the variables in the equation. The videos will help clarify some misconceptions like the difference between erosivity and erodibility. At one of the filming locations, we show how to calculate the length of sheet flow and the slope percentage. We also use the Canyon and the larger Colorado River watershed to demonstrate the principles behind the Dynamic Equilibrium

relationship and the processes of aggradation and degradation.

MD: *What kind of film equipment are you using and what challenges have you encountered?*

AT: We are very happy with our selection of equipment that we brought with us. The picture quality we've seen in the dailies [preview footage] is beyond our expectations. We are shooting on the Canon C200 digital cinema camera in 4K and cropping to “scope,” or 2.39:1. It's kind of an unusual aspect ratio for a training film, but we wanted to go with a more dramatic visual presentation - it's the Grand Canyon after all, it needs to be big. For many of our shots following John on the trail, we used a handheld gimbal – a Freefly Movi M15. This gives us incredibly smooth footage even when we are chasing him up a steep slope. One of our biggest challenges this week has been the ever-changing weather conditions. The clouds are providing a dramatic backdrop, but the lighting changes constantly.

MD: *How do the erosion lessons taken from the Grand Canyon relate to a construction project?*

JT: That is a good question. When we think of the Grand Canyon we usually relate it to natural erosion. In other words, erosion caused by weather, wind, chemical and geological processes, plants, and even past catastrophic events. We typically do not associate human activities with erosion in the Canyon like we would on a construction site. (Although, you will see that the presence of so many park visitors does have an erosional impact on trails and accessible areas. But the National Park Service is doing an excellent job in maintaining these areas and keeping erosion to a minimum but still open to visitors.) In these videos, we relate things we observe in the Canyon to similar conditions on a construction project. For example, you will notice looking at the canyon wall over there, that some of the layers are essentially vertical, but others are sloped. This is because of the differences in the erodibility of soils, or the K

factor. Some soils are more erodible than others and will therefore exhibit different characteristics. On one of our filming days, we explored a wildfire area and talked about the effects of the loss of vegetation due to fire. We also saw examples of how the Fire Service fell trees so that they lie parallel to the contours of the hill. The felled trees are acting as linear control breaks much the way that Caltrans uses straw wattle on the slopes of a new highway overpass.

MD: *What kind of audio equipment are you using?*

Jonah Sonner, (Production Sound Mixer): I am using a Sound Devices portable digital recorder with my Audix hypercardioid microphone on a boom pole. We are getting good sound quality, but the Canyon does present some unique challenges. Sometimes, it is almost too quiet here and the rocks and canyon walls give us strange reverberations and echoes. Wind, rain, and snow also make it challenging to get good clear recordings. But, we have gotten some really good foley, such as birds in the Piñon Pines, wind rustling through the Ponderosas, the creaking of a dead tree that was on the verge of toppling over, and the sound of snow hitting the ground.

MD: *John, you mentioned that past events may have been responsible for the erosion of the Canyon. What do you mean?*

JT: Well actually, there is some controversy about the formation of the Canyon and it boils down to this ... *was it a little water over a lot of time or a lot of water over little time?* In the opening video, I use erosion principles to help shed some light on this controversy. You will have to watch the video to see which side of the controversy I weigh in on. But, it is fascinating to see how erosion and sedimentation concepts that I teach and use every day are applicable not only on construction projects and in agriculture, but also in a National Park.

MD: *When and where will our readers be able to view this fascinating series on erosion?*

AT: It will be available at www.PDUweek.org and can be viewed at no charge during this year's PDU Week event, May 21 – 27, 2018.



Upcoming Training

- ✓ QSP/QSD Training in Lodi, CA, Apr. 10-12, 2018
 - Sign up at www.gotswppp.com
- ✓ New On-line PDH Opportunity Coming:
 - **Lessons on Erosion Theory from the Grand Canyon**
 - Available on www.pduweek.org, May 21 – 27 2018

(For more information about these classes, please email jteravskis@wgr-sw.com)

Online Tools for the Erosion Professional

The United States Department of Agriculture's (USDA) Natural Resource Conservation Service (NRCS) and the University of California have teamed up to develop some online tools that are great resources for those who prepare SWPPPs and Erosion & Sediment Control Plans. One of them is the SoilWeb, an online app that allows you to view an aerial map and see soil types and other soil data for the location you are currently in.



It is also available as an app for iPhones and can be downloaded as a kmz file for Google Earth. The California Soil Properties is another tool developed by NRCS and the University of California. It displays information such as the HSG ratings of soil types over a selected area.



For more information or to download these apps, go to:

<https://casoilresource.lawr.ucdavis.edu/soilweb-apps/>

Please contact us if you have any questions ...

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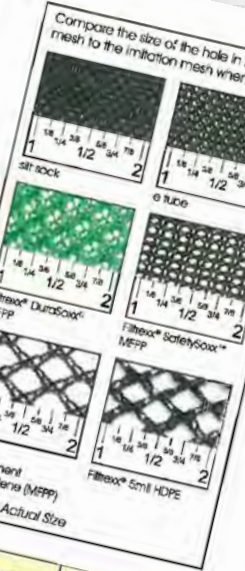


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