

The New Mexico Interstate Stream Commission hosted a work-group of Watershed Researchers on April 4, 2014. During this all-day event, eight people presented and discussed their research in the fields of forest thinning, watershed management and fire suppression. The notes below briefly summarize the discussions. If you would like more information about any of the topics, please send an email to [nm.awsa@state.nm.us](mailto:nm.awsa@state.nm.us) and it will be forwarded to the presenter.

Dr. Robert R. Parmenter, Director of Scientific Services Division for Valles Caldera National Preserve, USDA, talked about the Valles Calderas history and research projects, especially those regarding snowpack and sublimation. He described the field equipment they have in place, including ET towers. He discussed the challenges wildfires and floods present to doing field work, particularly in damage to the equipment. Dr. Parmenter described a plan to use a series of models to analyze 1300 stands of forest within the preserve, and then develop a prescription for thinning to minimize snow sublimation and maximize water retention.

Amy C. Lewis, Hydrologist for ACL Consulting, discussed a paired watershed basin study in the City of Santa Fe City watershed. The goal of this study is to determine whether treatment increases water yield in the outlet stream. The treated basin is holding more water, however the basins are not matched as well as they should be, given terrain and size differences. Bears have been a problem as they tear up the equipment. ET is measured by chlorine mass balance. Results are inconclusive.

Dr. Frank H. McCormick, Research Program Manager for Air, Water and Aquatic Environments Program in the Rocky Mountain Research Station, US Forest Service Research and Development, discussed the history of the US Forest Service itself and of its research. He discussed the Fool Creek Study in Colorado at length and in great detail. This study began in 1956 and continued for 50 years. This led directly into a discussion of the effects of a bark beetle infestation at the same location.

Temuulen "Teki" Sankey, Assistant Research Professor at the School of Earth Sciences and Environmental Sustainability, Northern Arizona University, discussed how remote sensing could be used for monitoring the Four Forest Restoration Initiative (4FRI) in Arizona. The overall goal of the 4FRI is to create landscape-scale restoration approaches that will reduce fuels for wildfire, and improve forest health, and wildlife and plant diversity. The methods discussed by Dr. Sankey included MODIS, LANDSAT, WORLDVIEW and small unmanned aerial vehicles.

Mike Matush, measuring increased watershed hydrology pre to post thinning scenarios, described restoration of grasslands with mechanical thinning of trees and carefully managed grazing. Effectiveness is measured by measuring the annual weight of grass produced per acre.

Talon Newton, Ph.D., Hydrogeologist at NM Bureau of Geology and Mineral Resources, New Mexico Institute of Mining and Technology described his work on the New Mexico Bureau of Geology and Mineral Resources Aquifer Mapping Program in the Sacramento Mountains of southern New Mexico where 26 inches of precipitation fall each year. An estimated 25-40% of this precipitation is intercepted by trees and much of that sublimates. Dr. Newton discussed the challenges of determining which path

the water may take, the possibilities of perched aquifers and how critical soil is in the water budget equation.

Cody Stropki, Ph.D., Watershed Scientist, SWCA Environmental Consultants, described a paired watershed study in the Estancia Basin in central New Mexico. He discussed soil erosion, soil chemistry, equipment used. Insect damage is aiding the thinning efforts, but not really appreciated because it cannot be controlled. Much data is already available at <http://www.nmfwri.org/index.php/estancia-basin-monitoring>.

Dr. Kent Reid, Director of the New Mexico Forest and Watershed Restoration Institute at New Mexico Highlands University, gave a summary of forest management operations of Sugarite Canyon State Park. There are 12 funding sources for thinning operations in this park. Thinning operations were conducted in such a way that many trees were left standing and a deep layer of wood chips was left on the ground. A few years later, after a long period of very dry weather, an ATV started the "Track Fire" of 2011, which burned 28000 acres. It is believed that if the thinning operation had been more aggressive and the wood chips and debris removed from the area, the fire might have been less catastrophic. The Little Bear Fire and preceding thinning operations were also discussed.