NORTHERN ARIZONA UNIVERSITY

WATERSHED
Research & Education Program

2006 Field School in Watershed Science for K-12 Educators

April 20-22, 2006

KEY FINANCIAL UNDERWRITING BY:

WITH ADDITIONAL CONTRIBUTIONS FROM:

ADEQ Arizona Department of Environmental Quality

ENVIRONMENTAL BIOMASS

ARIZONA DEPARTMENT OF WATER RESOURCES

Institute for Tribal Environmental Professionals — Northern Arizona University

Rocky Mountain Research Station

2006 Field School in Watershed Science for K-12 Educators

Presented by NAU's Watershed Research & Education Program

The objectives of this Field School are to:

- Present watershed science information that will be of lasting value to educators and their students;
- Facilitate discussion and networking in an interactive learning environment;
- Examine the application of watershed science to water issues that presently face north-central Arizona communities.

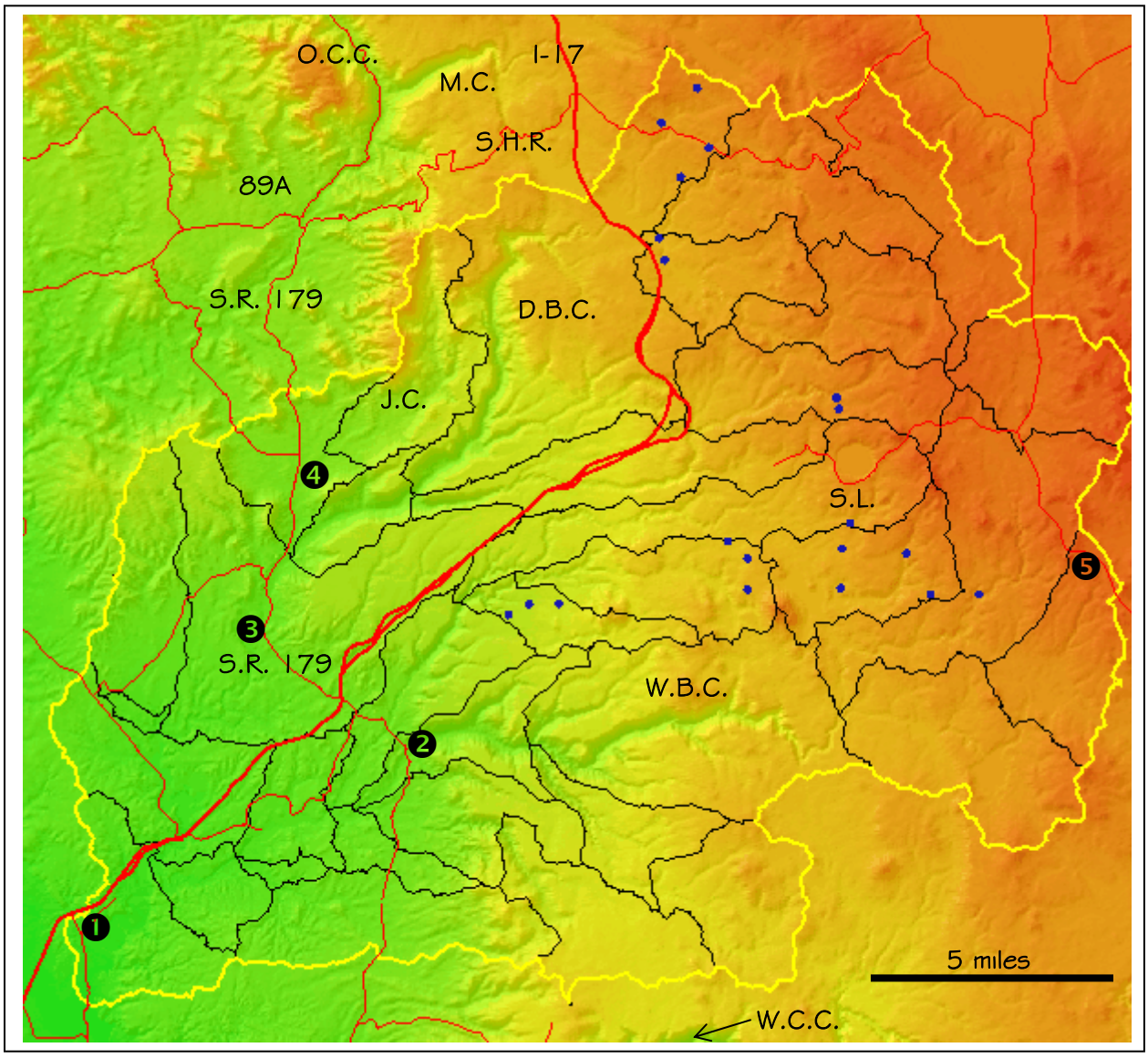
During this Field School we will explore issues pertaining to impacts of fire on watersheds, land use and urbanization; water use, quantity, quality and conservation; drought impacts, surface and ground water hydrology; geology, and riparian ecology, with emphasis on development of curricula and curricular materials suitable for primary & secondary schools. Individuals who have been and continue to be involved with these issues will lead individual portions of the trip, and present and exchange information with participants. We will spend our time primarily in the Beaver Creek watershed. All sites have been chosen to allow ready access during inclement weather.

The following summary of the Beaver Creek watershed is condensed from information provided on the USDA Forest Service's Rocky Mountain Research Station website:

ag.arizona.edu/OALS/watershed/beaver/index.html

The 275,000-acre Beaver Creek watershed is about 80 km (50 mi) south of Flagstaff, Arizona, in Coconino and Yavapai Counties. From 1956 to the early 1980's, this area was a major center for watershed management research within the pinyon-juniper and ponderosa pine vegetation types, on the Coconino National Forest. The watershed is part of the much larger Verde River watershed, which supplies much of the water for the Phoenix metro area and Salt River valley. The watershed is along the Mogollon Rim and is within the largest continuous stand of ponderosa pine in the United States, which extends for nearly 200 mi across Arizona.

Bedrock in the shed consists of igneous volcanic rocks, underlain by sedimentary rocks of Kaibab, Coconino, and Supai formations, which outcrop at lower elevations in the watershed. Elevations range from 3,000 to 8,000 ft above sea level. Vegetation ranges from semi-desert shrub at the lower elevations, to pinyon-juniper woodland from 5,000 to 6,000 ft, which gives way to ponderosa pine above 6,500 ft. Precipitation and streamflow vary greatly from year to year. Seasonally, streamflow peaks during those few winter/spring months when snowpack melts. The watershed is now a biosphere reserve, a component of a worldwide network in UNESCO's Man and the Biosphere (MAB) Program.



Beaver Creek Watershed (yellow outline) with Sub-Watersheds & Gages (blue dots) (http://seth.arid.arizona.edu/website/ialc_watersheds/beavercreek/viewer.htm)

❶ Cliff Castle Conference Center
❷ Beaver Creek Campground
❸ Dry Beaver Creek
❹ Big Park Wastewater Treatment Plant
❺ Happy Jack Area
89A is Highway 89A
J.C. is *Jacks Canyon*

W.B.C. is *Wet Beaver Creek sub-watershed*
D.B.C. is *Dry Beaver Creek sub-watershed*
S.R. 179 is *State Route 179*
I-17 is *Interstate 17*
W.C.C. is *West Clear Creek*
S.L. is *Stoneman Lake*
O.C. is *Oak Creek*
S.H.R. is *Schnebley Hill Road*
M.C. is *Munds Canyon*

Thursday April 20

6:30 PM	Registration and Room Assignments
7:00 PM	Welcome, orientation and introductions at Cliff Castle Conference Center
7:20 PM	Keynote Presentation on Arizona/Southwest Climate History – *John Skindlov* – SRP
8:30 PM	Break for night

Friday April 21

7:45 AM	Breakfast; Orientation to the day. Confirm rooms for those who did not arrive Friday night.
8:45 AM	Load vehicles, depart for Beaver Creek Ranger Station/Campground
9:15 AM	Arrive at Beaver Creek Ranger Station/Campground
9:30 AM	Wet Beaver Creek I Stream Flow Gaging – *Curt Kennedy* – SRP Hydrologic Gaging and Precipitation Data with GIS Examples – *Leslie Graser* – ADWR Bathroom Break
12:00 PM	Distribute Box Lunches
1:00 PM	Dry Beaver Creek I Riparian and Flood Plain Setting and Ecology – *Janie Agyagos* – Coconino National Forest
2:00 PM	Load vehicles, travel to Village of Oak Creek
2:15 PM	Arrive at Village of Oak Creek's Big Park Wastewater Treatment Plant Wastewater – *Lee Hixson*, Environmental Biomass
3:30 PM	Load vehicles, travel to Cliff Castle Conference Center, Middle Verde
4:00 PM	Arrive at Cliff Castle Conference Center
4:30 PM	Water Policy – *Grant Loomis* – USFS & *Rich Martin* – Retired USFS
5:30 PM	Check-in to hotel rooms for those who did not arrive Friday, freshen up
6:30 PM	Buffet Dinner, Cliff Castle Conference Center
7:30 PM	Facilitated Exchange amongst Educators – *Muriel Haverland*
9:00 PM	Break for night

Saturday April 22nd

7:00 AM	Checkout of hotel rooms.
7:30 AM	Full breakfast at Cliff Castle Conference Center
8:15 AM	Load vehicles depart to a wildfire/controlled burn site (Happy Jack area) History, Science/Policy related to Fire in Forests, the Wildland/Urban Interface – *David Ostergren* – Ecological Research Institute at NAU History of Fire Magnitudes, and Impacts of Fire on Streamflow & Sediment – *Dan Neary* – Rocky Mountain Research Station at Flagstaff
11:45 AM	Travel to Beaver Creek Ranger Station/Campground
12:30 PM	Lunch
1:30 PM	Wet Beaver Creek II Water Quality (Chemistry) – *Mansel Nelson & Co.* – NAU Water Quality (Macroinverterbrates) – *Sam Rector* – ADEQ
4:00 PM	Load vehicles travel to Cliff Castle Conference Center
4:30 PM	Field School closeout at Cliff Castle Conference Center; complete evaluations

Recommended Gear

Small daypack or fanny pack
Layered clothing (cool mornings, warm/hot afternoons)
Long pants (potential for poison ivy and snakes)
Hat (with wide brim)
Sunscreen & Sunglasses
Water bottles (we will provide ice water, as well)
Sturdy foot gear (with likelihood of getting wet/muddy, Tevas or old sneakers work well)
Cameras
Binoculars
Tissues & TP
Rain Gear – *so that we can go into the field, rain or shine*

Drivers of vehicles (NAU personnel)

Janine Ostergren
Charlie Schlinger
Third person (TBD)

Provided by WREP

Lunches
Snacks & Drinks during field trips
Coolers for box lunches and beverages
Transportation from Camp Verde to Field Localities
Field trip handouts

Organizers:

Janine Ostergren
NAU
(928) 525-2943
Janine.ostergren@nau.edu

Charlie Schlinger
NAU
(928)-523-0652
charles.schlinger@nau.edu

LINKS AND OTHER INFORMATION

http://azriparian.asu.edu/ (Arizona Riparian Council – Information Sheets, etc.)
http://www.mpcer.nau.edu/beavercreek/
http://ag.arizona.edu/OALS/watershed/beaver/index.html
http://waterdata.usgs.gov/az/nwis/dv/?site_no=09505200
http://seth.arid.arizona.edu/website/ialc_watersheds/beavercreek/viewer.htm
http://www.prescottcreeks.org/