2004 Verde Watershed Field School
April 2nd – 4th, 2004

ITINERARY

Organized and Sponsored by:

Verde Watershed
Research & Education Program

KEY FINANCIAL UNDERWRITING BY:

2004 Verde Watershed Field School

Introduction

The Verde River watershed incorporates a diverse range of tributaries each with their own set of natural characteristics and human-induced problems. Our 2204 Field School is designed to investigate a variety of these characteristics and water-related issues, with focus on two key watersheds – both of which have been impacted by the current drought.

The Fossil Creek watershed is an area with spectacular landscapes, water features, geology and ecology. Fossil Creek is a perennial stream and key Verde River tributary with headwaters at the Fossil Springs – a Wilderness Area. Hydroelectric power facilities below the wilderness area are presently operated by APS and are slated to be decommissioned in December of 2004. As part of decommissioning, the future of the Fossil Springs diversion dam must be addressed. The U.S. Forest Service, the land manager, faces the choice of removing the dam altogether, or lowering the height of the dam. Each alternative has implications for liability, recreation, native fish populations, plant life as well as water quality and quantity. Additionally, anticipated groundwater development in Pine-Strawberry has the potential to impact the aquifer that supplies Fossil Springs.

The Oak Creek watershed is an equally-spectacular environment with a different set of ecological, geological and anthropogenic conditions. Oak Creek too is an important tributary of the Verde River. Runoff from snowmelt and rainfall, springs and base flow provide a perennial flow that supports a diverse and rich riparian habitat. Presently, the Coconino (*C*) and Redwall (*R*) aquifers provide water supplies for many communities on the Coconino Plateau and in the Verde Valley. Smaller wells draw water from alluvial deposits, some of which may be hydraulically-connected to Oak Creek. Pumping of groundwater has led to concerns about possible impacts on Oak Creek and Verde River baseflow and on the regional and local aquifers. Also, impacts on Oak Creek from individual and community wastewater treatment systems have been, and remain a concern.

During this Field School we will explore issues pertaining to land use and urbanization; water use, quantity, quality and conservation; surface and ground water hydrology; geology, and riparian ecology, with emphasis on development of curricula and curricular materials suitable for Verde Watershed secondary schools. Individuals who have been and continue to be involved with these issues will lead the trip, and present and exchange information with participants. We will spend one long day in the Fossil Creek watershed and a shorter day at several sites along Oak Creek.

Friday April 2nd

6:00 PM Welcome, registration, orientation and introductions at Cliff Castle Conference Center, Middle Verde.

7:00 PM Presentation on Tribal History
Vincent Randall Apache Historian, Yavapai-Apache Tribal Council Member

Saturday April 3rd

6:30 AM Coffee, juice muffins and bagels; Orientation to the day. Confirm rooms for those who did not arrive Friday night.

7:00 AM Load vehicles, depart

8:15 AM Arrive at site – Fossil Creek & Irving Hydroelectric Plant

8:30 AM Fossil Springs Ecosystem and trip to the dam (15-30 minutes on flume road).
Orientation Introduction: Phil Smithers of APS (15 mins)
Discussion topic: Fossil Creek Dam removal: hydrological, biological issues

Riparian Setting - *Vanessa Beauchamp (Arizona State University)*
Stream flow monitoring - *Grant Loomis, Kathy Nelson of Tonto National Forest*

11:30 PM Return to Irving Station, Distribute Box Lunches; lunch & bathroom break

APS Operations - *Phil Smithers* of APS (45 mins)
SRP Human water use and demand – *Wayne Kirby of Salt River Project* (45 mins)
Fish barrier and endangered or native fishes - *Rob Clarkson of USBR* (45 mins)
USFS Management Challenges & Answers - *Judy Adams of Coconino National Forest* (45 mins)

4:30 PM Relocate to Creek site near Irving Station

Hydrology/geomorphology - *Stephen Monroe*

5:30 PM Load vehicles, travel to Cliff Castle Conference Center, Middle Verde.

6:45 PM Arrive Cliff Castle Conference Center; check-in to hotel rooms for those who did not arrive Friday, freshen up.

7:00 PM Buffet Dinner, Cliff Castle Conference Center Evening presentation or discussion.

Sunday April 4th

7:00 AM	Checkout from hotel rooms.
7:30 AM	Presentation during full breakfast at Cliff Castle Conference Center; History of Energy and People in the Watershed - *Jim Byrkit* Human water use and demand - *Wayne Kirby of Salt River Project*
9:30 AM	Load vehicles, depart to Big Park Wastewater Treatment Plant
10:00 AM	Wastewater - *Lee Hixson*, Environmental Biomass Biological implications of water availability in Jack's Canyon - *Vanessa Beauchamp of Arizona State University*
11:30 AM	Load vehicles, travel to Oak Creek area Red Rock State Park
12:00 PM	Distribute box lunches; lunch
1:00 PM	Load vehicles, travel to next stop
1:30 PM	Devils Sinkhole above Sedona Geology of Verde Valley Sinkholes: Form and Function - *Paul Lindberg*
3:00 PM	Load vehicles travel to Cliff Castle Conference Center
3:30 PM	Field School closeout at Cliff Castle Conference Center

Presenters

Vanessa Beauchamp, Arizona State University
Charlie Schlinger, Northern Arizona University
David Ostergren, Northern Arizona University
Grant Loomis, Tonto National Forest
Kathy Nelson, Tonto National Forest
Lee Hixson, Environmental Biomass
Paul Lindberg, Consulting Geologist
Phil Smithers, APS
Wayne Kirby, SRP
Stephan Monroe, USGS
Jim Byrkit, NAU – retired
Rob Clarkson, USBR
Judy Adams, USDA – Forest Service
Vincent Randall, Yavapai – Apache Nation

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

Drivers of vehicles (NAU personnel)

David Ostergren
Charlie Schlinger

Provided by VWREP

Lunch
Snacks
Coolers for box lunches and beverages
Vans
Field trip handouts

Field School Organizers:

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