

CLEARING THE WATERS

A QUARTERLY NEWSLETTER OF THE WATERSHED PROTECTION SECTION

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IN THIS ISSUE....

STINKY CREEK
- PAGE 1

TRAINING
SUPPORTS
SUSTAINABILITY
OF WETLAND
RESTORATION
PROJECTS
- PAGE 4

DIA DEL RIO
- PECOS RIVER
CLEANUP A
SUCCESS!
- PAGE 7

16TH SUMMER
ENVIRONMENT
ACADEMY IN
NORTHERN NEW
MEXICO
- PAGE 7

New Mexico
Environment Department



Surface Water
Quality Bureau

We Found Stinky Creek!

By Abe Franklin

Disclaimer: The contents herein are not intended to deride Stevens Arroyo. I figured that since Stevens Arroyo isn't a person, it can't be offended. And it is really a nice little polluted creek with a lot of potential. The homes and farms around Stevens Arroyo are among the oldest in San Juan County, and that part of the world is certainly dear to most of the people who live there. I hope that when the first picnic is held celebrating the official opening of Ye Olde Swimming Hole on Stevens Arroyo, I can be there.



Spot the illicit discharge: the tires are easy to spot, but septic discharges are a little more challenging to locate. The one found on Stevens Arroyo is in the middle right of the photo.

“Some of the landowners are pretty sure that there are faulty septic systems in the area”, said Deneb Woods, a consultant working for the San Juan Watershed Group.

I had heard this concern before, and I had yet to see a convincing demonstration that septic systems have much effect on surface water, anywhere in New Mexico.

“A couple of them pointed me to a suspicious site”, she added.

“OK, we'll see,” I thought to myself. “What makes it suspicious?” I asked.

“There's a pipe coming out of the stream bank near a mobile home, and underneath it is a black-looking deposit.

“Was it flowing?” I asked, thinking that this pipe sounded promising, but that unless it was flowing we wouldn't have data to make our case.

continued on pg. 2



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www.nmenv.state.nm.us/swqb/wps

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CTW is also available on our website at:

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STINKY CREEK continued from page 1...

It turned out that, when sampling did take place in May of this year, the pipe was flowing, and the E. coli results were very high indeed. Even the one to one hundred dilution had a result of "too numerous to count," which told us that the concentration of E. coli was greater than 241,960 colony forming units per 100 mL. That something so foul made me so happy is evidence of the perversion of my profession.

I personally had thought that the cattle grazing along the stream in places, and the small sheep operation in which Stevens Arroyo is the primary water source, and even the flood-irrigated fields that serve as winter pasture and thus get all loaded up with cow patties all winter long were all likely sources, but it was somehow reassuring to have some evidence that the suspicions of so many people were not wrong. It just took a little persistence to confirm those suspicions.



Stevens Arroyo in March

It turned out that even a conspicuous source such as that dribbling pipe, which by mathematical necessity must have produced a real increase in E. coli numbers in the stream, produced only a minor increase. The sheep operation produced a small increase too. So did the cattle grazing, judging from the numbers upstream and downstream of the reach with the most cows. The irrigation return flows had a larger influence, but the influence of specific return flows varied between dates, and they weren't a source at all until early April, when water was first available in the ditch. What we found was a classic nonpoint source pollution problem, in which no single source is especially significant.

Except, the more data that were collected, the more significant Stevens Arroyo's influence on water quality in the San Juan River as a whole appeared. The San Juan Watershed Group recognized that Stevens Arroyo was a good place to start a study of bacteria sources, based on its representative nature (being rather typical for the San Juan Valley), and the high result of a single sample for E. coli collected from a raft where Stevens Arroyo joins the San Juan in May of 2005. After three sampling events in 2006, it became apparent that Stevens Arroyo *continued on page 3*

contributes a good share of the E. coli load in the San Juan River, despite the relatively tiny size of its watershed. On the two dates on which the flow of Stevens Arroyo was measured, it was contributing more than 20% of the E. coli load of the San Juan River downstream.

After five years of traveling to the Farmington area for different water quality related work, I had never brought my family. So in June, my wife Tania Chávez and son Skye (who is six) finally got to tour the four corners, and they joined Deneb and I for sampling. We were also joined by Lawrence Stock, a farmer with land near Waterflow who had become a frequent Watershed Group participant. Lawrence was interested in knowing more about the sampling, and probably wanted to help us learn more about the potential sources, as there would certainly be complexities that we wouldn't understand with our cursory field visits. Skye loves playing in rivers, and we had a hard time convincing him to stay out. "This is one stream you don't want to get into", I said. Later, Skye got up ahead of us and by the time we caught up he was in the stream cooling off. Fortunately, we were at an upstream site. I noticed a dead animal, indistinguishable as to species except that it may once have weighed forty pounds, in the water about twenty-five feet downstream of Skye.

The findings from Stevens Arroyo have generated some urgency in the San Juan Watershed Group meetings, but most of the participants are not in a position to help directly. Furthermore, the two main farmer participants were uncomfortable with the notion that this group, composed of people from all over San Juan County and some beyond, presumed to deliberate the fates of a few farmers and residents in an obscure area west of town. So far, only Deneb had been in touch with any of them, and that was only to request permission to sample and very briefly explain what we were up to. But then the offers starting coming forth to help out in different ways, and see what might be possible, and we can expect good news on Stevens Arroyo.

In case you're wondering about the septic system that was discharging directly into Stevens Arroyo, staff from the Farmington Field Office of the Environment Department had been attending Watershed Group meetings and learned of the illicit discharge right away. They decommissioned the one described above along with two other faulty systems in the area, and are keeping their eyes and ears out for others.

For a more complete account of the recent Stevens Arroyo monitoring, please see the report available on the Watershed Protection Section page of the NMED web site (www.nmenv.state.nm.us/swqb/wps), in the "reports and studies" drop-down list. ~

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NMED Surface Water Quality Bureau's
**NEW MEXICO
WETLANDS PROGRAM**
has a new website - come check us out!
www.nmenv.state.nm.us/swqb/wetlands
There is a lot of great information with more to come, so keep checking back.

Training Supports Sustainability of Wetland Restoration Projects

by Julie Arvidson

A clear understanding of restoration goals and how to achieve them is essential to the long-term success of a restoration project. Over the past 6 months a wetlands restoration project on Cedro Creek (near Tijeras, New Mexico) has provided a unique educational opportunity for stream restoration practitioners to acquire the skills necessary to guarantee success and sustainability of projects throughout the State. “Restoration Methods of Riverine, Wetland, and Cienega Ecosystems” was a 3-part seminar series held in May, August, and October of this year and lead by professional stream restorationist Bill Zeedyk.



Class discussion at a cienega - a spring fed wetland in the Sandia Mountains.



Visiting a relic wetland along Cedro Creek.

The seminar included both classroom instruction and extensive field work. The primary focus of the course was the demonstration and application of Zeedyk’s well respected “Induced Meandering” techniques and participants were directly involved with implementing these techniques to sections of Cedro Creek during the seminars. Participants in the training are required to use knowledge gained in the class to restore other locations in New Mexico as part of the seminar’s practicum.

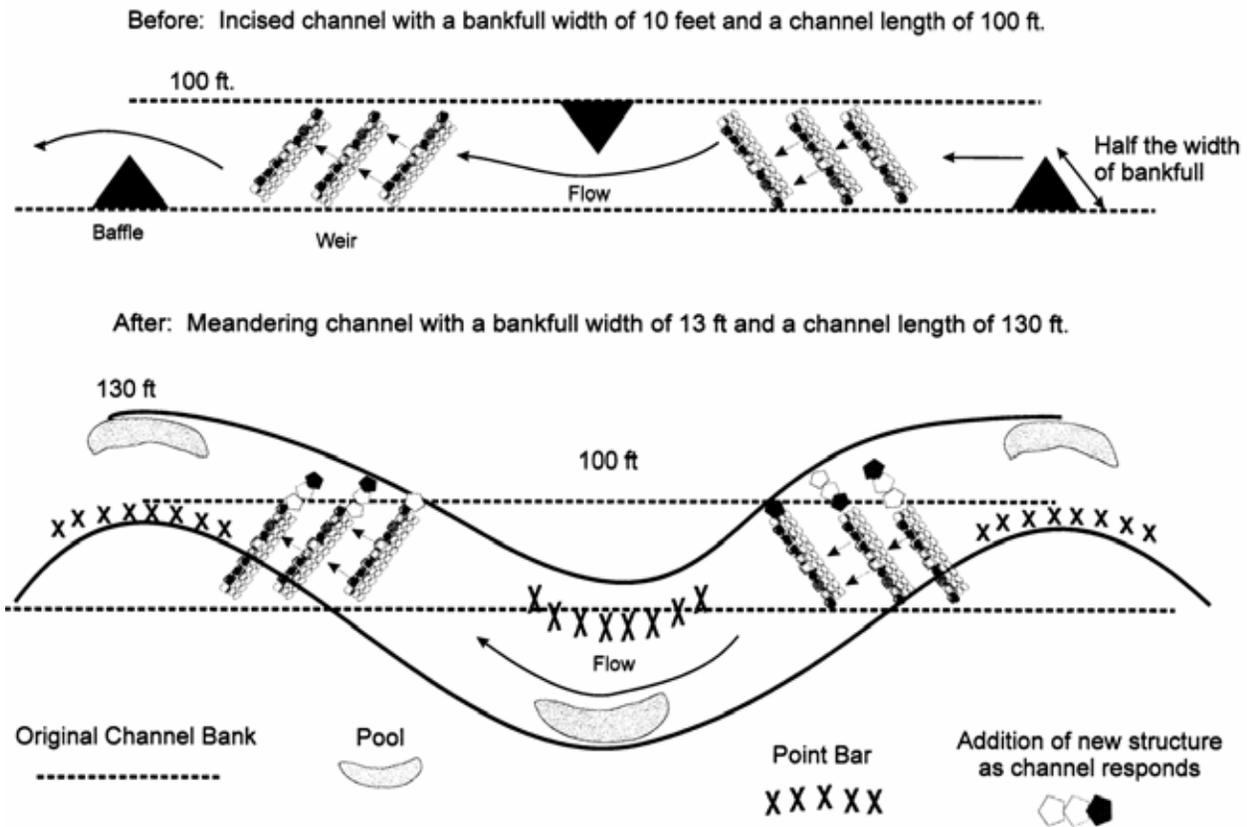
Induced Meandering is a new technique which encourages incised streams to deposit sediment and form meanders. After sediment is deposited in the bends of a meander, wicking action occurs between the alluvial strata to facilitate growth of riparian/wetland vegetation. A number of other techniques were also taught in the seminar including the placement, design, and installation of structures to restore dispersed flows across wet meadows.

The first 3-day seminar was held in May, 2006 and focused on an introduction to wetlands and geomorphic analysis for stream restoration and natural channel design. The connection between wetlands and induced meandering was stressed by Zeedyk. Riverine wetlands have a hydroperiod, or period when water is available to the vegetation. If the hydroperiod is short, more upland vegetation will begin to appear. If the hydroperiod is longer, soil and water will be affected and wetland vegetation will persist on river banks and colonize the tops of point bars. Wetland vegetation such as sedges have very fibrous roots which form resistant mats that can stabilize banks and bars and work to narrow overly wide streams. Increased vegetation height and density increase the roughness of the floodplain’s surface which, in turn, allows more sediment to be retained and water to be held longer following a flood event. This action results in effectively lengthening the hydroperiod. Precipitation, hyporheic water, snowmelt runoff, water consumption, and vegetation type contribute to the hydroperiod. Induced meandering encourages the growth of wetland plants, increases meander length, improves the stream’s access to it’s floodplain, and decreases stream channel slopes all resulting in extension of the the hydroperiod , thereby encouraging the growth of wetland plants.

continued on page 5

Deposition of sediment is also important in facilitating growth of wetland vegetation in floodplain areas. During bankfull flow (usually a flood event with a recurrence interval of one to two years), it is important for the river to move into the cobble layer on the inside of the meander-bend. When this happens, topsoil in contact with cobble layer develops capillary action which increases soil moisture and helps to facilitate wetland vegetation growth. The capillary zone is shut off when the bed of the river drops. For example, when a headcut is present the river is not reaching the cobble layer and therefore no capillary action can occur.

Overall, by improving the opportunity for the river to meander, sediment deposition improves, wetland vegetation grows, and the hydroperiod is extended. Course participants visited various areas including Cedro Creek and San Pedro Creek to see the different types of wetlands discussed in the classroom sessions and to see first hand how Zeedyk's induced meandering structures function.

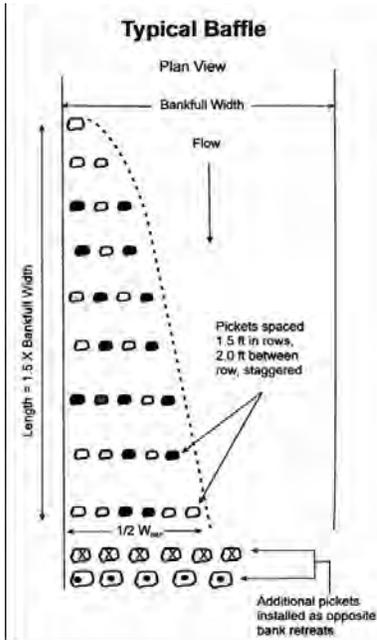


Placement of Induced Meandering structures

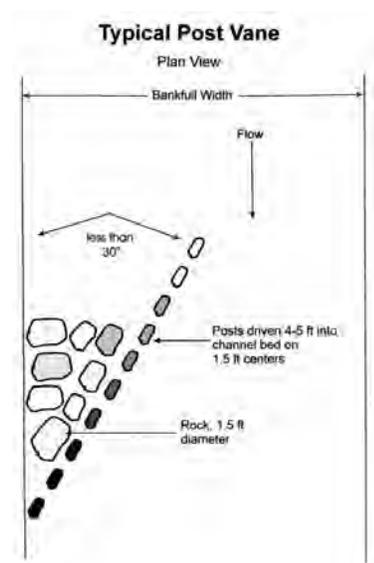
This first session also reviewed wetland monitoring techniques such as greenline, line-point intercept, geomorphic, and proper functioning condition (PFC). These methods assist in determining the type and condition of the river system and vegetation that occurs in the area. Zeedyk stressed the importance of working on a project area for several years to monitor the success of the project and repair or add to any structures that may have been impacted by flooding.

The second seminar, held in August, addressed measurement and design. Participants learned more of the equations associated with Induced Meandering and how to create a plan from problem to solution for the river. Overview included Rosgen Stream Channel Types and evolutionary trends of stream morphology. Participants learned the elements of creating a project vision and design goals by working within the constraints of their river restoration projects. Participants spent half of their time in the field developing a design for particular stretches of Cedro Creek and presenting it to the rest of the class.

continued on page 6



Example of a one rock dam



In October, the third and final session of the seminar series focused on implementation strategies. Participants used the design of their section of Cedro Creek or of their own projects to create an implementation plan. The plan includes the information needed to obtain the necessary CWA permits. These plans will be implemented after the training to complete the wetland restoration project on Cedro Creek and for the participants' other project areas.

Participants will be applying what they've learned in class to a project that they select. In addition to several sites on Cedro Creek, projects developed out of this training include the following locations:

- Cieneguilla Creek - Moreno Valley of North Central NM,
- Cottonwood Creek - Central Arizona,
- Las Huertas Creek -Wallwork Reach near Placitas, NM,
- Sabino Creek - Tijeras Canyon
- Tinaja Creek - Colfax County
- San Pedro Creek - South 14 Bernalillo County
- Pueblo Canon drainage - Eldorado, NM
- Mimbres River tributary arroyo - Grant County
- Santa Fe County near La Cienega
- Tesuque Creek - Santa Fe County
- Whitewater Canyon Tributary - Lupton, AZ
- El Rito Creek - Rio Arriba County
- Santa Fe River Arroyo
- Cienega Springs & Deer Flats Spring - Mescalero Indian Reservation

A sense of ownership has been established with these projects and with the Cedro Creek project because so many people have been involved in the process of project development. The goal of the training seminar was to have restoration specialists around the State prepared to apply for grant funds and to ensure sustainability for projects in the future.

This restoration & training project was supported by a grant from the EPA Region 6 Wetlands Program under Clean Water Act Section 104(b)(3) and was implemented by SWQB in cooperation with the Quivira Coalition and the US Forest Service Sandia Ranger Station. In addition to Bill Zeedyk, instructors included Van Clothier, Steve Carson, Rich Schrader, and Steve Vrooman. ~

Julie Arvidson is with the NMED Surface Water Quality Bureau in Santa Fe. She can be reached at (505)476-3069 or julie.arvidson@state.nm.us.

Dia del Rio - Pecos River Cleanup a Success!

An all time record for the Dia del Rio Pecos Cleanup was set on Saturday, October 14th with 122 volunteers participating! The event was organized by the newly formed Upper Pecos Watershed Association (UPWA). The Forest Service picked up 115 bags of various sizes to take to the transfer station along with an engine manifold, odds and ends of metal objects and a large, very soaked, and muddy piece of carpet. Additional loads of trash were also taken, bringing the total of garbage bags collected to over 130. Way to go Pecos! After the morning cleanup there was a celebratory barbeque lunch held at the Tererro campground complete with a demonstration of the aquatic insects living in the Pecos River that depend on clean water.

If you wish to get involved with the UPWA, the next Stakeholder/Member meeting will be January 17 at the Village of Pecos Hall. You can also contact Neal Schaeffer with NMED Surface Water at 476-3017; neal.schaeffer@state.nm.us. ~



Cool Bugs! Young Dia del Rio volunteers learn about the aquatic insects whose habitat they are helping to protect.

16th Summer Environment Academy in Northern New Mexico



USFS Soil Scientist Greg Miller explains wetland soils to academy participants.

The New Mexico Environment Department (NMED), Surface Water Quality Bureau once again helped to sponsor the annual Summer Environmental Academy. The academy is coordinated by WERC, a consortium for environmental education based at New Mexico State University. Thirteen teachers and 19 students from across New Mexico and Arizona participated in this year's academy held in Taos July 17-21. The theme for the 16th academy was "Cultural and historical use of water in Northern New Mexico". Guest lecturers and mentors for the 5 day course were from New Mexico Environment Department, Los Alamos National Lab, NM Fish and Game, Taos Pueblos, NM Acequia Association, Taos Bureau of Land Management (BLM) Field Station, and the Carson National Forest.

Time was divided between classroom style lectures and field trips with an emphasis on hands-on learning. Topics covered included riparian restoration and resource management at the Pilar BLM Recreational Area along the Rio Grande, wetlands restoration at the Stewart Meadows Waterfowl/Wildlife Habitat Improvement Project, a sustainable organic acequia farm, and Taos Pueblo Cultural Center.

The Stewart Meadows is a joint wetlands restoration project between the NMED Surface Water Quality Bureau's Wetlands Program and the USFS Carson National Forest. Academy participants planted water birch, learned about soil types by drilling soil pits, and learned about the types of aquatic insects living in the river and wetland pond. ~

Find out more...

Summer Environment Academy: www.werc.net/outreach/K-12_programs/summer_environmental_academy.htm

Stewart Meadows Wetlands Project: www.nmenv.state.nm.us/swqb/wetlands/projects

EVENTS CALENDAR

NOVEMBER, 2006

14th & 15th: Trout Unlimited Open Houses to discuss their recently awarded Collaborative Forest Restoration Program (CFRP) grant from the Forest Service. Topics of discussion: overview of what is proposed to be accomplished, explore opportunities for people to get involved, share information, answer questions, etc. Key Forest Service officials have agreed to attend. 2 DATES & LOCATIONS:

11/14, 7:30 pm Silver City, Western NM University Meeting Room – Student Memorial Building

Topic – component involving NEPA/prescribed burns within wilderness

11/15, 7:30pm, Glenwood, Glenwood Community Center

Topic – Tularosa River and Whitewater Creek fish passage projects

Contact for both events: Kira Finkler (703) 284-9408; kfinkler@tu.org OR Joe McGurrin jmcgurrin@tu.org

JANUARY, 2007

17th: Upper Pecos Watershed Association Stakeholder/Member meeting; 7PM at the Village of Pecos Hall

18th -20th: Quivira Coalition's 6th Annual Conference; Albuquerque, NM. Online Registration begins November 15th. www.quiviracoalition.org, (505)820-2544.

MARCH, 2007

8th & 9th: 12th Annual Water Conservation & Xeriscap Conference; Albuquerque Convention Center; www.xeriscapenm.com



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