Utah! Watershed Review

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Salt Lake City, Utah
Permit No. 4621

Volume 14, Issue 1 - January-February 2006

East Canyon Creek Starting to Show Improvement

By Lee Duncan
East Canyon Watershed Coordinator

In the mid 90's in response to East Canyon Creek and Reservoir being listed on Utah's 303(d) List of Impaired Water bodies the East Canyon Watershed Committee was formed. The specific impairments are excessive levels of phosphorus and low dissolved oxygen. The committee has been the catalyst for implementation of numerous water quality studies and projects within the watershed. Funding for studies and projects has come from a variety of sources including USEPA grants and the Natural Resource Conservation Service (NRCS) programs. Most of the project work has occurred in the Park City and Snyderville Basin areas. The following is a summary of activities associated with these grants and programs.

The goals of the East Canyon Watershed Stream Assessment and Demonstration Project grant were to assess East Canyon Creek and tributaries in order to provide the location and basic design information needed to implement stream restoration projects and to inform and educate the public about non-point source pollution issues and solutions in the East Canyon Watershed. Through a multi-agency effort an assessment of East Canyon Creek and tributaries using the NRCS Stream Visual Assessment Protocol (SVAP) was conducted. This assessment located the degraded and impact sections of the creeks and made specific recommendations for improving them. The East Canyon SVAP Report is used as the basis for implementing restoration projects along the stream and tributaries.

The East Canyon Creek Streambank Rehabilitation Demonstration Project was implemented on the Jeremy Ranch Golf Course with funding from this grant. The project has reduced streambank erosion and established healthy riparian vegetation. This project has been and will continue to be used to demonstrate how coordinated restoration activities can be implemented and accomplished and as a showcase for healthy streambanks. Several watershed tours of this site have been conducted.

An additional project which is being funded through this grant is the Park City Mountain Resort Upper Treasure Hollow Erosion Control and Gully Repair Project. This project has replaced 2,100 ft of an existing gully on the Upper Treasure Hollow ski run with a similar length of reinforced low flow runoff channel. The project will be completed in the summer of 2006 with the installation of grade control structures to slow flow velocities and help settle sediment. Prior to the project there was an estimated 780 tons of sediment coming from the Upper Treasure Hollow drainage. It has been estimated there will be a 69% reduction in sediment after completion of the project.

In order to educate and inform the public about the water quality issues an East Canyon Watershed wed-site was developed. This web-site provides the public with up to date information on issues and progress with the stream and watershed. It also allows a way for the public to become involved by listing up coming events and East Canyon Watershed Committee meetings. All the assessments, reports and related literature concerning the watershed are available on the site. The web site, located at www.east-canyoncreek.org, will have a long term positive effect on the watershed.

The goal of the East Canyon Watershed Stream Restoration Phase 2 project grant is to implement stream restoration and road drainage BMP's in order to restore the beneficial uses of water quality currently impaired for East Canyon Creek and Reservoir. In order to accomplish this, landowners along the stream were contacted to determine their interest in participating in the voluntary incentive-based approach to restoring the stream. Fortunately, the majority of land owners have shown interest in participating in

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Volunteers and students from Northern Arizona University plant cottonwoods in the floodplain of East Canyon Creek. NAU donated 630 cottonwoods to the Swaner Nature Preserve. Genetic research will be conducted on the cottonwoods.

CAFO Projects Show Success

Animal Feeding Operation Program Reducing Pollution Drastically to Utah Rivers and Streams

After a little more than five years of planning, assessment and implementation, Utah's Animal Feeding Operation (AFO) water pollution control program is starting to show significant results.

An update released at a recent soil conservation meeting shows pollution loading reductions of up to 90 percent from the first round of AFO manure management projects that have been completed. A mathematical model called the Utah Animal Feedlot Runoff Risk Index (UAFRRI) is used to determine water pollution load reductions.

"UAFRRI is a model for predicting reduction in polluted runoff from animal feeding operations (AFOs) once their manure management plans have been put into place and implemented," said Ray Loveless, Utah Association of Conservation Districts. Loveless and Mark Peterson, Utah Farm Bureau, are leading the team that is overseeing AFO assessment, planning and implementation. Loveless and Peterson are part of the interagency Utah Animal Feeding Operation Committee, chaired by the Utah Department of Agriculture and Food and the Utah Division of Water Quality.

"UAFRRI takes into account the number of animals, type of animals, the average precipitation for the area, distance from the feedlot or coral to the water, vegetation between the coral and the water, and the slope," said Loveless.

Monitoring is completed and a pollutant loading number is calculated before project implementation begins. Best management practices are implemented and the model is run again.

Events Calendar: January - April 2006

Small Acreage Workshop

Date: January 21, 2006

Begin Time: 8:30 AM
End Time: 4:00 PM

Description: Workshop to help small acreage owners in the St. George area to manage their acreage and gain ideas of uses for their property.

Location: St. George

Contact: Vernon Parent (435) 652-5813

Small Acreage Workshop

Date: February 04, 2006

Begin Time: 8:30 AM
End Time: 4:00 PM

Description: A small acreage workshop to help small property owners know how to manage their property to the best advantage and give ideas for uses of their property.

Location: Riverton Civic Center

Contact: Maggie Wolf (801) 468-3171

Small Acreage Workshop

Date: February 25, 2006

Begin Time: 8:30 AM
End Time: 4:00 PM

Description: Small Acreage workshop to help small property owners better manage their property and ideas for use of their acreage.

Location: Hooper City Offices

Contact: Matt Palmer (435) 283-7582

"Farm Works" Computer Program Training
March 20-21, 9:00am to 5:00 pm
Description: Training for all farmers, ranchers, and anyone interested in improving their farm records, fertilizer application, soil tests, etc.
Location: Ephraim – Snow College Student Center
Contact: Polly Johnson (435) 835-4111 ex. 14.

2006 Utah Water Users' Workshop
March 6-8, 2006
The Dixie Center--St. George
Description: Annual workshop includes several water quantity and water quality presentations.
Contact Linda John, USU (435) 797-4105

San Pitch River Watershed Education Day
April 7, 2006
Snow College
Description: 4th grade students in Sanpete County learn about watershed issues!
Contact: Polly Johnson (435) 835-4111 ex. 14.

Weber Water Fair
April 20-21, 2006
Ogden Weber Applied Technology Center
Description: 4th grade students from Weber County learn about water quality, conservation, recreation, wildlife, and much more.
Contact: Dave Francis (801) 399-8202

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As of November 2005, 22 operations had completed and implemented their manure management plans and had the model run before and after implementation. The results are dramatic, Loveless said. Total nitrogen loading from the 22 operations combined was more than 26,000 pounds per year prior to project implementation. After each of the projects was completed, the projected nitrogen loading is a combined 1,405 pounds.

Specific examples are equally impressive. One operation that has completed its restoration work is the Utah County dairy owned by Jon Beck. Beck's operation went from 453 lbs Nitrogen, 221 lbs Phosphorus and 1,647 lbs BOD before he implemented his manure management plan, to 57 lbs Nitrogen, 28 lbs Phosphorus and 206 lbs BOD after implementation.

"I didn't want to admit it," said Beck, "but I was polluting the waterways." But that was before his manure management plan. As part of the plan, Beck's feed yard was moved about 30 yards further from the river bank and a berm, made of clay-based soil, was built along a 225-foot stretch of the Spanish Fork River. The berm acts as a dike between the feedlot and the river to prevent runoff.

Beck wasn't certain he wanted to take part in the program but he knew he had to do something.

"This program came out and I thought I may as well take advantage of it and make sure it's done right," he admitted. Like many other Utah farmers and ranchers who have participated in the program to this point, Beck has become a big supporter of the work.

"I'd advise anybody that's got a problem to fix it and cooperate with these guys," he said. Beck described the project on his small 100-cow dairy as "a drop in the bucket." But Loveless and Peterson said that the "drops" add up. The new UAFRRI results from 22 project are just a drop in the bucket compared to what's coming.

Utah Watershed Review:
is the official publication of the Utah Nonpoint Source Task and is produced by the Utah Department of Agriculture and Food, with assistance from Utah State University Water Quality Extension.
http://ag.utah.gov/conservation/uwr.html
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Pharmaceutical and Personal Care Products Down the Drain Cause Water Quality Concerns

By Andree` Walker
USU Water Quality Extension

When cleaning out your medicine cabinet, what do you do with your expired pills? Many people flush them down the toilet or toss them into the trash can. Although this seems convenient, these simple actions may be contaminating your water supply.

Recent studies are generating a growing concern over pharmaceuticals and other personal care products entering surface and ground water. Pharmaceuticals include chemicals such as over the counter medicines, cosmetics and other personal care products, as well as antibiotics and growth hormones used with livestock.

Starting in the mid 1980's, studies began to sound the alarm. In the U.S. and in Europe, aspirin, caffeine, nicotine and by-products of soaps, shampoos and other personal care products were showing up in rivers below waste water treatment plants. A sampling program in the 1990s found 30 different pharmaceuticals and related chemicals in surface water samples (Ternes, 1998). More recently a study published by the U.S. Geological Survey found a broad range of chemicals downstream from urban areas. Of the 95 chemicals the USGS measured, one or more were found in 80 percent of the streams sampled and about one-third of the streams contained 10 or more of the chemicals (USGS 2002). Recent work by Colorado State University has also found elevated antibiotics in surface water downstream from livestock operations and manure fields (Davis, 2004).

Are humans or the environment affected?

The levels of most of these chemicals measured in streams and groundwater are very low (parts per trillion) and therefore below the prescription dosage. However, evidence is mounting that these chemicals are finding their way into humans. For example, one study looking at household and industrial chemicals found that over 80% of American children contained residue of at least 1 pesticide. Scientists are concerned that these chemicals may disrupt human hormone systems, may cause lower sperm counts, and may be linked to increased rates of breast, testicular, and prostate cancer. Antibiotics in our environment create a different type of problem. Disease causing bacteria exposed to low levels of antibiotics over extended periods of time may lead to resistant strains which cannot be treated easily.

Around the world, changes in fish, amphibians and other organisms have also been noted. These range from premature spawning in shellfish to the inability of fish to repair damaged fins (Reynolds 2003). In all cases, low levels of these chemicals are a prime suspect.

How do these chemicals get into the water?

Sources of pharmaceuticals and personal care products include pharmaceutical industries, hospitals, medical facilities, households, and agricultural areas. Because up to 90 % of oral drugs can pass though humans unchanged, many of these drugs enter the environment through human and livestock waste. Improper disposal of unused products is also a factor. Many of these drugs and care products do not biodegrade and may persist in the groundwater for years.

The amount of these chemicals released into the environment is also a concern. The amount of personal care products and pharmaceuticals released to the environment is estimated to be about the same as the amount of pesticides used each year. Furthermore, the U.S. accounts for about half of all pharmaceutical use in the world.

What can we do?

Unfortunately, clean up and removal of these pollutants is a difficult task. Wastewater treatment methods used in the United States aren't designed to remove many of these chemicals, and much of the contaminated water is from non-point sources and is never treated. This means that much of what goes down our toilets and our drains finds its way to our streams and groundwater.

Drinking water treatment plants can remove many of these chemicals, but the technologies that are most effective are not common in the United States. The most effective treatment methods include advanced oxidation, membrane filtration, and nano-filtration, while the least effective method is chlorination, which is the most common technique in the United States (Reynolds 2003).

Prevention is always the best strategy for reducing contamination. Individuals can minimize overuse and misuse of drugs and return unused medications to pharmacies, rather than dump them down a drain. Industries are working to produce more environmentally friendly chemicals and increase point of use treatment.

The good news is that the concentrations currently being detected are very low, and there is time to develop new treatments and modify our current practices to protect our waters. All these actions to keep drugs and care products from finding their way into your water will ultimately protect you and your family.

For more information:

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Davis, J. 2004. Antibiotics in the Environment. From the Ground Up – Agronomy News. Volume 23, Issue 3.

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Jobling et al. 1996. Inhibition of Testicular Growth in Rainbow Trout (Oncorhhynchus Mykiss) exposed to Estrogenic Alkylphenolic Chemicals. Journal of Environmental Toxicology and Chemistry. Volume 15, Issue 2 : 194-202.

Reynolds, K. 2003. Pharmaceuticals in Drinking Water Supplies. Water Conditioning and Purification Magazine Volume 45, Number 6. http://www.wcp.net/column.cfm?T=T&ID=2199

Ternes, TA. 1998. Occurrence of drugs in German sewage treatment plants and rivers. Water Research 32 (11): 3245-3260.

USGS, 2002. Pharmaceuticals, Hormones, and Other Organic Wastewater Contaminants in U.S. Streams. USGS Fact Sheet FS-027-02 (PDF [372k])
http://toxics.usgs.gov/pubs/FS-027-02/

USU Names New VP for Extension

Utah State University President Stan Albrecht has named Noelle Cockett as vice president for Extension and Agriculture.

Cockett, who has been interim provost since February, steps into this newly created position that now combines administrative duties of university Extension and the College of Agriculture. In this new capacity, she will also serve as dean of the College of Agriculture, a post she occupied prior to her appointment as interim provost. The provost position has since been filled by Raymond Coward, who assumed his new responsibilities Jan. 2.

In this new structure, distance and continuing education, which was under university Extension, will now fall under the jurisdiction of the provost's office.

This major administrative restructuring comes on the heels of the resignation of Jack Payne, USU vice president, dean and director for University Extension. Payne accepted a position at Iowa State University to become the new vice provost for Extension and Outreach.

"The opportunity has presented itself for administrative realignment that makes good sense and one that will save the university a senior level appointment during this budget reduction period," Albrecht said. "The roots of Cooperative Extension and the College of Agriculture run deep at Utah State and throughout Utah. A natural connection also exists between continuing education and the office of the provost."

The new vice president position encompasses the three legs of USU's traditional land-grant mission: agriculture education, research through the Utah Agriculture Experiment Station, and outreach provided by Cooperative Extension, Albrecht said.

"Dr. Cockett is uniquely qualified as a scientist, administrator and teacher," he said. "This change allows us to keep her in the president's cabinet where her voice will continue to be heard and Extension will continue to be represented."

Three senior level administrators will report directly to Cockett: associate dean of the College of Agriculture, the director of the Ag Experiment Station and the associate vice president for Cooperative Extension.

"These three essential entities, now combined, comprise the heart of our great land-grant university," Cockett said. "I am deeply honored to be able to continue my close association with President Albrecht in this new and challenging capacity."

East Canyon continued from page one

the restoration efforts.

A conservation management plan has been developed for the Peaceful Valley Ranch which encompasses about 7800 acres in the East Canyon Watershed. The plan includes 12,773 ft of stream bank fencing, prescribed grazing on 371 acres, wildlife fencing totally 9820 ft, riparian forest buffer totally 41.5 acres, use exclusion for 21.5acres and stream bank protection of 500 ft on East Canyon Creek. Except for the stream bank protection and wildlife fencing portions the plan has been implemented with successful results. A tour of the project area was conducted to highlight the success of fencing off the stream and allowing the natural vegetation to re-establish in order to stabilize the banks and provide ground cover in area were rill and sheet erosion were a problem.

In the spring of 2005 the Swaner Nature Preserve East Canyon Creek Restoration Project was begun. To date, 700 willow cuttings and over 750 riparian trees and shrubs have been planted to help stabilize banks and provide shading to the stream. Also accomplished was the stabilization of 700 feet of eroding stream banks using conifer revetments. These efforts will be implemented each year for the next 4 years. This project will restore approximately 2 miles of stream channel with riparian vegetation and bank stabilization treatments.

Although project implementation has not begun, funding from this grant will be used to help fund the removal of 5000 cubic yards from a sediment detention pond located on the Park City Municipal Golf Course. The pond is in the headwaters of McLeod Creek, a major tributary to E. Canyon Cr, and acts as a major sediment collector for the stream.

Summit County has made progress in improving the road drainage system and thus reducing road drainage erosion on the dirt road from Jeremy Ranch Golf Course to East Canyon Reservoir. Improving this road drainage system is also one of the implementation items in the East Canyon Creek Total Maximum Daily Load (TMDL). Summit County has hardened the surface of their portion of the road. This amounts to about 3 miles and equals just under 50% of the total length of the road. The hardening of the road surface has minimized the dust coming from the road and entering the stream.

In the summer of 2003 a portion of East Canyon Creek went dry due to an illegal water diversion. In response to this and other water quantity issues the East Canyon Watershed In-stream Flow Feasibility & Alternatives Study was conducted. The goal of this study was to determine mechanisms, options and feasibility of maintaining in-stream flows during the critical summer season in East Canyon Creek. The in-stream flow feasibility study was completed in February of 2005 and presents 12 alternatives to maintain a minimum of 6 cfs in the main channel of East Canyon Creek. This report can be downloaded at www.eastcanyoncreek.org

Scheduled to begin in 2006 is a mapping project to map the naturally occurring phosphoric deposits within the East Canyon Watershed and determine loading contributions from these deposits to the streams. The explosive growth rate in the watershed and the associated construction has made it necessary to know the locations of these deposits in order to minimize the phosphorus contributions during soil disturbance activities.

In order to educate and inform the public about the water quality issues in the watershed and about behaviors which negatively impact water quality an Information and Education campaign was begin in the Fall of 2005. The campaign involves determining the level of knowledge of water quality, increasing that knowledge and providing alternatives for behaviors which impact water quality. A survey will be conducted in late January and early February which will assess the current level of knowledge and determine what issues should be focused on.

On June 10th, 2006 a watershed festival will be held on the Swaner Nature Preserve. The festival will be geared to all ages and will be a collaboration among all the stakeholders in the watershed and organizations involved in preserving our natural resources. Information about the festival and survey will be posted at www.eastcanyoncreek.org and www.swanernaturepreserve.org.

In the spring of 2005, the Natural Resource Conservation Service (NRCS) designated $180,000 of Wildlife Habitat Incentive Program (WHIP) funds to improve improving the stream habitat and water quality along East Canyon and Kimball Creeks. Working with Lee Duncan, the Upper Weber Watershed Coordinator, the NRCS employees contacted landowners along the streams to inform them of the water quality issues and the benefits available through the WHIP program. The program has a 75% cost share match, meaning the NRCS pays for 75% of the project implementation. The Snyderville Basin Water Reclamation District added an additional 15% to the cost share bring the total cost share to 90%. Through the program landowners can implement a variety of practices to improve water quality and wildlife habitat including planting riparian trees and shrubs, installing fencing to exclude livestock from the stream corridor, installing watering facilities for livestock, stabilize eroding stream banks, re-seeding pasture areas to improve grazing management, planting upland tree and shrub species for wildlife habitat and installing stream crossings to minimize bank disturbance. Through their tireless efforts the NRCS signed up 20 participants along East Canyon and Kimball Creek.

Of particular interest were the "ranchettes" along Old Ranch Road in Snyderville Basin. This area is divided into 2 to 10 acre home sites with many properties allowing horses to graze along or near the creeks. Because of historic grazing practices this area is now mostly devoid of woody riparian species which normally buffer the stream from grazing and flooding impacts. Once landowners learned about the negative impacts from livestock and the importance of woody riparian species, most were more than willing to sign up for the program to improve and protect the stream corridor. Of the $180,000 of WHIP funds available, $135,262 was committed to 20 landowners.

Program participants have 1 year to start project implementation and 5 years to complete their projects. Projects must be maintained for 10 years. WHIP funds are available each year to qualifying landowners. For information concerning the Wildlife Habitat Incentive Program please contact the NRCS Heber field office at 435-654-3861.

All of the funding for water quality studies and projects in the East Canyon Watershed are voluntary, incentive based grants and programs. This type of funding is vital to improving and sustaining our natural resources. Without the cooperation among the different stakeholders and the tireless efforts of countless volunteers none of this work would have been accomplished. For more information on the East Canyon Watershed or to become involved please visit the website @ www.eastcanyoncreek.org.

Above: Volunteers and staff from the Swaner Nature Preserve install Christmas tree revetments along eroding stream banks in E. Canyon Creek. The revetments are designed to deflect water away from the banks and help trap sediment within the trees. Above Center: The above picture shows the lined, stabilized channel that replaced the eroding gully in the Upper Treasure Hollow ski run on the Park City Mt Resort.