Missouri Department of Natural Resources

Water Quality Coordinating Committee
Water Protection Program

Minutes

June 19, 2007

WATER QUALITY COORDINATING COMMITTEE

USGS Columbia Environmental Research Center
4200 New Haven Road
Columbia, Missouri

June 19, 2007
10 a.m.

MEETING AGENDA

Bonne Femme Watershed Plan: Proactive Storm Water Planning
Terry Frueh, Watershed Conservationist, Boone County Government Center

Using Modeling to Evaluate Six Missouri AgNPS-SALT Projects
Claire Baffaut, FAPRI, UMC

Using Research Data to Develop New Riparian Corridor Practice for AgNPS SALT Projects
Colleen Meredith, DNR, Soil & Water Conservation Program, DNR

Other
Summary from Recent Heartland Conference (targeting BMP practices)
Bob Broz, UMC/Greg Anderson, DNR

Agency Activities

Meetings & Conferences

MISSOURI WATER QUALITY COORDINATING COMMITTEE

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USGS Columbia Environmental Research Center
4200 New Haven Road
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MINUTES

Attendees:

Colleen Meredith	DNR Soil & Water Conservation Pgm	Cindy DiStefano	MO Dept of Conservation
John Johnson	DNR Water Protection Program	Mona Menezes	City of Columbia
Frank McDaniels	PDWB, Water Protection Program	Wayne Maresch	DNR, Env Services Program
Walter Raechell	EPA Region 7	Anne Peery	WPCB, Water Protection Program
Paul Andre	MO Dept of Agriculture	Liz Grove	Clarence Cannon Wholesale Water Comm
Ken Tomlin	PDWB, Water Protection Program	Betty Wyse	Env Resources Coalition
Randy Sarver	DNR Env Services Program	John Schumacher	USGS
Greg Anderson	DNR, Water Protection Program	Vera Williams	Iowa State Univ Ent/Tox Dept.
Mary Clark	WPCB, Water Protection Program	Pete Davis	EPA Region 7
Priscilla Stotts	WPCB, Water Protection Program	Bob Ball	USDA NRCS
Lindsay Tempinson	WPCB, Water Protection Program	Bob Bacon	Env Resources Coalition
Bob Broz	Univ of MO-Columbia Extension	LeCadre Elodie	UMC FAPRI
Ginger Berry	MO-Ag	Claire Baffaut	UMC FAPRI
Steve Anderson	UMC School of Natural Resources	Terry Frueh	Boone County
Sarah Fast	DNR Water Protection Program	Darlene Schaben	DNR, Water Protection Program

Introductions were made. Sarah announced that the July WQCC meeting has been cancelled. The next meeting will be in August.

Bonne Femme Watershed Plan: proactive stormwater planning, Terry Frueh, Watershed Conservationist, Boone County Government Center
PowerPoint Presentation; Handouts: Watershed Management Plan (hard copy & CD)

The Bonne Femme Watershed runs from the northern part of Ashland to southern part of Columbia (includes Rock Bridge and Three Creeks) and covers 93 square miles. It has several outstanding resource waters including Devil's Icebox, Cave Branch, Bass, Gans, Turkey and Bonne Femme creeks. Terry said the population increased by 40% during the 1990's. Some of the watershed's natural features include oak-hickory forests, karst topography, and some endangered and endemic species.

They decided to develop a plan because of uncontrolled storm water runoff, which caused streams to degrade. A group of stakeholders, representing a variety of interests, developed the plan. A Policy Committee gave input as to the legal and political feasibility of the stakeholder's plan recommendations. They also selected the stakeholders. A Steering Committee, technical-level staff, gave support and guidance. Stakeholders met monthly for 2.5 years to work through the plan process. They had several educational presentations on a wide variety of topics, including property rights, karst hydrology, stream life, farming, real estate, storm water runoff & management. They identified issues important to them to consider throughout the planning process and developed a vision for how the watershed should look in the year 2030. The Stakeholder's Vision: "In the year 2030, we envision a watershed where quality of life and economic vitality are fostered by: maintaining or improving the current conditions of the water resources, having a mix of land uses and development types, and

maintaining thriving agricultural activities." To develop the vision statement the stakeholders came up with a list of elements. Those elements were transformed into achievable goals. They then developed recommendations to achieve those goals. The recommendations are listed in the plan. There were several umbrella recommendations that they wanted to be considered as a part of every recommendation. Terry talked about two of those—assess effectiveness of the plan implementation and equity. The next step was a public comment period. Public meetings were held and landowners notified. Stakeholders responded to all comments. Those were included in the Plan as an Addendum. Ashland, Columbia, Boone County, and Pierpont have been asked to adopt the plan. Terry said that if adopted they would help implement the plan using cost-share funding.

The Bonne Femme Watershed Plan project ends this summer.

Using Modeling to Evaluate Six Missouri AgNPS-SALT Projects, Claire Baffaut, FAPRI, UMC
PowerPoint Presentation; Handouts: presentation; report materials were available

The goal was to estimate the loading reduction expected from the six AgNPS SALT projects and at the same time evaluate the SWAT tool to assess the environmental impacts of best management practices (BMPs) in the projects. She showed a map of where the 2006 AgNPS SALT projects are located in Missouri. There are 68 current projects with up to $750,000 available for each project. The SWAT model is a watershed-based model used to simulate the process of controlling runoff and pollution movement in a watershed. It calculates pollutant loadings and concentrations. They had to determine which BMPs would work with the model, estimate the load reductions that could be expected, and develop a process that could be repeated. The six projects are in the Long Branch Lake Watershed, the Upper & Lower Maries River, Jenkins Basin, Flat Creek, and Miami Creek. The Soil & Water Conservation Districts (SWCDs) in each area were contacted. They were asked to form a Steering Committee to help determine the current practices used in the watershed. This information and any available data were included to calibrate the model. Once the model was calibrated a baseline was developed. All of the BMPs were then evaluated. In the model preparation, a topography map was loaded, as well as soil and land use maps; a weather station, groundwater data, and management data were selected. The management data was adapted with the local information then a model output was produced. This process took approximately 6 months to a year. Claire displayed maps of the six project areas showing the acreage of each, percentages of grassland, forest, row crops, and water in each.

They found that some of the BMPs could easily be simulated and evaluated while others could only be partially simulated. Those that could be fully simulated included erosion control through tillage and terraces, erosion control through grade stabilization structures (ponds), woodland protection (livestock exclusion), grassland establishment / improvement, pasture management, and poultry litter export. The following could only be partially simulated: pesticide management, nutrient management, irrigation management, grazing management (rotational grazing), field borders, stream corridor protection (riparian buffers), and stream protection (livestock exclusion). Still other project components that the model could not simulate include groundwater protection, well decommissioning, spring development, waste management when applied to only a few operations, critical areas planting, education, and public meetings. Claire discussed several issues that were encountered during project evaluation of the baseline conditions, model calibrations, and BMP locations. The amount of acreage needing treatment was specified for only some projects and some information had to be assumed. Also, some data was not available for all projects to calibrate the model. She showed charts with current stream loads, the expected reduction, and the coefficient of variation over the next 30 years. She talked about the spatial and temporal variability. Due to weather changes every year, the predicted reductions were smaller than the variability in different areas of the watershed. In conclusion, several assumptions of the current conditions were made. They found the model to be a useful tool to evaluate watershed projects and the districts were interested in results. FAPRI has had several requests from districts to use the model in their areas to assist with the planning stage of projects. More research is needed to simulate some conventional practices and BMPs. Expected reductions in upstream annual contributions varied from 6% to 40%. Expected reductions in annual

stream loads varied from 2% to 30%. Expected reductions are less than the spatial and temporal variability of annual loads. The model could be used by the districts to target education efforts in certain areas of the watershed.

Claire will be speaking at the Soil & Water District Commission meeting on Thursday. She had copies of some final reports and individual watershed reports available.

Using Research Data to Develop New Riparian Corridor Practice for AgNPS SALT Projects
Colleen Meredith, DNR, Soil & Water Conservation Program, DNR
PowerPoint presentation

Colleen said the Soil & Water Conservation Program developed a new practice for SALT projects, "Stream Protection Practice," or WQ10. Two new practices for forested lands have also been approved. The focus is on livestock exclusion from streams. Some of the benefits of streamside buffers include streambank stabilization; trap runoff of fertilizers, pesticides, and up to 80% of sediment; trap up to 60% of bacteria and pathogens; provide fish and wildlife habitat; regulates temperature of stream; and helps prevent flooding. A study from Maryland found that when forest cover is removed from streambanks, the average stream temperature increases as much as 7°F. Some of the impacts of livestock grazing are manure and urine directly in the stream, streambank erosion, aquatic habitat destroyed, reduce capacity to filter pollutants, and creates an undesirable shift in aquatic life. Looking at manure loading, they figured 30% of nitrogen loading comes from direct animal deposit into the stream. Phosphorus in one cow defecation into a stream is the same as phosphorus load from an acre of pasture in one runoff event (from John Lory). A cow will produce about 60 pounds of manure in one day. Using information from Claire's research, and looking at riparian corridor management, the change showed a reduction of approx. 2% change of pollutants from the baseline. So if cattle could be kept from the stream, it would improve even more.

Some of the new practice components include fencing cattle from the stream, develop an alternate water source (put in a well, pond, or spring); water distribution (pipeline and tanks – 1 tank/field) with distance limitation; stream crossing (pay only for amount that cattle would cross); and fertilizer, chemicals, and seeds or seedlings for buffer. Cost-share amounts are $500/acre incentive payment for fencing cattle from a stream; up to 75% of the cost on the required components (fence, tank, pipeline, seed, etc.); water source development cost is limited to $3500 (well, pond). A minimum of 25 feet must be excluded, but a maximum of 150 feet. Livestock must be excluded on <u>both</u> sides of the stream. If the landowner didn't own both sides, they would have to work with the other landowner. Between April 15 and May 7, farmers can allow grazing for three consecutive days, but they ask not to allow grazing on the wettest areas. Also, grazing is allowed three days from Sept. 1 – Oct. 1. And, if they have warm-season grasses, grazing is allowed for three days between July 15 and August 15. Strip grazing is also allowed but there are wildlife benefits. Ultimately, the goal is natural regeneration. Spraying for noxious weeds and around fence lines is allowed. Mowing is not allowed. Landowners are asked to consider their stocking rate. And, there is a 10-year maintenance agreement.

The U.S. Forest Service did a study on vegetation types for buffers. They looked at the benefit for using different types of vegetative buffers. Colleen showed a before and after picture of a stream after cattle were excluded for 10 years. She also had a picture of what a farm plan could look like with fencing, pipelines, tanks, and buffers.

This is a new tool in the SALT areas. Colleen will update the group later on how many feet of stream and how many acres have been excluded as a result of this new practice. She said they are willing to work with the districts on costs to get the best riparian protection.

Other

Summary from Recent Heartland Region Conference (targeting BMP practices), Bob Broz, UMC/Greg Anderson, DNR

Bob said the actual name of the conference was "Targeting critical source areas for implementation of BMPs" and was sponsored by the Heartland Nutrient and Pesticide Management Group. This is a 4-state USDA CSREES program where all Region 7 states are involved. They try to identify someone from each of the land grant colleges to work directly with the teams to identify critical needs within the four states. They found that the target is a moving target. Bob noticed there were two different concepts on why people were there. Part wanted to know what it means to have targeting criteria to identify which watersheds are most critical. Another part wanted to know how to determine the critical areas within those watersheds to put the BMPs. They found they needed to use different tools, understand the data (which varied between groups), look at targets or impact to water quality, and the selection criteria. Everyone thought it important to establish a standard criteria, determine what tools are most effective at targeting watersheds, and establish the criteria for identifying targeted areas within a watershed. They not only needed to identify ways to do an assessment of the watershed in the critical areas, but how to determine what the impact will be. Bob said they were learning to look at the impact; sometimes the practice selected isn't what's needed. They also talked about what criteria to use to determine if something is environmentally sensitive. No conclusion was made on this. They also wondered if different things were done in different parts of the state or do they look at just the basics. Discussion was held to determine if this could be built into a tool or model to determine the most critical areas within a watershed.

GPS data layers, Stream Assessment Tool, Land Assessment Tool, economic data layers, visual assessment were some of the tools mentioned that were used for targeting. Iowa has developed a computerized tool to use for stream and land assessment. Some tools are very subjective so you must be trained in their use to be effective. Before tools will work, landowners must be given the opportunity to review and provide assistance and verification. The ultimate goal must be determined for the agency, landowner, and the producer, then determine how they can come together. Producers need to be involved to identify BMPs to improve water quality. In Missouri, 93 percent of the land is owned by private citizens. Farmers are more likely to participate in a BMP if they can see what damage has actually occurred. Landowners are intelligent and have a long-term memory of the land they work with. They want to have input in developing or identifying ways to improve their situation. Bob explained the techniques used to get landowners participation. Success will occur easily if your goals are the same. Bob said it's good to have a "tool box" of available practices and assistance that you can offer. If they want to do something different than what is on the list, you should figure out how to make it work, if it's within reason. The farmer can also be involved by using his farm as a demonstration site or for a field day. Signs can be used on the farm to show it is part of a conservation and water quality project. It takes more than information - it takes education.

When reporting outcomes, you need to determine what constitutes success. You must utilize models and tools for not only assessing the watershed or targeting BMPs but also for calculating load reductions and determining impact of BMPs on water quality. A major change in behavior and attitude is another way to determine the outcome and impact in targeted areas. Bob talked about some ways to determine if targeting would work within a particular area in a watershed.

At the Heartland Regional meeting, they determined 1) criteria for targeting watersheds was needed; 2) a need to determine criteria for targeting critical source areas for implementing BMPs; 3) a need to identify possible tools available for assessing an area; 4) a need to figure out how to show improvement and impact of what has been done; what tools and modeling systems are available to help accomplish this; and 5) a need to figure out how to get producers and landowners to participate.

Agency Activities

Mona Menezes mentioned there will be a Show-Me Yards project in the city of Columbia will be having workshops on August 14 and 28.

Greg Anderson said the 2007 319 Request for Proposals (RFP) is now available. There are nine watersheds targeted for this funding. The plan is to have the 2008 319 RFP out this fall. Contact Bob Broz or Greg for more information on the Heartland Region's presentations on targeting best management practices. These are available on the Web (http://www.heartlandwq.iastate.edu). Monitoring and assessment were big discussion topics at this meeting.

Randy Sarver said that one of the reasons there is more nitrogen and phosphorus data is that it has been collected for nutrient criteria. It is currently collected on an ecological region basis. There is also some turbidity data but not sediment.

Colleen Meredith mentioned that Clinton County in Plattsburg is having a grazing tour on July 21. They are installing some water systems and fencing, along with information.

Claire Baffaut mentioned a more reports that she had available - Missouri Watershed Water Quality Initiative (summary of FAPRI environmental activities, 1995-2006) and Estimating Water Quality, Air Quality, and Soil Carbon Benefits of the Conservation Reserve Program (nationwide study done by FAPRI for Farm Service Agency).

Bob Ball said the program committee for the 2009 MO Natural Resources Conference is meeting to develop a theme for the conference. Let Bob know if you have any ideas.

Sarah mentioned the Soil & Water Conservation Society's region conference will be on ethanol and land bio-mass in October this year. She said the July WQCC meeting has been cancelled due to staff attending an EPA training that was already scheduled. August meeting topics include update on TMDLs and Rapid Watershed Assessment. Let Sarah know if you have other topics.

Meetings and Conferences

Sept. 27	State SWCD Fall Forum, Macon
Oct. 16-17	West North Central Region SWCS Conference, Dubuque, Iowa