



## **WATER QUALITY COORDINATING COMMITTEE**

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

February 17, 2009  
10:00 a.m.

### **MEETING AGENDA**

Developing human threat indices for assessing the ecological integrity of freshwater ecosystems across EPA Region 7, Gust Annis, MoRAP

Missouri Onsite Loan Program Pilot Project, Joe Pitts, Financial Assistance Center, Water Protection Program

Watershed Management Development Education, Bob Broz, UMC Extension

Other

Agency Activities

Meetings & Conferences



## MISSOURI WATER QUALITY COORDINATING COMMITTEE

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### MINUTES

#### Attendees:

Sarah Fast	DNR, Water Protection Program	Paul Andre	MO Dept. of Agriculture
Stacia Bax	DNR, Water Protection Program	Jack Dutra	Syngenta
Darlene Schaben	DNR, Water Protection Program	Robert Voss	DNR, Water Protection Program
Ken Midkiff	Sierra Club	Bob Broz	University of MO Extension
Greg Anderson	DNR, Water Protection Program	Loring Bullard	Watershed Committee of Ozarks
Amy Jungelaus	MDC Stream Team	Cindy DiStefano	MDC
Chris Riggert	MDC Streams Unit	Angel Kruzen	Water Sentinel Program
Randy Sarver	DNR, Environmental Services Pgm	Mandy Sappington	DNR, Water Protection Program
Tucker Fredrickson	DNR, Water Protection Program	Valerie Hentges	DNR, Water Protection Program
Joe Pitts	DNR, Water Protection Program	John Hoke	DNR, Water Protection Program
Priscilla Stotts	DNR, Water Protection Program	Bill Whipps	DNR Water Protection Program
Andrew Branson	MDC Streams Unit	Jaci Ferguson	EPA Region 7
Walter Roachell	EPA Region 7		

Introductions were made.

#### **Developing human threat indices for assessing the ecological integrity of freshwater ecosystems across EPA Region 7, Gust Annis, MoRAP** PowerPoint Presentation

This project is supported by two grants: a DNR Section 319 grant and Wetland Program Development Grant, both of which are through EPA. The 319 grant pays for quantifying data that is relative to Missouri, plus a training on the data. The Wetland Program Development Grant will pay for the work in Iowa, Nebraska, and Kansas.

Through this project MoRAP is trying to develop some human threat indices to assess the ecological integrity of freshwater ecosystems across the EPA's 4-state region. Throughout the region there are several potential human threats, i.e., mines, landfills, CAFOs, wells, dams, roads, etc. Any one of these potential threats do not impact or degrade water quality all the time but at any given time each has the potential to do so. The goal of the project is to develop reach scale GIS-based Synoptic Human Threat Indices (HTI) for assessing ecological integrity of freshwater ecosystems. There were some limitations of Missouri's HTI on a past project that included large assessment units of 237 sq. Km average; it did not account for the contributing area outside of individual sub-watershed polygon (local polygon only); and there were only eleven "threat" datasets to use as input. With this new project, they are trying to overcome these limitations and create a "threat assessment" tool to use for on-the-ground planning and management. They wanted to utilize as many threat datasets as possible; consider the drainage area of each stream segment; consider riparian conditions; and account for distance. If time allows but is not part of the project, Gust said they want to make a separate tool or index that would be useful for the various components of ecological integrity.

To start the project they established a Regional Oversight Committee that included “experts” from across the region. They conducted a literature review, created assessment units, gathered the potential “threat” datasets to be used as inputs, and quantified those “threats” locally for individual assessment units, for the watershed and drainage area above every stream segment. Riparian areas were also reviewed. When that was completed, the data was ranked and a threat index was created. Any GIS overlays that deal with polygons and land cover, and any others that can be quantified, can be joined back to the stream segments. The programs will run through the networks and quantify everything upstream in every single stream segment. This would give information for a total drainage area, number of point sources, length of road, amount of land cover, etc. This info can be converted to a proportion of the drainage area or stream miles.

The Regional Oversight Committee had a brainstorming session to make a list of data they would need. Not all the data could be found from the established list. The datasets needed to be consistent over the 4-state area to make a seamless index. This proved more challenging than anticipated. Gust talked about the different data issues that came up. The datasets they acquired were sorted into six different groups: agriculture, stream alteration, transportation, human infrastructure, discharge, and mining.

To quantify the data, they began by overlaying each threat with the catchment polygons and quantified everything locally. He showed examples of how the map would look. They developed their own dataset for connectivity and fragmentation in order to find out how much of the stream that fish have access to without running through a dam. Using the example of Table Rock Lake and Beaver Lake, they figured the fish would have access to approx. 221 Km of fragmented stream by Beaver Lake and less than 19 Km in a headwater connected to Table Rock Lake.

Another dataset they felt important to quantify was the distance to a threat. A threat of a given type has a different potential impact on the stream if it's a Km upstream versus 100-500 Km upstream. Gust talked about how they developed the Distance Weighting. He showed a list of datasets they used for HTI inputs and a subset that were Distance Weighted. He showed a draft map of the end product.

If possible, they would like to account for different component of ecological integrity separately. The separate HTI components include physical habitat, flow regime, water quality, energy/nutrient dynamics, and biotic interactions.

They had to create a few new datasets for the project, which included Connectivity/Fragmentation dataset; Ditches dataset; Headwater Impoundments dataset; and various tools for quantifying distance upstream and down. The resulting products included an HTI course, geospatial data archive of input datasets they had gathered, raw data metrics, and a final report. This would work by clicking on any primary channel stream segment to get a big list of quantified information in addition to the threat index. The quantified information is specific to that given stream reach of interest. Some potential uses for this information include, but is not limited to, watershed inventory and assessment, monitoring – selecting reference sites, landowner incentive programs, identifying information needs, and education and outreach.

Gust thought training would be provided on the Missouri portion in March. This training would include a presentation and tour of the data. A basic knowledge of GIS is preferred in order to attend these trainings. Two subsequent training sessions are planned to be held at UMC in Columbia where participants would use a computer and actually work with the data. He said a training manual is being developed. The second part of the project will be to feed Missouri's data with the other three states to allow quantified data over all of EPA Region 7. A seamless HTI will be developed. This part should be completed by Sept. 2009.

Other partners in this project are EPA, DNR, MoRAP, UMC, and MDC. Gust mentioned that Matt Combs, MDC, helped with validating the threat index. He is constructing a fish IBI to compare with the HTI. Aaron Garringer, MoRAP, is also working on this project.

In answer to a question of who could attend the trainings, Gust said that the partners would have first option of attending. Darlene will forward the information to the group when the training dates are known.

### **Missouri Onsite Loan Program Pilot Project**, Joe Pitts, Financial Assistance Center, Water Protection Program PowerPoint Presentation

The purpose of this project is to get State Revolving Fund money out to individuals who need to remediate, replace, or repair failed or failing septic systems. Joe said they are hoping to work with Greene County to pilot the Missouri Onsite Loan Program. He is expecting an application from them by the end of the month. Some of the issues from onsite septic systems are groundwater and surface water. There are some new technologies now available with onsite septic systems. The problem is how to get the funds to the public for remediating their systems since they cannot get the loans directly. This program is designed to allow municipal and county governments, and other state agencies who wish to participate, to set up a localized onsite loan program. Low interest loans would be provided to the individuals, through those entities, who need to repair, replace, or remove their failing onsite wastewater treatment systems (OWTS). The funds are not for the purpose of funding new developments. The Missouri Department of Health and Senior Services (DHSS) is the agency with authority that regulates these systems. Soil conditions, system design, installation, operation and maintenance are all factors that affect the function of OWTS. DHSS regulations set the minimum standards for permitting and require certification of OWTS installers. These standards are then implemented by local health departments.

The 2000 Census showed about 72% of Missouri homes are served by public sewers and less than 28% use private septic tanks or other means. In 1999, EPA estimated Missouri had 30-50% of OWTS failed or failing. This has a significant impact on local and regional water quality. The cost of repair can range from \$5,000-\$20,000 per system, which means on average Missouri needs \$1.9 billion. This shows a definite need for the program. In 2006, DHSS issued 1,353 permits. Based on this rate, the annual financial need would be approx. \$16,256,000. The 2006 DHSS data showed a large number of permits issued for new OWTS installations in southwest Missouri. Using the DHSS data, Joe looked at four areas of the state where he thought the counties might be interested in participating in this program. He showed a map of Missouri counties that showed over 1,500 complaints were investigated in 2006. Another map showed almost 800 notices of violations were issued. Over 1,300 repair and replacement permits had been issued.

In October, Joe met with several communities to present the Missouri Onsite Loan Program. The Local Borrowing Authority (LBA) (municipal governments or agencies of the state) would enter into a loan agreement with DNR. As part of the application process, they would identify their own local need. The LBA would administer the loans. The LBA would accept applications from borrowers and coordinate payments, which would need to follow DNR guidelines. They would manage the loan funds and make repayments and reports to DNR. The LBA must provide OWTS maintenance training to borrowers at no cost. Loans cannot be made to serve a new development. If municipalities wish to participate, they would submit a proposal stating the description of the need, a general description of the proposed local loan program, a description of the dedicated source of loan security (generally bonds), a description of the overall operation, the identity of the authorized representative for the LBA, a description of a marketing plan, certification that current local OWTS codes comply with 19 CSR 20-3.060 Minimum Construction standards, and a description of the local program of enforcement. During the approval process, DNR would look at the anticipated impacts on the environment, historical and projected financial operating results, present and future debt service requirements, socioeconomic conditions and trends, effect of legal structure and any

regulatory control, schedule of milestones for timely implementation, location within a watershed identified on the 303(d) list, and any other information DNR may request.

DNR would approve the loans based on availability of funds. The LBA would provide a general obligation pledge (note) in fully marketable form and they must submit financial information to DNR as part of the loan review process.

This pilot program does not require a bank to be involved. Joe went over the DNR Loan Terms and Conditions. The money would be loaned at 30% of the market rate, which changes weekly. The LBA cannot charge more than the market rate. Their service fees (closing costs and fees) can be included in the loan and must be disclosed to the OWTS owner. They must meet their debt service requirements. Repayment structures will be developed on a case-by-case basis. The term of the loan will not exceed 20 years. There is no penalty if the loan is repaid early. Any legally available sources can be used for security. The LBA is required to submit annual reports to DNR. Any default of the OWTS borrowers is the responsibility of the LBA; however, DNR has included a "loan forgiveness" clause on loans to low-income OWTS owners. DNR has set aside a small portion of the funds for this purpose. The LBA will establish criteria for loan forgiveness. A good-faith effort by the borrower must be made for two years before the loan would be forgiven. Some details are still being worked out on this part.

Joe also talked about the OWTS owner Terms and Conditions. The loan must be at market interest rate. It must be secured by a debt instrument acceptable to DNR. The recipients must receive OWTS maintenance training and they must maintain the system for the term of the loan.

Modifications to the program may still be needed. Joe is hoping it works for Greene County to pilot this program. He is expecting to see individual loans made by April. Should this pilot work successfully, Joe sees this to be included in the Intended Use Plan that goes out every year, making it more of a competitive basis. If Greene County doesn't work out as a pilot, he will be looking for other counties or entities to pilot. Some non-profit organizations could possibly participate if they have the necessary security.

Priscilla mentioned that the Dept. of Agriculture has rural development grants and loans for on-site systems available. These are grants for elderly and low-income rural residents. They must meet specific guidelines to qualify. Joe thought this could be a good companion grant.

Joe thought that when an inspector issues a notice of violation, they could also give them a brochure on this loan program. Joe said the interest earned on these loans must be dedicated back to this program, so it may be possible over time that counties could start funding these repairs and replacements on their own.

### **Watershed Management Development Education, Bob Broz, UMC Extension** PowerPoint Presentation

Bob said they are working with DNR's 319 program and TMDL program to offer training to help individual groups that are trying to develop a watershed management plan. The topics they cover include watershed definition and education, point source and nonpoint source definitions, regulations protecting water quality, nonpoint source management program, organizing a local watershed group, and Web-based resources for plan development. Five trainings have been completed and two more are scheduled.

Bob said they begin with the basics, i.e., what is a watershed. They show maps of the different size HUCs so they can see the size difference in watersheds and what they will be working with. DNR has watershed maps by county on their Internet site. At the training they talk about the Clean Water Act and Safe Drinking Water Act so people will have a better concept of the regulations. Knowing more about these regulations

will help those being trained to better explain to their communities why these are important issues to include in the plan. They also talk about the 303(d) list, definition of a TMDL, and the TMDL document, which generally only identifies the impairment. The Watershed Management Plan (WMP) should explain how the local group is going fix the impairment.

With the Nonpoint Source (NPS) Program, they explain the grants that are available as well as other sources of funding, such as from NRCS EQIP and MDC. Funding from NPS is used for planning. In the training, Bob said they talk about the reasons for organizing a group. They also help establish collaborative partnerships that are needed. They invite local partners like MDC, NRCS, SWCD, and DNR. These partnerships need to be developed early. They can assist with establishing a common ground and contribute technical information. They can also help with applying for state or federal funding. They can help the groups address conflict over specific issues. Building partnerships can be frustrating. It can take a long time to get urban and rural people to work together. Anyone can write a plan but it takes the local people being involved upfront to make it successful. Bob found there are four developmental phases of a group—forming, storming, norming, and performing. There has to be ground rules for everyone. When developing the WMP or any other plan, it needs to incorporate EPA's nine key elements and tell the story. Groups should utilize agency partners for technical, educational and financial support. Web-based resources should also be included in the plan.

Bob said the duties of the Local Steering Committee are also discussed. The overall watershed group is very valuable when looking at the overall components. He talked about what is needed for the introduction of the plan. It should list the parties involved, summarize important issues, describe features of the watershed, physical setting, climate, natural history, and soils. Soil survey info can be found on an NRCS web site. Bob talked about each of the nine elements and what should be included with each element.

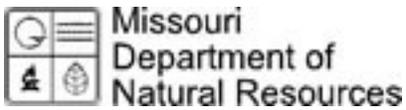
It's important for the Steering Committee to keep the public informed every step of the way. The public needs to provide input to make the plan work. Some of the web-based resources they use are STEPL and RUSLE2. These help determine load reductions. Other sources for obtaining watershed introduction information are the CARES Web site, BERM (Business Environmental Risk Management), DNR, MDC, NRCS, and MoWIN Web sites. As a result of comments received from previous training sessions, they plan to include slides with screen shots of the Web sites so attendees can see what they are looking at and for when they get to the sites.

Dan Downing, John Tharp and Bob have provided the trainings and can be contacted if questions. Bob thought there may be funding available to do more than the two trainings already planned. If more training dates become available, Bob will let Darlene know in order to pass along the information.

### **Agency Activities**

Sarah Fast said the next meeting is scheduled for March 17 in Jefferson City. Volunteer monitoring update and CARES Web-based watershed tool are topics for that meeting. Sarah is open to suggestions for topics of interest for other meetings.

Loring Bullard handed out a brochure and announced the Watershed Committee of the Ozarks (WCO) will be celebrating a 25<sup>th</sup> anniversary in August 2009. Over the next years they plan to develop a Watershed Center. All were invited to the 25<sup>th</sup> anniversary celebration. In turn he asked for all to support the idea of watershed education. He felt we need to teach people how to take care of the water and demonstrate some techniques and ideas that we know work to help protect the water. Target groups include kids, professional development, and casual users. School kids have used this site for field trips through the "Wonders of Watershed" program. The WCO has an onsite wastewater training center where onsite professionals can get



training and be certified to put in advanced wastewater systems in Missouri. People also use the facility to walk trails, fish, and pick up ideas on what a watershed is and how to protect water quality.

Bob Broz said there will be a watershed education conference on May 12-13, 2009, at Haskell Indian Nations University, Lawrence, Kansas, targeting 1890 and 1994 universities. These are African-American colleges and Indian Nation colleges. The University of Missouri-Columbia will be involved in this. They are anticipating getting educators to share watershed education materials. There will be an NRCS State Technical Committee meeting held Feb. 20 in Columbia.

Meeting adjourned.