

**Dix River Watershed Council Meeting
April 15, 2008**

Meeting Notes

Attendees: Malissa McAlister (UK KWRRI); Preston Miles (landowner); Tony White (Mercer County Health Dept.); Rose-Marie Roessler (CREEC); John Webb (Ky. Division of Water); Heath Stone (Garrard County Health Department); Jim Roe (Ky. Division of Water); Angie Wingfield (Ky. Division of Conservation); Mary Ann Sharp (Boyle Co. NRCS); Bill Hundley (Boyle Co. Conservation Board)

Watershed Activities

- *Danville Rotary Club presentation on March 14th*
John Webb and Malissa McAlister provided a presentation to the Danville Rotary Club on the Dix Watershed Council's purpose and preliminary findings. The Rotary Club members were very receptive and requested an update as conclusions are drawn and water quality improvement recommendations are developed.
- *Growth Readiness workshops*
The second "Growth Readiness" workshop for the four-county region of Anderson, Boyle, Mercer, and Washington Counties was held in Harrodsburg on April 7th. Representatives of these counties are interested in learning more about low impact development and will be assessing local ordinances relating to development practices. Participants will be working to encourage development practices that reduce impacts on local water quality, preserve greenspace, and increase the overall desirability of their communities. The next meeting is scheduled for April 21st from 1:00 to 5:00 p.m. at the Lion's Park Community Center in Harrodsburg.
- *CREEC Work Day, April 20th*
CREEC (Clark's Run Environmental and Educational Corporation) is planning an Earth Day-related creek work day on Sunday, April 20th in Danville from 1:00 to 3:00 p.m. Centre College students and CREEC volunteers will be clearing invasive honeysuckle, planting tree seedlings along the creek, and conducting a creek walk to show community partners a portion of the proposed trail extension route.
- *Watershed Watch training*
Kentucky River Watershed Watch will be holding a volunteer training course at Centre College on April 26th. This training is required for anyone interested in participating in the organization's annual water quality sampling activities. Watershed Watch volunteers select site(s) to conduct sampling 3-4 times per year for a variety of water quality parameters. More information is available online at www.krww.org.

Water Quality Data Review: Chlorophyll and Nutrients

During the Council's previous meeting in February, members expressed an interest in further analysis of the relationship between chlorophyll readings and the presence of nutrients—as an increase in nutrients should result in an increase in plant growth, and subsequently an increase in chlorophyll. A comparison chart of chlorophyll, nitrate and orthophosphate results at each of the sites did not show many sites with the combination of high nutrients and high chlorophyll. Unfortunately, two of the sites with exceptionally high nutrient values (Clark's Run at Hwy 52 and White Oak Creek) were not sampled for chlorophyll, so the correlation at those sites is not known. Linear regressions of chlorophyll vs. nutrient concentrations also did not illustrate a strong relationship between the two variables. Further research suggests that there are many other factors influencing chlorophyll levels in waterbodies, including sunlight exposure, stream depth, average turbidity, site specific rainfall events causing scouring of the stream bottom, percentage of tree canopy closure and the cardinal direction of the stream. The direction of the stream influences how much sunlight it will receive, i.e., North/South streams would receive more sunlight exposure than East/West-running stream. Thus, there are many factors, in addition to nutrient levels, that affect chlorophyll concentrations in waterways.

General discussion relating to chlorophyll cited that algae is objectionable aesthetically, for its negative impacts to aquatic habitats, and as a cause of oxygen depletion as it decomposes. Unfortunately, the sampling study did not produce oxygen data that allows the Council to see the effects of high algal/ chlorophyll levels.

It was also noted that the TMDL (total maximum daily load) report for Herrington Lake is being written partially to address low levels of dissolved oxygen in the lake. Council members questioned whether or not nutrient levels are the cause of the oxygen problems in the lake. In the official 303(d) listing for Herrington Lake, the lake pollutants are high organic enrichment and low dissolved oxygen, rather than nutrients. The 2006-07 data analysis being conducted by the USEPA should further identify the causes

and sources of low oxygen levels found in the lake. USEPA staff will again be asked to provide their findings to the Dix Council. Representatives from the Kentucky Division of Water and the Kentucky Department of Fish and Wildlife may also be able to provide insights on the water quality of the lake.

Habitat Assessment Score Results

John Webb provided background on the methods used to calculate “habitat assessment scores” for each of the sampling sites in the Dix River watershed. These field data sheets were completed at each of the sites at the beginning and conclusion of the sampling period. The results indicate how healthy the stream is in relation to its ability to support aquatic life. The Kentucky Division of Water also uses these scores in determining how adequately a particular waterway supports its designated uses (in its Biennial 305b Water Quality Report to the EPA).

Ten major categories are assessed in calculating the overall habitat score. These include:

- 1) Stream Bottom Structure and “Critter Cover” (epifaunal structure)
- 2) Embeddedness – examines the degree of siltation around stream substrate rocks/pebbles/gravel
- 3) Velocity/Depth Regime – should have a variety of different velocity types (slow/shallow, slow/deep, fast/shallow, fast/deep)
- 4) Sediment Deposition – want to see few point bars where sand/gravel settles out in creek bends
- 5) Channel Flow Status – stream fills its banks
- 6) Channel Alteration – relates to degree of channelization, or straightening, of the stream
- 7) Frequency of Riffles – areas of whitewater, oxygenation; ideally one riffle every 7 stream widths
- 8) Bank Stability – vegetated, tree-lined banks are more stable
- 9) Bank Vegetative Protection – lessens thermal, sunlight impacts
- 10) Riparian Vegetative Zone Width – filters stormwater runoff

The Bluegrass Habitat Criteria rate streams depending on whether they are headwater or wadeable streams. Headwater streams have upstream watersheds less than 5 square miles in size, and wadeable streams have watersheds greater than 5 square miles. Headwater streams are generally less impacted, and thus have higher habitat score ranges for fully, partially, or not supporting aquatic life. Wadeable streams are usually in more developed, impacted areas and have lower average score ranges. Thus, the ranking values differ, depending on the classification of the stream as headwater or wadeable. For example, the headwater stream of White Oak Creek is considered non-supporting with a score of 139, but the wadeable stream of Clark’s Run at Hwy 150 is considered fully supporting with a score of 135.

Dix River watershed sites considered able to *fully support* aquatic life are:

- Clark’s Run Bypass (Score = 154)
- Clark’s Run Second Street (Score = 151)
- Clark’s Run DOW at Goggin Lane (Score = 147)
- Clark’s Run at Hwy 150 (Score = 135)
- Clark’s Run at Hwy 52 (Score = 132)
- Dix River DOW at Hwy 52 (Score = 163)
- Dix River above Hanging Fork (Score = 152)
- Drakes Creek (Score = 132)
- Logan Creek (Score = 132)
- Gum Sulfur (Score = 131)
- Hanging Fork Mouth (Score = 152)
- West Hustonville (Score = 144)
- Knob Lick Creek (Score = 138)
- Spears Creek (Score = 159)
- Mocks Branch (Score = 144)

Dix River watershed sampling sites considered in *partial support* of aquatic life are:

- Dix/Crab Orchard (score = 122)
- Gilberts Creek (score = 120)
- Blue Lick Creek (score = 127)
- Hanging Fork/Hwy 150 (score = 127)
- Oak Creek (score = 124)
- McCormick Church (score = 116)
- McKecknie Creek (score = 116)

Sampling sites considered in *non-support* of aquatic life are:

- Balls Branch West (score = 134)
- Clark's Run at Corporate Drive (score = 131)
- Balls Branch Mouth (score = 115)
- White Oak Creek (score = 139)
- Copper Creek (score = 112)
- Frog Branch (score = 123)
- Peyton Creek (score = 113)
- Moore's Lane (score = 110)
- Baughman Creek (score = 109)
- Chicken Bristle (score = 107)
- Junction City (score = 95)
- McKinney Branch (score = 86)

Preston Miles suggested that potential stream restoration sites be identified based on the habitat score results. Some of the poor scoring sites are also located downstream of point source discharges (from sewage treatment plants). It was suggested that these sites might not be ideal for restoration, since the point sources will be persistent, ongoing impacts to these waterways.

Other Discussion

- Council members are still interested in a field trip to the stream & wetland restoration site in Lincoln County near the Copper Creek monitoring location and Saylor Road. The project includes 52 acres of wetlands, and full restoration of 6,525 linear feet of four 1st order streams. This restoration project may be used as an example for future Dix Watershed endeavors. The project coordinator, Art Parola of U of L, may be able to provide an on-site explanation of the restoration project. John Webb will work on the specifics of this potential field trip and council members notified if a date/time is selected.
- Rose-Marie Roessler mentioned that a writer with the Danville Advocate-Messenger had proposed a series of articles on the Council's activities and findings. Council members were in agreement that this would be an excellent way of stimulating more interest in the area's water quality issues. A series of articles could address 1) the state of the watershed; 2) impacts to water quality and 3) what can be done to lessen impacts to water quality. The NRCS also developed a series of short articles on best practices for water quality that might be helpful to include in some way. This topic should be added to the council's next meeting agenda for further discussion.
- Members requested a summary table compiling the ranking of all sampling sites for each of the focus water quality parameters. This would be helpful in further refining data analysis discussions and deciding where management recommendations should be targeted.
- John Webb introduced a proposal to use available federal EPA funds to acquire outside assistance to develop the Dix River Watershed Plan document. It was acknowledged that help is needed due to the large size of the watershed, staff and expertise limitations, and a limited timeframe for the plan's completion (September 2009). A consultant could assist the Division of Water and the Dix Council in creating an EPA-acceptable watershed plan for Clark's Run and Hanging Fork. A more generalized plan would be created for the remainder of the Dix River watershed, including Herrington Lake. Members agreed, stating "We recognize the Council's limitations and request further funding and technical assistance in developing the Watershed Plan."

Another suggestion was to create subgroups of the Council to focus on the issues and recommendations for the subwatersheds of Clark's Run, Hanging Fork and any others with sufficient interest levels. The overall Council would continue to meet regularly to discuss the overall plan and review the work of the subgroups.

With regard to Herrington Lake, the EPA's TMDL report will provide information about sources and management recommendations.

The next meeting of the Dix River Watershed Council was scheduled for Tuesday, May 20th at 6:00 p.m. at Danville's City Hall.