

## **Watershed Plan for the South Elkhorn Creek Watershed (051002-05-270)**

The South Elkhorn Creek watershed is among the largest and most populous watersheds in the basin. It includes urban and suburban areas and agricultural land. The top priorities for the watershed are to mount a determined effort to reduce the pollution from urban stormwater runoff, to prevent flood losses, to safeguard public health by tracking and eliminating sources of pathogens in surface waters, and to reduce phosphorus loading that threatens the ecological balance of the streams. One strategy that addresses all of these goals is the adoption of new approaches to planning new development and designing drainage systems. Another is restoration of trees and other natural vegetation adjacent to streams. Educational outreach is critical for raising public awareness of the problems and solutions, in both urban and rural sections. More specialized training can help specific groups implement measures to prevent these problems.

The following watershed plan emerged through the combined input of local task force members and agency personnel who participated in a series of meetings on this watershed, culminating in a planning workshop (see list of participants on page 42). Task force members and agency personnel examined monitoring data, agency programmatic information, and local knowledge assembled through the framework process as a factual background for the meetings. During the workshop, an independent facilitator asked planning participants to identify the issues they felt were most important. Next, the group went through a priority-setting process to highlight the issues and actions of greatest concern to the group. Finally, they discussed what steps should be taken next to address issues in the watershed.

Goals and strategies for action are listed on page 35. A color map of the South Elkhorn Creek watershed appears on page 149. The watershed summary for this watershed appears on page 330.

### **Assessment and Ranking (2000)**

#### **Ranking metrics**

Rankings of the South Elkhorn Creek watershed were high for every segment of the framework prioritization formula. Groundwater sensitivity is higher than almost anywhere in the basin (4.82 compared to a mean of 3.21 and median of 3). The numerous stream impairments demonstrate the stress placed on the watershed. In addition, potential impact scores suggest high risks to water resources: the concentrations of livestock are high for the Kentucky River basin, as is the population without public sewers and the projected rate of population growth. Only one watershed has more permitted discharges, and only three have accumulated more discharge violations. Only one watershed has more potential contamination sites.

## **Agency data assessment**

Of 122 miles of streams in the watershed, 59.9 miles were assessed for the 2000 305(b) report, and six assessed creek segments (17.8 miles) did not fully support all of their designated uses, based on biological and water-quality data. Pathogens, organic enrichment, alterations of flow and habitat, agricultural practices, municipal point sources, storm sewers, and urban runoff contribute to the impairment of these streams. Specifically, the 2000 305(b) assessments show that: Lee Branch in Midway only partially supports primary contact, due to pathogens; Wolf Run in Lexington fails to support primary contact and only partially supports aquatic life; one segment of South Elkhorn Creek fails to support aquatic life due to siltation; and three segments of Town Branch in Lexington only partially support aquatic life; two of these segments of Town Branch were assessed for primary contact and failed to support it, due to pathogens. Several of these streams are already on the list of impaired waters for conditions identified in previous assessments. Total maximum daily load (TMDL) plans are under development by UK for low dissolved oxygen and high levels of nutrients in South Elkhorn Creek and Town Branch. UK is also undertaking TMDL studies on pathogens to address problems in Town Branch, Wolf Run, and South Elkhorn Creek.

## **Volunteer data**

Kentucky River Watershed Watch samples seventeen sites in the watershed. Data for Beals Run, Steeles Branch, and one of the sites on South Elkhorn Creek show high levels of bacteria indicative of fecal contamination (above 200 colonies/ml). Lee Branch exhibited elevated sulfate levels. Phosphorus levels at every site where it was analyzed were well above the level that may cause potential nutrient enrichment problems ( $> 0.1$  mg/l). Town Branch and three sites on South Elkhorn showed nitrate nitrogen concentrations above 10 mg/l, which is the drinking water supply standard and EPA's maximum contaminant level. Lead, copper, selenium, and thallium were significant in several samples. Traces of the organophosphate insecticide chlorpyrifos were detected at a few sites.

## **Identification of Issues and Opportunities (2001)**

The watershed is among the most polluted and most populated in the basin, but it is also the focus of many efforts to prevent and reverse degradation. The Bluegrass Conservancy and Thoroughbred RC&D have secured \$100,000 for a program to purchase easements to reduce nonpoint source pollution specifically in the South Elkhorn, North Elkhorn, and Elkhorn Creek watersheds. The purchase of development rights program in Fayette County will also help preserve open space.

The Planning Committee of the Lexington-Fayette Urban County Council resolved at their session January 22, 2001 to support the city's involvement in a Framework task force for the South Elkhorn. Council members are concerned with

and active in issues such as stormwater management, greenspace preservation, and stream restoration projects.

Lexington's engineer in charge of water quality has implemented a number of programs to characterize and rectify water pollution in the city's streams. Public education and public involvement are an important emphasis in these programs.

The county has planning and zoning, and water and water quality management are central to the greenway master plan, now under development. Fayette County's water quality assessments and stormwater studies are conducted on a watershed basis. The county's Division of Engineering plans in the near future to inspect stormwater and KPDES permits, watershed by watershed, in a new initiative to encourage full compliance. An administrative procedure to deal with violations of the county's antidegradation statute has been proposed as a means to streamline proceedings that must now go to district court.

Potential partners in Fayette County, in addition to the urban-county government, include Town Branch Trail, a not-for-profit group whose object is to create a greenway along Town Branch. Rehabilitating the stream corridor, restoring natural habitat, and addressing water quality impairments in the creek are important to creation of the greenway. The group is dedicated and well organized, has already obtained grants and donations in excess of \$22,500 for the trail project, and is building impressive public support for the concept. There is great potential for synergy between goals for the trail and wider watershed management objectives, as is evident from the report prepared by the Environmental Quality Committee of Town Branch Trail (choose "Explore" at <http://www.townbranch.org/>).

There is significant interest in this watershed outside Fayette County. The basin team's regional meeting for the Bluegrass drew people from five counties, and the South Elkhorn watershed was the first priority of more than 75% of the participants. The watershed also received fully 50% of votes for participants' top three priorities, although nine of the eighteen watersheds in the region received votes. Those from Franklin and Scott counties supported attention to the South Elkhorn, but interest was especially strong in Woodford County.

Watershed Watch has more volunteer sampling sites in the South Elkhorn Creek watershed than in any other Kentucky River Basin watershed. Volunteers come from all five counties of the watershed. The local strength of this organization will be a significant asset in terms of both monitoring capability and citizen involvement. The group is producing Citizen Action Plans for both the South Elkhorn and the Town Branch/Wolf Run subwatersheds (see page 108).

In Woodford County, the Judge-Executive sees the Kentucky River basin as a useful basis for regional cooperation and planning. He chairs the Board of Health and is working to limit the collective impact of septic systems on water quality. The Board of Health and Fiscal Court have considered various means to ensure regular maintenance and inspections. The county engineer represented the judge at

our regional meeting and expressed further interests in parks and planning as they relate to water issues. Kentucky River Watershed Watch would like to focus on contamination of Woodford County streams by septic systems. Lees Branch and the South Elkhorn Creek itself are of particular interest to both the county and Watershed Watch.

The South Elkhorn Creek watershed represents a prime opportunity for inter-jurisdictional cooperation to solve water problems and protect land and water. Human and financial resources are more concentrated than in other parts of the basin, and awareness is high. Because the watershed is so large, it will make sense to focus early attention on the subwatersheds where impairments and local interest are both clustered: in Woodford County and central Fayette County. These areas can serve as proving grounds for approaches that can subsequently be applied to other parts of the watershed and adjacent watersheds in the counties. A focus on the watershed as a whole can be maintained for protection measures and public education efforts.

TMDL development is well advanced in this watershed in comparison to most of the basin, meaning that a task force here will have some analyses to work with in devising strategies for the restoration of impaired streams. Dr. Lindell Ormsbee of The Tracy Farmer Center for the Environment is directing the TMDLs for streams in this watershed and plans to engage the task force as an advisory body for the process. The South Elkhorn Creek watershed is a headwaters watershed. There is no USGS gage in the watershed, although there is one on the North Elkhorn and one on Elkhorn Creek.

## **Planning Workshop (September 2001)**

### **Goals and strategies for action**

#### ***Priorities***

- Raise awareness about stormwater pollution to reduce contamination.
- Investigate stormwater treatment options.
- Strengthen spill prevention and response capability for Town Branch and elsewhere.
- Identify strategies to address stockyard and muck pile runoff.
- Determine nutrient load in South Elkhorn and how much comes from each source (TMDL is in progress, and sewage plant permit revision is coming).
- Promote planning, design, and development processes that take watershed issues into account.
- Facilitate development of a greenway along Town Branch, ensuring that the greenway is incorporated into the designs for both the landfill closure and the extension of Newtown Pike.

***First steps, by issue***

**Watershed planning.** Pursue a regional conference to exchange ideas with decision makers and implementers in local governments. Advocate the best construction practices. Address topsoil removal from construction areas, urban sedimentation from construction runoff, design of water retention structures for both flow control and water quality, and the importance of appropriate riparian buffers. Hold urban site design workshops and trainings: a list of watershed planning trainers is available on the Framework web site. Promote greater consideration of impervious surfaces and of soils and geology in planning. Develop and implement TMDLs, and address the Town Branch sewage discharge. Promote a greenway adjacent to Town Branch. Keep abreast of Ag Water Quality Act activities. Reduce livestock access to creek.

**Urban stormwater.** Install drain markers indicating the stream each street drain is connected to. Fayette County is beginning this in spring 2002 and other counties can take advantage of the program they have developed. Compile a map of watershed hotspots for potential water pollution. Review hot spots to determine whether facilities hold correct permits and to identify facilities that should have KPDES permits or should be routing effluent to sanitary sewers rather than storm sewers. Develop a call list for reporting incidents in each county to the appropriate authority.

Implement an educational outreach program on urban stormwater runoff, nonpoint source pollution, best lawn and garden practices, and proper disposal for homes and businesses. Target Town Branch and Wolf Run first.

**Riparian buffers (streamside vegetation).** Assemble riparian buffer articles and a database of property owners to send these articles to. Talk to neighborhood organizations or civic groups about riparian zones, building on Bev Juett's project. Establish buffers on government properties to demonstrate projects.

**On-site sewage.** Develop a program to disseminate information on the needed maintenance of septic systems. Increase communication and connection between this group and the state health department.

***Organizational priorities***

- Affected audiences need to be involved in order for the effort to succeed: there is concern that the framework process is agency driven. What is the appropriate role for the agencies and individuals present?
- Share information and networking to maximize existing efforts. Distribute the water quality data already collected more widely, and coordinate data collection to fill gaps in knowledge.
- Partner with existing programs on education and publicity.
- Meet on an interest group level: the whole group to meet less frequently; the smaller groups to meet more often. Priority interests are Town Branch,

urban stormwater runoff, on-site sewage systems and maintenance, riparian buffers (streamside vegetation), and flooding as it relates to watersheds.

- Establish a “working group” of county/city authorities and DOW authorities to work together for enforcement issues.
- Hold a regional seminar/conference/workshop for community planners and authorities to discuss land use issues and watershed management.
- Include landowners in the process.

## **Watershed priorities and actions by issue**

### ***Urban runoff***

- Hold a regional conference to share ideas on urban runoff with decision makers and implementers in local governments.
- Install drain markers indicating the stream each street drain is connected to. Fayette County is beginning this in spring 2002, and other counties can take advantage of the program they have developed.
- Compile watershed hotspots for potential water pollution. Review these to determine whether they have the permits they should.
- Lawn care education campaign needs funding.
- Case studies from Lexington for other cities.
  - Herbaceous cover needs variance from noxious weed ordinance.
  - Detention/retention basin management (400 basins in Fayette County): planting trees on homeowner-held land.
  - Water quantity models are in development for Lexington, watershed by watershed, for retrofitting areas in Fayette County to minimize flooding.
  - Construction and lack of sediment control authority: an education for other communities. Training citizens on how to take people to court if they are improperly constructing.

### ***Streamside vegetation zones***

- Education is the key. Inform the public to stop mowing creekside areas in general and to let vegetation grow back naturally along the banks.
- Identify the areas of greatest need and focus there.
- Start by establishing buffers on local government property.
- Urban forestry grants are available for urban buffers.
- Buffer zones would benefit from increased rental rates for the Conservation Reserve Program (state funds; \$66/acre rental; cost share is \$99/acre).
- Bev Juett has a mailing list for riparian landowners. (She did an educational project in Woodford, Scott, and Franklin Counties on the South Elkhorn.) Get a newsletter article out as first step. Newspaper and newsletter articles for neighborhood associations, web resources, etc. are useful media.

### ***Septic/onsite wastewater systems***

- ❑ Need better standards for siting new systems and rehabilitation of existing systems, and need more uniform inspection by the local health departments.
- ❑ Need to review and revise standards for regulating installation and maintenance: state has the authority to do this. Must more clearly define the division of authority and responsibilities between DOW and Department of Public Health. An action plan developed for the Kentucky Environmental Quality Commission is an attempt to help with this.
- ❑ The educational process for the owners, installers, and regulators of septic systems should be ratcheted up.
- ❑ Prioritize and then target problem areas for more intensive new outreach programs.
- ❑ Health departments could distribute educational materials with inspections.
- ❑ The secondary home market could provide educational materials during the transfer of property. Materials are available from DOW. Potential legislation would require inspection of wastewater system before property changes hands.

### ***Flooding***

- ❑ Enforce floodplain construction laws and permits more thoroughly.
- ❑ Encourage local governments to undertake stream restoration rather than drainageways.
- ❑ Have city engineers and local officials engineer better retention basins.
- ❑ Mount joint efforts between local government and other agencies to study the hydrology (Corps of Engineers).
- ❑ Increase the size of riparian buffers by involving both public support and private landowners. Currently, stormwater regulations require 25' of non-disturbance zone on either side of a stream and other buffers and easements.

### ***Town Branch***

- ❑ Main issues: urban stormwater, solid waste/garbage, sewage treatment plant, stockyard.
- ❑ Main resources or programs: TMDL and stormwater permitting. Both are short of staff and lack political support at times.
- ❑ Short term strategy: Lexington will work with state government to come up with targeted areas to work on. They will target problems that are solvable and can garner the needed resources and political will.
- ❑ TMDLs will calculate limits on phosphorus, but can they fix the problem?
- ❑ Lexington will send letters soon to holders of stormwater permits, to remind them of responsibilities.

- ❑ Work with agencies implementing the landfill closure plan to ensure compatibility with a Town Branch greenway.
- ❑ Organize cleanups to remove solid waste in streambeds and along banks.
- ❑ Need proactive ways to act rather than reacting to problems.

### ***Data Collection***

- ❑ Define which concerns are actually problems and which are most pressing.
- ❑ Develop a mechanism to more specifically define sources of impairments.
- ❑ Gather sources of data for the watershed, and identify further data needs.
- ❑ Distribute information already available; share data.

## **Watershed concerns, by area**

### ***Town Branch and Wolf Run***

The Town Branch and Wolf Run subwatersheds, in central Lexington and western Fayette County, are affected by many impacts and have diverse needs.

### **Impacts on Town Branch and Wolf Run**

- ❑ Urban runoff, via storm sewers that run to streams, includes nonpoint source pollution of many types, among them lawn chemicals and fertilizer.
- ❑ Stormwater also carries frequent spills and discharges.
- ❑ Other concerns include solid waste, landfill leachate (the city plans to cap and close the landfill), and stockyard runoff. Fecal coliform bacteria contaminate Town Branch above the sewage treatment plant.
- ❑ The treatment plant discharges phosphorus and organic matter, as well as transferring large quantities of water from the Kentucky River (source of the city's water supply) to Town Branch.
- ❑ Riparian/streamside buffers have been lost during the development of the watershed, and there has been a dramatic increases in impervious cover in the headwaters. For example, the watershed of Wolf Run is more than 60% impervious.
- ❑ The increase in impermeable surface affects water quality, water quantity, and geomorphology. Productive agricultural bottom lands downstream often flood as a result of rapid runoff from impervious surfaces.

### **Needed action for Town Branch and Wolf Run**

- ❑ Mount a stormwater education campaign so that people know that storm sewers drain to Town Branch and know how to prevent damage. Creeks are “invisible” to most of Lexington: we need to attract attention to them and make them a focal point.
- ❑ Identify facilities that should be routing effluent to sanitary sewers or that should have a KPDES permit.

### *Kentucky River Basin Management Plan*

- Promote revegetation of riparian areas and urban forestry opportunities to improve the watershed.
- Ensure that a greenway is incorporated into the landfill closure plan and the design for the Newtown Pike extension.
- Obtain needed assistance for the McConnell Springs contamination site.
- Clean up accumulated solid waste in and near streams.

### ***South Elkhorn above Town Branch***

- Need assistance from DOW to ensure that industrial discharge/stormwater permits are enforced (Fayette County will be asking to see permits).
- LFUCG Ordinance 16, section 73, says anything that is added to stormwater that makes a chemical or physical change to stormwater is illegal. Encourage LFUCG to enforce that law.
- The airport abuts the creek and its tributaries. Cave Hill Creek or South Elkhorn Creek will be moved for airport expansion. Also, de-icing glycol materials affect water quality.
- Filling or rerouting stream systems produces loss of aquatic habitat and hydrologic modifications that decrease baseflow. Such practices are particularly common in developing areas of northern Jessamine County and southern Fayette County.
- In the Hometown Road area near Shannon Run, septic systems are built low and close to the bedrock and not adequately installed.
- Muck piles, composting operations, and stockyards are present in the South Elkhorn watershed.

### ***South Elkhorn below Town Branch***

- This section of the creek is affected by Town Branch nutrient loads.
- High fecal bacterial levels are common after rainfalls in most agricultural zones.
- Runoff from cattle operations.
- Runoff from pastures turned into horse farms, with increased spraying for pasture maintenance.
- Inadequate leach fields at mobile home parks.
- Plans and potential for new development, which include a stockyard and commercial/industrial development, Woodford EDA.
- Other development sites: Lees Branch; I-64 interchange at Midway/KY 341; Rte. 421; Fishers Mill (Woodford/Scott line).
- New bridge construction concerns: cleaning woody debris and how they are going to construct the bridge and reroute traffic, controlling sediment.
- Head of South Fork to the Forks of Elkhorn: development causing flooding.

- ❑ At the Forks of Elkhorn, the severity of floods is increasing. Bacteria and nutrients from livestock and fertilizer runoff are a concern there too.

***Watershed-wide issues***

- ❑ Onsite wastewater issues: get people to maintain septic tanks and to keep records. Information is available via homeowner plan, groundwater protection plan, and Farm-A-SYST; must find ways to reach homeowners with this material.
- ❑ Dispel the misconception that properly installed and maintained septic systems will protect groundwater in karst. Encourage better design of septic systems.
- ❑ Riparian/streamside buffers and development: promote protection and expansion of streamside vegetation. Narrow line of trees is not adequate for wildlife or to protect water quality.
- ❑ Urban/rural runoff and contaminants and impervious surfaces.
- ❑ Urban construction: sedimentation from poor practices. Also, removal of topsoil increases impervious surface for all practical purposes.
- ❑ Low-level dams impacting fish habitat, siltation, eutrophication.
- ❑ Nutrient load: what are the sources?
- ❑ Improve Elkhorn for smallmouth bass.
- ❑ Livestock access to the creek leads to animal waste in water and bank degradation.
- ❑ Nonpoint source pollution from lawn chemicals and agriculture.
- ❑ Need for coordinated decision making on watershed issues (such as the impervious cover) across jurisdictional boundaries.
- ❑ Sanitary sewer overflows: inflow and infiltration into collection systems during wet-weather events, also illegal roof drains and sump pumps. These overload the treatment plant and cause bypasses that result in raw sewage being discharged.
- ❑ Pressure for development in northwest Fayette County, Leestown Pike, etc.
- ❑ Loss of streams, riparian areas, and habitat is widespread: not much effort to mitigate for stream loss.
- ❑ Homeowners, street flushing into storm sewers and creeks.
- ❑ Retention and detention basins: choose options for better design.
- ❑ Are there treatment options for stormwater runoff?
- ❑ Ignorance of geology and soils in making decisions about development.
- ❑ Solid waste in creeks: where does it come from and why?
- ❑ Enforcement and intergovernmental coordination/cooperation.

## **Participants in the South Elkhorn Workshop Phase**

Workshop was held September 5, 2001, at Midway

### ***Local Representatives***

Lynn Brammer, DOW Frankfort Regional Office  
Arthur Craig, County Engineer, Woodford County  
Amanda Curry, NRCS Ag Water Quality program, Woodford County  
Don Dampier, Kentucky River Watershed Watch  
Stan Dyer, property owner and canoeist, Elkhorn Creek  
Charles Farmer, NRCS, Fayette County  
Fred Goins, Vice Judge Executive, Franklin County  
Joe Gormley, County Judge Executive, Woodford County  
Don Hassall, Blue Grass Area Development District  
Yvette Hurt, Town Branch Trail, Inc.  
David Gabbard, Lexington-Fayette water quality engineer  
Steve Jackson, Lexington Division of Environmental and Emergency Management  
Bev Juett, Kentucky River Watershed Watch  
Phillip Kring, Magistrate, Franklin County  
Bill McGowan, Kentucky River Watershed Watch  
Kerry Prather, Department of Fish and Wildlife Resources, central Ky. fisheries  
Whitney Probst, Scott County Conservation District  
Jim Rebmann, Lexington-Fayette Planning  
Randal Rock, NRCS, Woodford County  
Clay Smitson, Department of Fish and Wildlife Resources, private lands wildlife  
Patrick Thompson, UK policy intern  
J.R. Williamson, Scott County Fiscal Court

### ***State Program Representatives***

Benjy Kinman, Department of Fish and Wildlife Resources, Fisheries  
Gary Levy, DOW Enforcement Branch  
Bennie McWain, DOW Facilities Construction Branch  
Ed Neal, DOW Water Resources Branch  
Beverly Oliver, DOW Groundwater Branch  
Shanda Pace, DOW Nonpoint Source Section, grants administration  
Ron Price, DOW Program Planning, grants administration  
Bruce Scott, DOW KPDES Branch  
Bob Ware, DOW Assistant Director and Kentucky River Authority  
Corrine Wells, DOW Nonpoint Source Section

***Staff***

Jennifer Thompson, facilitator (Kentucky Natural Resources Leadership Institute)

Pamla Wood, workshop recorder (Licking River Basin Coordinator, DOW)

Greg Epp, Kentucky River Basin Coordinator (KWRRRI for KRA)

Lee Colten, Watershed Framework Manager (DOW)

**Point of Contact**

David Gabbard, LFUCG Division of Engineering

200 East Main Street, 8th Floor, Lexington, KY 40507

(859) 258-3410