Overview of the Basin Management Plan

Watershed Planning for the Kentucky River Basin

Water is increasingly in demand and increasingly threatened. The intertwined issues of land use, water quality, and water quantity are best addressed in concert, and the most efficient approach is to use watersheds, delineated by the natural boundaries of flow, as the units in which to plan management solutions. The Kentucky Watershed Management Framework is designed to do just that.

This document is the product of the first complete basin cycle of the framework process. Beginning in 1997, the Kentucky River Authority and the Kentucky Water Resources Research Institute pioneered implementation of the framework approach for the Kentucky River basin. Kentucky's framework process is a form of the US EPA model for integrated management of water resources. The framework focuses scarce human and financial resources on places where they can be most effective, by means of a repeated five-year cycle of analysis, prioritization, and action. Management goals are met via continuous improvement of monitoring, community outreach based on watershed data, and action founded on agency program criteria and on local interest and choices.

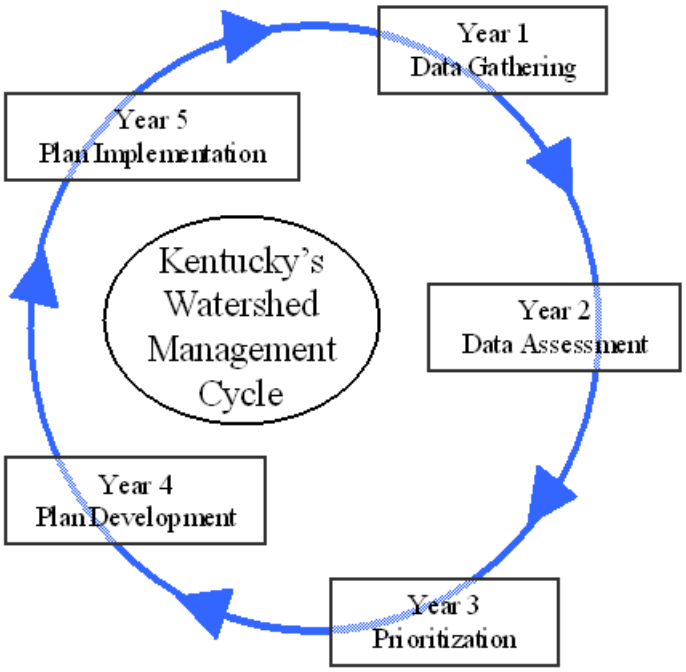
This basin management plan is embedded in the watershed approach, so an explanation of the watershed framework is necessary as an introduction to the document. The framework process is explicitly cyclical: watershed data are re-analyzed at five-year intervals, and watershed planning is extended and improved in each successive cycle. The framework thereby will connect existing state and local programs in a new geographic focus—the watershed—and will eventually promote new and more comprehensive efforts mobilized around watersheds. The plan for management of the Kentucky River basin presented herein represents the first iteration of a process that will be refined and expanded with each repetition.

The Framework Approach

The Kentucky Watershed Management Framework is a dynamic, flexible structure for coordinating watershed management across the Commonwealth of Kentucky. The framework is not a new program, but rather a way of coordinating existing programs and building new partnerships for more effective and efficient management of the state's land and water resources. Inherent in the design of the framework is the belief that many stakeholder groups and individuals must have ongoing opportunities to participate in the process of managing the abundant natural resources that characterize Kentucky's watersheds.

Seven basin management units take in all of Kentucky's major river basins. The Kentucky River basin is one management unit. The basin cycle facilitates the coordinated timing of key activities within each management unit. The cycle consists of five year-long phases: (1) scoping and data gathering, (2) assessment, (3) prioritization and targeting, (4) plan development, and (5) implementation. The five phases are repeated at five-year intervals to ensure that watershed manage-

ment goals, priorities, and strategies are regularly updated. The statewide basin management schedule establishes a staggered sequence for conducting key activities in each management unit and throughout the state. The statewide schedule facilitates the efficient use of resources by focusing major watershed management efforts (such as stream monitoring) on different parts of the state each year.



A partner network, linking agencies and stakeholders via existing local organizations and forums, is the key element of the framework's approach to achieving broad public participation in watershed management. Coordination of activities takes place on three levels: state, river basin, and watershed. Efforts at each level are linked together and integrated through communication forums that include the statewide steering committee, river basin teams, and local watershed task forces.

The Management Plan

This document presents information and priorities identified in the first basin cycle, and it sets forth priorities for activities during the second cycle of watershed management in the Kentucky River basin. It provides a summary of how activities of partner agencies will be coordinated as the Kentucky River basin completes its second basin cycle (July 2002 to July 2007). Although the fifth year of each cycle is designated for implementation, in reality the implementation of the many activities of framework partners will focus on the Kentucky River basin at various points in the cycle. Participating programs have prepared management plans that outline how each program targets its activities to specific locations within the basin and when they will implement each element of the program.

This report is not a comprehensive, prescriptive plan for management of water and waterways in the basin. Instead it sets out the criteria and processes that guide state and federal programs to take particular action in particular watersheds or particular points within watersheds, and it summarizes relevant conditions in each watershed. We envision that as the watershed management approach is more fully implemented the basin plans will become more fully integrated and will provide geographic priorities articulated in greater detail.

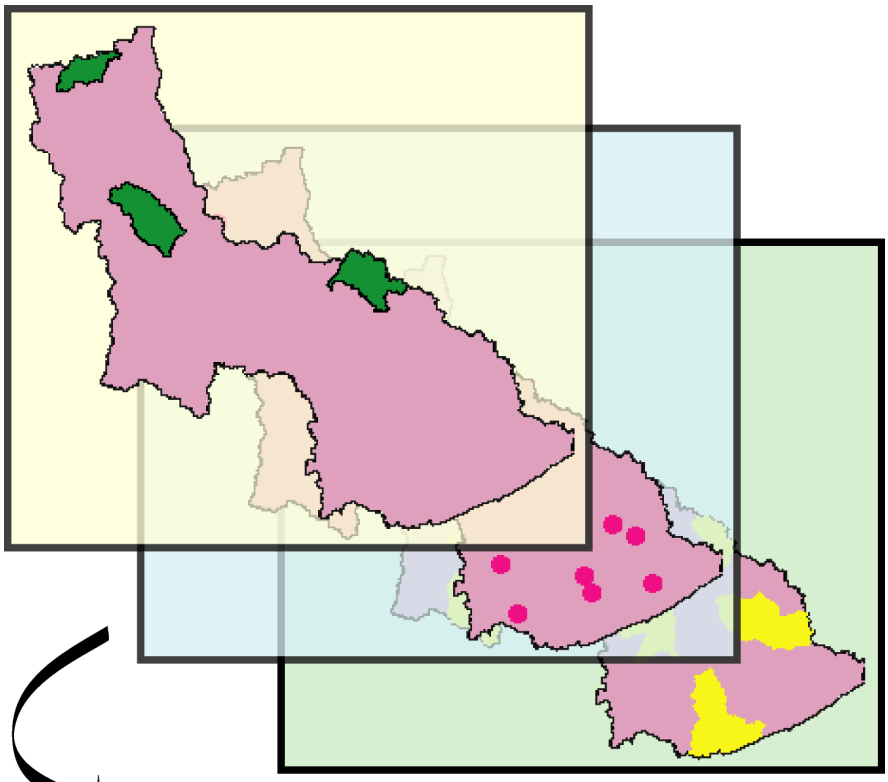
The diagram at right illustrates how the basin planning process should work. Priority watersheds that are selected through the framework ranking and targeting process are the focus for activities conducted in cooperation with local task forces. But partner organizations will continue to target resources to other parts of the basin as well. Some programs target responses to watersheds that meet specific criteria; other programs are focused on specific sites within watersheds, such as permitted facilities or the properties of clients who request assistance. By overlaying the targeted zones for all of the programs that operate in the basin, the basin management plan produces a comprehensive mapping of activities. Understanding how each program targets resources is crucial to better collaboration under the framework umbrella. Collaboration is pursued at the state, basin, and watershed level via the statewide steering committee, basin teams, and watershed task forces. Collaboration will integrate planning more fully, but approaching that goal will require continued evolution of the planning process and of the plan itself.

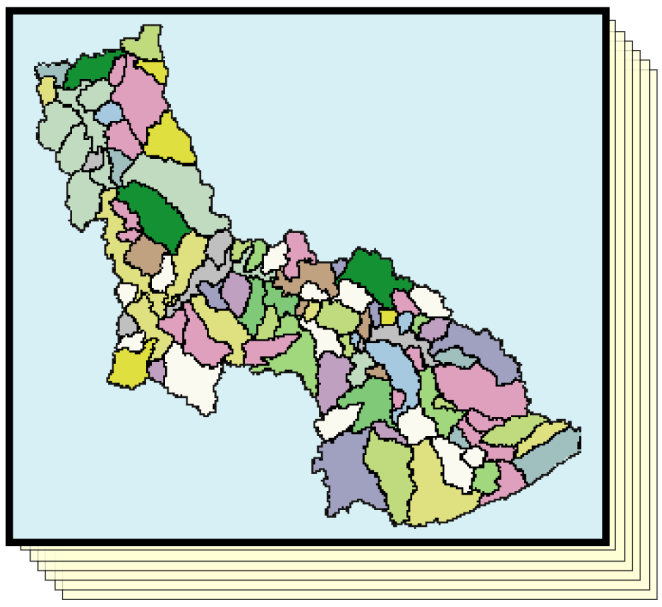
The 2002 plan contains two major sections: program management plans and watershed summaries. Supplementary information is presented in maps and tables. Management plans in part one outline the goals and requirements of each program and indicate what activities the program will carry out and how sites are selected for each activity. The basin coordinator's mobilization strategy sets priorities for targeting outreach to stakeholders in the early portion of the second cycle, and the monitoring strategy explains how framework partners will approach the second cycle of data collection. Plans for each of the three priority watersheds also appear in part one. In part two, the watershed summaries highlight information gathered under the framework process during the first cycle, drawing from the assessment report, watershed ranking, and targeted watershed list. Each of the 97 watershed summaries includes a map.

The Issues We Face

In the Kentucky River basin as a whole, the major challenges are controlling fecal contamination of the water, reducing sediment problems that disrupt the physical and biological functions of our streams, and managing water supply for household and commercial uses. The watershed summaries emphasize infrastructure, assessments, and predictive data related to these pervasive problems, which are discussed in more detail in the paragraphs that follow.

Framework Priority Watersheds **Program Sites** **Program Priority Areas**





Comprehensive Basin Plan

Other issues are also important: industrial or municipal point sources of pollution cause problems in several places in the river basin. However, as in the rest of the United States, most pollution comes from more diffused sources such as fields, roads, and homes. This nonpoint source pollution contaminates rainwater that flows off rural and urban land. Farm runoff in the Kentucky drainage seems seldom to contain significant levels of pesticides, but it can wash excess nitrogen and phosphorus, bacteria, organic matter, and sediment into streams. Owners of 10 acres or more who farm are now required to have an Agricultural Water Quality Plan to assure that groundwater and surface water are protected. In urban and developing areas, urban stormwater runoff is an important concern. Federal stormwater regulations that are now being phased in will require many communities in the basin to take action.

Changes in land use that alter the flow of water through watersheds should also be considered in any management plan. Mining clearly has the potential to alter flow characteristics. Development also leads to a reduction in the amount of rain that soaks into the ground and to an increase in impervious surfaces such as roofs, pavement, and compacted soil that shed water more rapidly. Trends toward lower recharge of groundwater and flash floods after rainstorms have important implications for water supply, aquatic life, and the dynamics of sediment movement in streams. Quantitative issues such as these are not as well quantified by the assessment dataset as are water quality issues.

Fecal contamination, both human and animal, is widespread in the Kentucky basin. Fecal matter contains potentially harmful bacteria and highly concentrated chemical nutrients, and contamination of streams creates both hazards to public health and nutrient imbalances that threaten stream and lake life. Better manure management practices will reduce contamination from livestock. UK Cooperative Extension, area RC&D councils, USDA NRCS district conservationists, and the county conservation districts distribute information on such practices and on programs that offer funding or cost sharing. Extending the reach of sewer systems and upgrading treatment plants will minimize the impacts of human wastes. Consolidation of inefficient "package" treatment plants and extension of sewer lines to outlying areas is being pursued under a policy of "regionalization." The KPDES permitting process has also been used to ensure treatment compliance and to impose tightened limits as needed. Where it is necessary to use onsite sewage systems such as septic tanks, appropriate designs are important and regular maintenance is essential. Alternative designs are available, but maintenance is rarely performed. In the Kentucky basin, standard septic systems are frequently inappropriate or poorly effective because of the terrain, the depth and type of the soil, the proximity of streams, or the size of building lots. Groundwater and surface water are closely linked. Nonfunctional septic systems, even when water does not pool on the surface, are little better than straight pipes, which are also common in

the basin. With the debut of Bluegrass PRIDE in autumn 2001 and the implementation of the PRIDE grant program in southeastern Kentucky, most of the counties in the basin have access to high-profile programs to eliminate straight pipes and failing septic systems (half a dozen counties at the north end, in the 4th congressional district, do not).

Sedimentation is a leading cause of degraded stream life. Fishing, tourism, and the basic environmental functions provided by natural systems are imperiled by sedimentation. Erosion and settling of sediment not only fill stream channels and eliminate habitat, but also make water turbid and carry chemicals attached to soil particles into waterways. Sediment is generated by disturbance of soil in the watershed or by disruption of the dynamics of water flow and sediment transport in the stream. The in-lieu fee program (administered by the Kentucky Department of Fish and Wildlife Resources) and the Total Maximum Daily Load program (administered by the Division of Water) address restoration of degraded streams. Prevention is a cheaper and better approach than remediation: best management practices for construction, mining, logging, and production of crops and livestock can reduce or eliminate soil loss and sedimentation generated by those activities.

Growing population centers and several severe and recent droughts have focused attention on assuring that the dry weather demand for treated water can be met without diverting too much water from the waterways that supply raw water. In the Kentucky basin, water supply plans are developed by counties, utilities, area development districts, water management planning ("409") councils, and the Kentucky River Authority. Utilities and governments in the Bluegrass area of the basin have formed the Bluegrass Water Supply Consortium to pursue a regional solution.

Implementing the Management Process

The initial round of the watershed process culminated in task force workshops that brought together stakeholders in the first three priority watersheds. Action plans for the watersheds of South Elkhorn Creek, Eagle Creek mouth, and Red River Gorge form part of this report (page 24). Working in the context of the watershed allows partner agencies, local government, and civic groups to identify shared opportunities. The framework mobilization plan (page 16) details how this process will be expanded to other watersheds. Armed with the data amassed when state agencies first focused their energies on the Kentucky River basin during 1998-1999, we are prepared for a more targeted, more extended outreach effort to engage communities in specific watersheds during the second cycle. This dimension of the framework process requires commitments from local stakeholders on a volunteer basis. Providing greater incentive for local participation should be an ongoing emphasis, because community-based task forces are a cornerstone of the framework approach.

On the government side of the equation, the agency strategic plans demonstrate how various programs are incorporating a rotating basin approach or linking their processes to framework activities. Those programs are taking action in the Kentucky basin, using this report, other framework information, and their internal data as guides. The first round of data collection in 1998-1999 was an ambitious effort to document conditions at the bottom of each watershed, as a means to screen all the watersheds and show which needed more attention. The monitoring strategy for the second round of assessments (page 22) will be refined to identify more specifically where problems originate within those watersheds and what is causing them. Monitoring results from 2003-2004 will provide the information necessary to more accurately target programs and funds to appropriate parts of the basin.

The Kentucky River Authority, as part of its unified long-range water resource planning for the basin, has a responsibility to address the conditions of surface water and groundwater, control and abatement of water pollution, protection of public health, erosion control, and management of stormwater and water supplies, among other matters (420 KAR 1:030 §4). The Authority's support of the framework process is a key means to fulfillment of these duties. Framework planning and other planning processes completed by agencies that are partners in the framework are expected to contribute substantial components of the Authority's long-range plan. Compilation of the long-range plan will be facilitated by the framework process, and the cyclical management model provides a practical means to implement appropriate actions via a watershed approach.