Report of the 1982-83
KENTUCKY WATER MANAGEMENT TASK FORCE

Research Report No. 211

Legislative Research Commission

Frankfort, Ky.

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Report of the 1982-83

KENTUCKY WATER MANAGEMENT TASK FORCE

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AND THE
1984 KENTUCKY GENERAL ASSEMBLY

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Frankfort, Kentucky
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FOREWORD

The Kentucky Water Management Task Force was created by the 1982 General Assembly with the enactment of House Joint Resolution 62. The legislature intended for the Task Force to begin planning the management of the water resources of the Commonwealth. This report is a first step toward that goal.

Vic Hellard, Jr.
Director

The Capitol
Frankfort, Kentucky

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Summary

The 1982 Kentucky General Assembly set in motion a process to plan for the management of the water resources of the Commonwealth. The first stage of the process was the creation of the Kentucky Water Management Task Force. The membership of the Task Force was a composite of individuals with quite different backgrounds but one common bond. Each member had an interest in bringing the work of the Task Force to a successful conclusion.

House Joint Resolution 62, establishing the Task Force, directed that it assist the Natural Resources and Environmental Protection Cabinet in developing a plan for completely managing the water resources of the state. The planning was to account for all uses of water, water quantity and quality, and the present organization of state government relating to water.

To arrange the task in a manageable way, the activities of the Task Force were divided into three narrow categories. First, a review and evaluation of existing statutes and responsibilities for water resource management was undertaken. Second, the Task Force engaged in an examination of the existing data on water quality, quantity, and use in Kentucky. Finally, programs and processes to thoroughly plan for the future management of the state's water resources were evaluated.

The primary result of this work has been the awareness that the 1982 House Joint Resolution 62 was indeed only the first step in what must become a more extended process in order to insure that the goal of proper water management planning is achieved. At the same time, the Task Force has suggested initial statutory changes which will make an eventual, more comprehensive approach more likely to succeed. Of the following proposals, 84 BR 532, 84 BR 533, and 84 BR 620 were passed by the 1984 Kentucky General Assembly and signed into law by the Governor.

RECOMMENDATION

The process of water resources planning must continue. 84 BR 527 would continue the Kentucky Water Management Task Force. 84 BR 528 would mandate that a state water plan be prepared and that planning become an ongoing endeavor.

RECOMMENDATION

Present water-related activities must be more closely monitored. 84 BR 529 would require water plant operators to keep up to date through continuing education. 84 BR 532 would require certification of water well drillers. 84 BR 620 would establish a certification board and continuing

education requirements for wastewater plant operators by statute rather than by regulation.

RECOMMENDATION

Additional financial resources for addressing water management needs in Kentucky are necessary. The Water Resource Authority is one tool for addressing this need. 84 BR 533 would revise the operation of the Water Resources Authority.

RECOMMENDATION

Regulation and protection of the water resources of the Commonwealth should be coordinated and, as far as possible, be consolidated. The Task Force adopted in concept the need to transfer the authority for the regulation of oil and gas drilling operations from the Department of Mines and Minerals in the Public Protection and Regulation Cabinet to the Natural Resources and Environmental Protection Cabinet.

CHAPTER I

INTRODUCTION

Committee Activity

The 1982 General Assembly established the Kentucky Water Management Task Force (House Joint Resolution 62, see Appendix 1) to assist the Natural Resources and Environmental Protection Cabinet in the development of a plan for the total management of the state's water resources. The Task Force was directed to consider all of the uses of water, its quantity and quality, and to review the organization of state government relating to water.

In order to carry out its mandate, the Task Force met fourteen times. Two of the meetings were tours and included three public hearings. The tour of eastern Kentucky focused on the water problems of that region, especially those related to brine disposal from oil and gas operations. The tour to western Kentucky focused on the unique water problems associated with a karst topography, i.e., a limestone area which is characterized by sinkholes, underground streams, and caverns and which experiences a very rapid movement of water underground.

Issues

The Task Force met as a whole, devised a work schedule (See Appendix 2), and divided its activities into three areas as discussed below.

I. A Review and Evaluation of Existing Statutes and Responsibilities for Water Resources Management.

Task Force staff developed and distributed a questionnaire to all state agencies involved in some aspect of water management. Agencies were requested to define their statutory responsibilities; describe their programs for carrying out these responsibilities; describe their interactions with other state agencies; point out areas of overlapping, conflicting, or deficient statutory authority; and recommend statutory changes. The results of the survey were distributed to the members of the Task Force.

The Task Force also heard expert legal testimony on recommendations for improving Kentucky's water laws.

II. A Review of Data on Water Quality, Water Quantity,and Water Use in the Commonwealth in Order to Generally Assess Water Resource Management and Information Needs.

Most of the meetings of the Task Force were spent attempting to assess water resource management and information needs. Appropriate state agencies presented information on areas of concern relating to water supply, water quality, and water use. Some presentations dealt with responding to water emergencies, including spills and water shortages. Problems of water pollution from septic tanks and package treatment plants were

discussed. The Natural Resources and Environmental Protection Cabinet outlined water enforcement procedures. Speakers with expertise in groundwater management and water project financing addressed the Task Force.

Two tours were taken to see water problems firsthand and to hold public hearings on water problems. On the eastern Kentucky tour, the Task Force visited Salyersville and toured the Magoffin County area to view drinking water problems associated with brine pollution. The Task Force also toured oil fields in the Lee County area. Two public hearings were held during the tour, one at Salyersville and one at Natural Bridge State Resort Park. During the western Kentucky tour, the Task Force toured the Mammoth Cave area and the Bowling Green area to see groundwater problems from improper sewage and industrial waste disposal associated with the karst topography. A public hearing was held in Bowling Green. On this tour, the Task Force also saw how flooding and water supply problems associated with surface mining in the Nortonville area have been addressed by use of funds from the Community Flood Damage Abatement Program and the Abandoned Mine Land Program.

Staff also surveyed federal agencies involved in water projects in the Commonwealth to determine the past, current, and future availability of federal assistance to meet Kentucky water needs.

III. A Review of Programs and Processes Needed to Properly Plan for Management of Kentucky's Water Resources.

Staff conducted a survey to see what the status of water planning is in surrounding states, including the source of the water planning authority, the geographic scope of any plans, agency responsibilities, state resources used (personnel and funding), implementation strategies, plan content, and plan updating. This information was provided to the Task Force.

A guest speaker involved in the development and implementation of the Pennsylvania State Water Plan highlighted the planning process in that state for the Task Force.

The minutes of the Task Force meetings are included in Appendix 3. The remaining chapters of this report elaborate on the three major issue areas investigated.

CHAPTER II

KENTUCKY WATER LAW

The right to use water in Kentucky is governed by the common law riparian system of water rights and by the permitting requirements of KRS Chapter 151. The basis for the current system can be traced to the volume of the water resources available for use and the growth of competing water uses.

Because water is a limited resource and because use of water for one purpose may preclude its use for other purposes, legal systems by which the use of water can be regulated have been developed. As would be expected, these systems of water rights developed differently in the eastern United States, where water resources were abundant, than in the semi-arid and arid western United States. In the east, the riparian system of water rights prevailed. The riparian system is based on common law, and it basically provides that a person who owns land bordering a watercourse has the right to free use of that water on contiguous property. Corollary doctrines give the riparian landowner the right to water undiminished in quality or quantity by upstream users, except that withdrawal of any amount of water for domestic purposes is allowable. The limitations on use imposed by this doctrine are addressed by another corollary doctrine. The reasonable use doctrine authorizes a riparian landowner to use water for any purpose as long as the use is reasonable and does not unreasonably interfere with other uses along the watercourse.

Even with this right to reasonable use, the riparian system has serious practical limitations: reasonable use is not a clearly defined concept. The system is not efficient in times of water shortage, and the right to use water is still limited to riparian landowners.

Because of the scarcity of water in the western United States, a better defined system of water allocation was needed there. The water rights system that developed in the western United States is the "prior appropriation" system. This is the "first in time, first in right," or "first come, first served," system of rights to water. It involves the use of a volumetric award, usually through a permit; the proposed use must be beneficial or non-wasteful; and the water right must be defined specifically in terms of the amount of water to be used and the time, place, and purpose of the water use. The user who first makes use of the water has a vested superior right to continue that use.

As competing demands for water resources increased in the eastern United States, the need for a fair and more secure system of water rights developed. A number of states in the eastern United States thus enacted permit systems to fill this need, and Kentucky is one of them. The main purposes were to quantify rights and to make water available to nonriparian owners. A secondary purpose for some states was to set up a regulatory structure to have more control of the use of water; a water user would apply to a state regulatory agency for a permit to make use of a specified amount of water. The permit system for allocation of water resources in Kentucky, which is called permissive appropriation, is established by KRS Chapter 151.

Having set the objective of reviewing and evaluating existing statutes and responsibilities for water resource management, the task force attempted to narrow the review to two areas. The first was to hear generally from experts on the effectiveness and adequacy of the existing statute to address water management needs in Kentucky. The second was to compile from the agencies themselves problem descriptions relating to statutory authority.

Statutory Limitations on Water Management Needs

In reviewing the adequacy of Kentucky law to address water management needs, the task force heard testimony from Dr. Richard Ausness, University of Kentucky Law School. Dr. Ausness has published several reports analyzing Kentucky's water law system.

Dr. Ausness perceives several problems with the state's present laws.

(1) The standards upon which water use is granted are not clear. Although "beneficial use" is implied, it should be specifically defined. Since one water use is not weighted against another, there is no method to reappropriate water under an absolute standard of "beneficial use" once all water is appropriated.

(2) The Natural Resources and Environmental Protection Cabinet (NREPC) may not have the power to deny a permit if water is available. Under the existing language, NREPC may have to issue a permit even though it might be desirable to reserve water for existing instream use and future withdrawal and instream uses.

(3) The state may not have the power to maintain instream flow and minimum groundwater levels in order to prevent undesirable environmental impacts, even though there is some general language providing that the withdrawal of water must not be detrimental to the public interest. Maintenance of instream flow is important to preserve navigation and recreational interests, as well as to protect aquatic species and provide sufficient flow to prevent violations of ambient water quality standards from effluent discharges.

(4) The statute exempts domestic use, agricultural use including irrigation, which is a major consumptive use of water, and use by steam generating plants. Also exempted is withdrawing water for injection underground in the production of oil and gas. Although each one of these exemptions could be justified in the past, only municipal or public, industrial, and manufacturing users are now being regulated. The exemption of large users raises a serious question as to the effectiveness and fairness of the permit system.

One alternative to exemptions by category could be to have an exemption based on the amount of water used; the amount could be set relatively high or low depending on the competition for use. One standard used in other Ohio River Basin states is an exemption for users of 100,000 gallons a month or less. Currently, besides the category exemptions, according to Kentucky regulations, those using 10,000 gallons or less per day are exempted from permitting.

One problem with having a large number of exempted users is that permit holders are placed in some jeopardy by virtue of the fact that the exempted users are arguably free to increase their use at any time. Such increased use may not be allowed during periods of drought or other emergencies, however.

(5) Kentucky statutes do not specifically address the duration of a withdrawal permit. One approach could be to use a perpetual permit, as opposed to one of limited duration. However, if there is no way to terminate or transfer permits once all water is allocated, there is no way to change the allocations. Another alternative would be to establish permits of a fixed duration. A problem with time-limited duration permits could result from the possibility that the activity or life of the physical plant might exceed the duration of the permit, with no guarantee of renewal.

(6) The authority of NREPC at the time of water shortage is uncertain. Although NREPC may temporarily allocate among and restrict water use by permit holders upon approval of the Water Resources Authority, it is not clear whether nonpermitted water users may be regulated or controlled. A priority system for use of water during shortages is needed.

(7) There is no explicit coordination between planning and the permit system. In order to get a withdrawal permit, applicants should have to show that the proposed use is supportive of, or at least not inconsistent with, the state water plan.

Agency Jurisdiction

A computer search of the Kentucky Revised Statutes indicates that the term "water" is used 1,513 times, in 524 sections. There are at least twenty-one state agencies that have some water-related responsibilities (Table 1). In order to streamline a review of agency jurisdictions, the task force staff developed and distributed a questionnaire to all state agencies with some involvement in water management. Agencies were requested to define their statutory responsibilities; describe their programs for carrying out these responsibilities; describe their interactions with other state agencies; point out areas of overlapping, conflicting, or deficient statutory authority; and recommend statutory changes.

A summary of the concerns and issues expressed in the questionnaire responses is shown in Table 2.

TABLE 1

STATE AGENCIES WITH WATER-RELATED RESPONSIBILITIES

Natural Resources and Environmental Protection Cabinet
Commerce Cabinet
Human Resources Cabinet
Transportation Cabinet
Department of Military Affairs
Department of Fish and Wildlife Resources
Department of Parks
Department of Housing, Buildings, and Construction
Department of Mines and Minerals

Department of Energy
Department of Agriculture
Department of Local Government
Water Resources Authority
Pollution Abatement Authority
State Planning Committee
Kentucky Geological Survey
Flood Control Advisory Commission
Environmental Quality Commission
Nature Preserves Commission
Soil and Water Conservation Commission
Public Service Commission

TABLE 2

SURVEY OF STATE AGENCIES WITH WATER RESPONSIBILITIES:
SUMMARY OF CONCERNS AND ISSUES

(Not in order of priority)

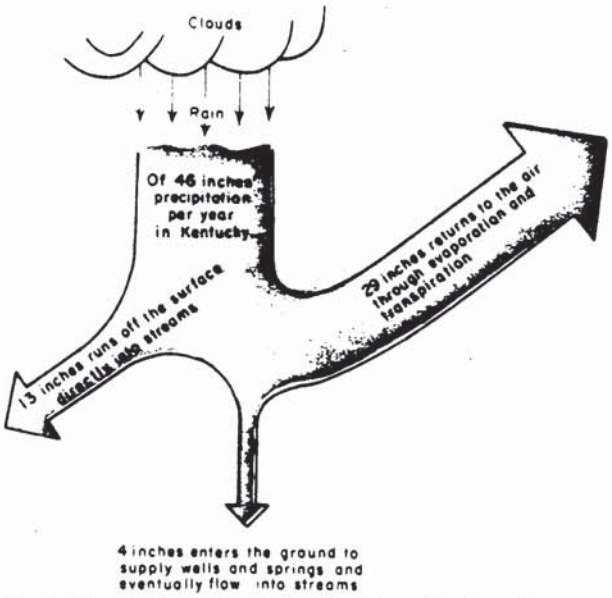
(1) Adequacy of groundwater protection.
(2) Regulation of oil brine disposal.
(3) Pollution from septic tanks.
(4) Inadequacy of NREPC authority to require an environmental assessment when needed to administer the Kentucky Pollution Discharge Elimination System (KPDES) permit program.
(5) Overlapping and conflicting jurisdictions between NREPC and the Human Resources Cabinet (HRC). Local health departments are expected by local citizens to respond to problems involving public water supplies but only NREPC has authority to take action in this area.
(6) Overlapping jurisdiction between the NREPC and the Department of Mines and Minerals.
(7) Lack of clarity of statutory responsibilities for state agencies responding to water emergencies for immediate, interim, and long-term action.
(8) Improved operation and maintenance of community and municipal water systems.
(9) Water quality of private wells.
(10) Lack of enforcement of water quality standards at swimming beaches.
(11) Conflict between 201 areas and agricultural districts.
(12) Conclusion of the Transportation Cabinet in the floodplain requirements of 200 KAR 6:040.
(13) Inability of the Public Service Commission to intervene in instances of unfair pricing of water by a city to a PSC regulated utility.

CHAPTER III

WATER QUALITY, WATER QUANTITY, AND WATER USE IN KENTUCKY

Kentucky receives about 46 inches of precipitation during normal years, with most of the precipitation occurring as rainfall. Of this, 29 inches returns to the atmosphere through evaporation and transpiration. The remainder enters or runs off into surface streams or percolates into the ground (Figure 1).

FIGURE 1

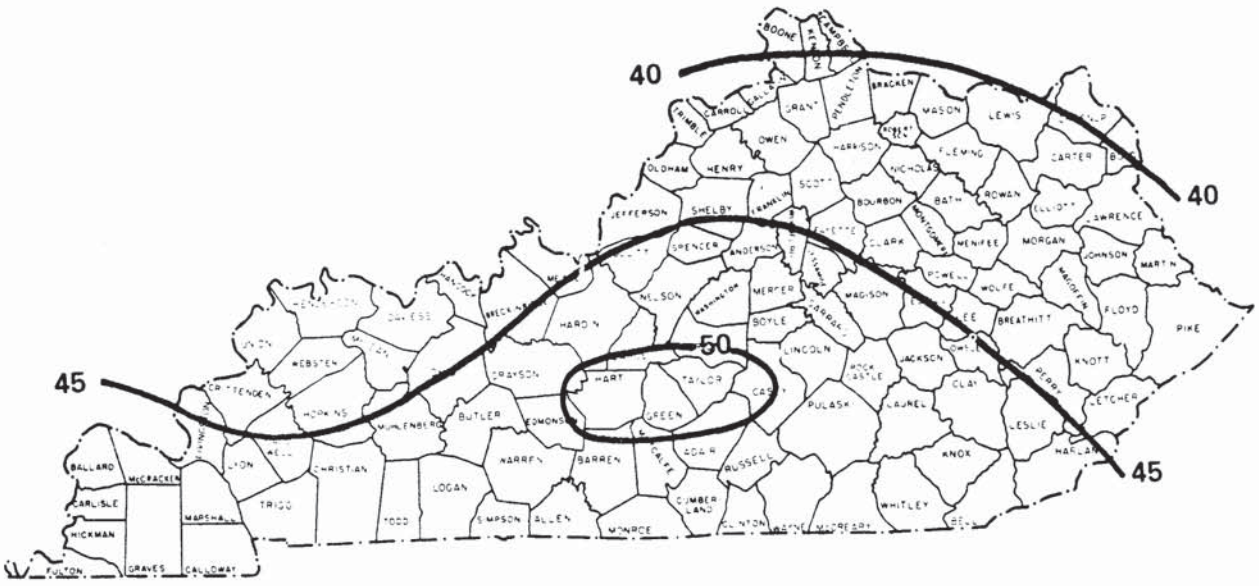


About 28 percent of all precipitation flows off the surface into streams and only 9 percent enters deep into the ground and eventually into streams.

SOURCE: U.S. Geological Survey. Water in Kentucky, 1969, p. 22.

The 46 inches is not evenly distributed geographically or seasonally (Figures 2 and 3 and Table 3). Average precipitation varies from 40 to 50 inches per year. Heaviest rainfall months are generally in the spring.

FIGURE 2



Mean annual precipitation (inches).

SOURCE: University of Kentucky, Agricultural Experiment Station. Climate in Kentucky (Progress Report 221).

FIGURE 3

Kentucky climatic divisions.

SOURCE: University of Kentucky, Agricultural Experiment Station. Climate in Kentucky, (Progress Report 221).

TABLE 3

Average Monthly Precipitation (inches).

Climatic Division	Month												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
Western	4.23	3.81	5.09	4.23	4.43	3.95	3.79	3.33	3.19	2.58	3.85	3.90	46.38
Central	4.16	3.89	5.08	4.19	4.35	4.42	4.39	3.45	3.04	2.47	3.74	3.92	47.10
Bluegrass	3.79	3.40	4.74	3.97	4.11	4.19	4.66	3.43	2.95	2.22	3.39	3.35	44.20
Eastern	4.02	3.86	4.67	3.89	3.93	4.19	4.97	3.68	3.13	2.40	3.45	3.77	45.97

The state's surface water resources drain thirteen river basins (Figure 4). Kentucky may be divided into nine physiographic regions in relation to groundwater resources as shown in Figure 5.

The task force received a large body of information on the quantity, quality, and use of its groundwater and surface water resources. This chapter briefly summarizes the information presented to the task force.

FIGURE 4

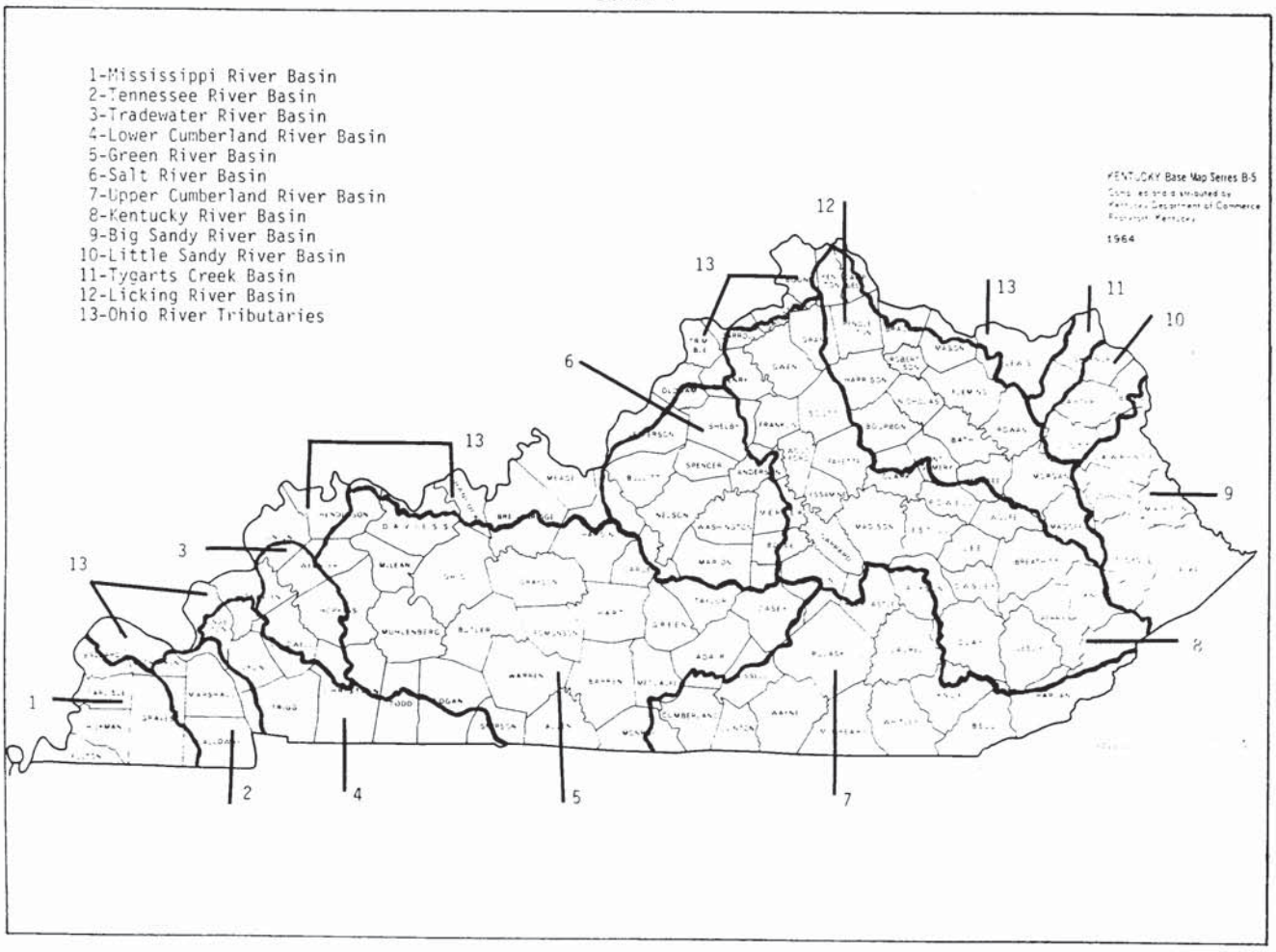
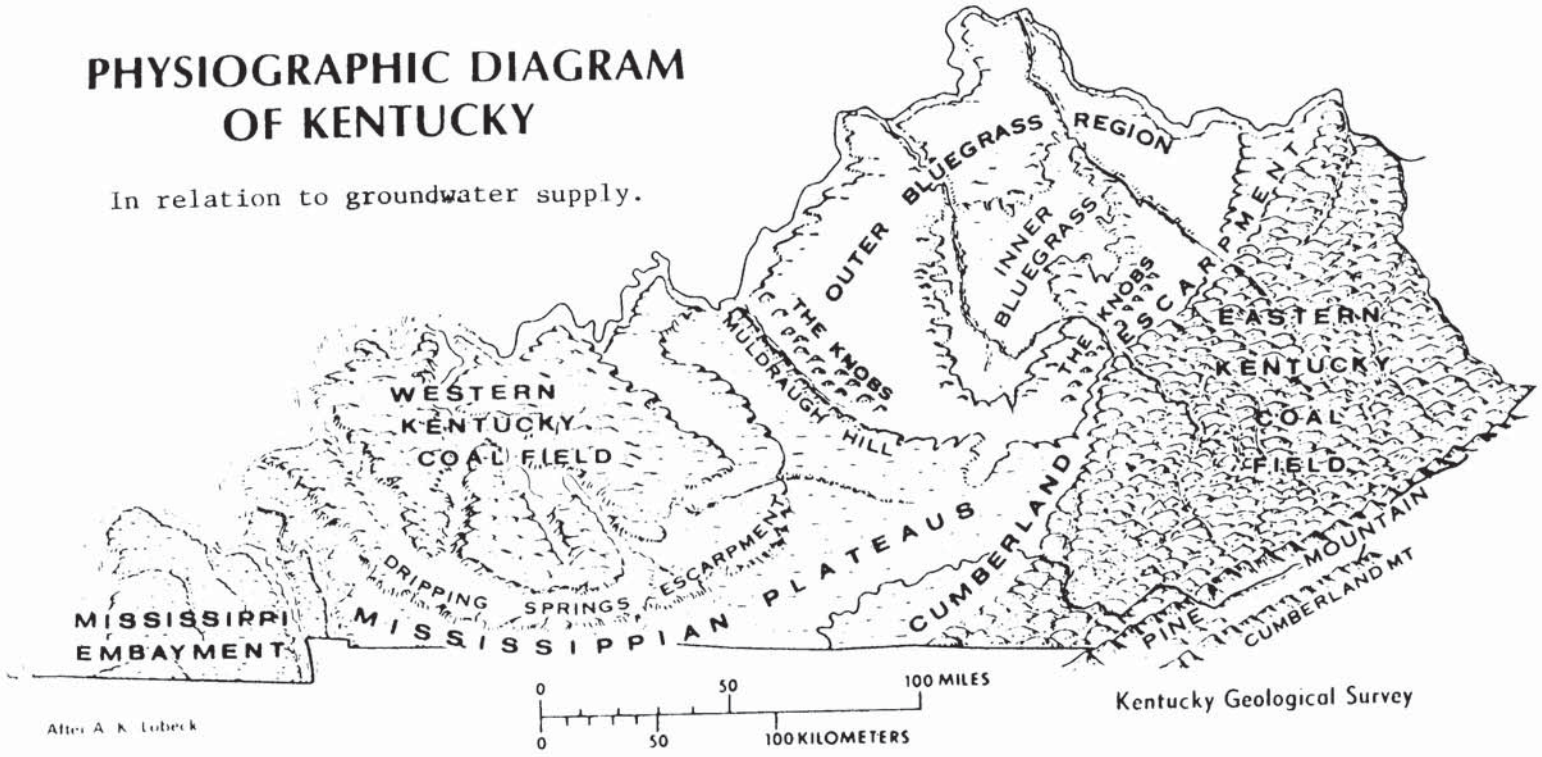


FIGURE 5


PHYSIOGRAPHIC DIAGRAM
OF KENTUCKY
In relation to groundwater supply.
OUTER BLUEGRASS REGION
INNER BLUEGRASS
THE KNOBS
ESCARPMENT
EASTERN KENTUCKY COAL FIELD
WESTERN KENTUCKY COAL FIELD
MULDRAUGH HILL
ESCARPMENT
DRIPPING SPRINGS
MISSISSIPPI EMBAYMENT
MISSISSIPPIAN PLATEAUS
CUMBERLAND MOUNTAIN
PINE MT
CUMBERLAND MT
0 50 100 MILES
0 50 100 KILOMETERS
After A. K. Lobeck
Kentucky Geological Survey

Water Quality

1. Surface Water Quality

Surface water quality conditions in the Commonwealth for the period 1980 and 1981 were determined through the state's ambient monitoring network and were summarized in Kentucky's biennial Section 305(b) Report to Congress on Water Quality. Section 305(b) of the federal Clean Water Act requires states and territories to report biennially on water quality.

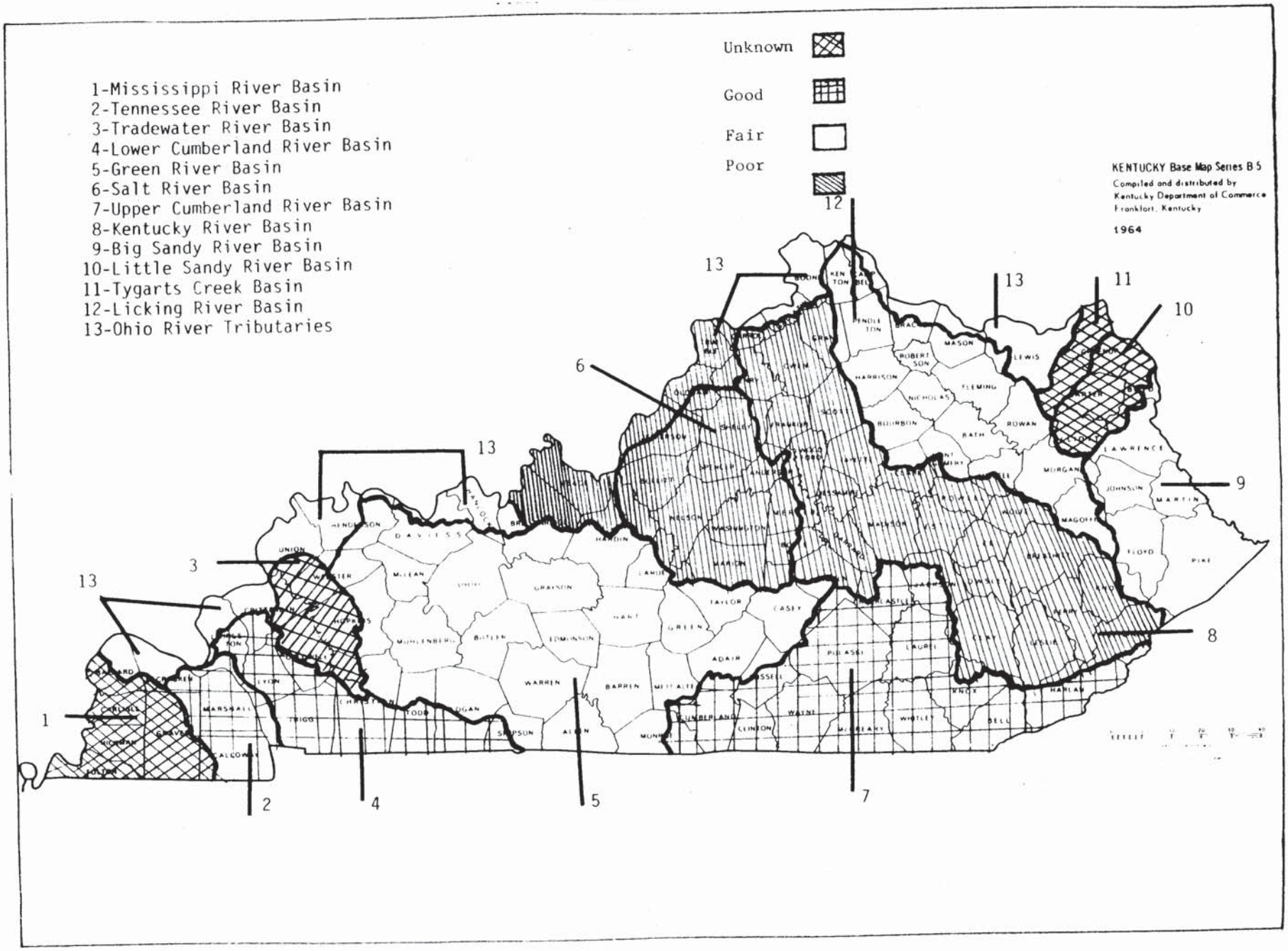
Based mainly on the 305(b) report, the following map graphically presents overall basin-level quality conditions for the two-year reporting period (Figure 6). The Tygarts Creek, Little Sandy River, Tradewater River, and the Mississippi River basins, which were not rated in the 305(b) report, are indicated as unknown on the map, because ambient trend monitoring data did not exist for the four drainages. However, the basins have been characterized based on other sources of information, such as investigations by the Kentucky Nature Preserves Commission. Efforts to expand the state ambient water quality monitoring network should ensure that comparable information will be available for all basins by the time the next regular report is prepared.

Poor water quality was reported for the Salt River and Kentucky River basins for 1980-81, with quality in the Kentucky River basin declining from a previous fair rating to poor. The term poor water quality indicates violations of state standards in 75 percent or more of the basin and in 33 percent or more of the samples. The Kentucky River was the only basin in the state to display an overall decline in quality during the reporting period. The following information indicates the type/source of pollution contributing to each basin's water quality conditions and the known problem parameters.

River Basin	Pollution Source	Problem Parameters
Mississippi	Unknown (Non-point sources)	Unknown (suspended solids)
Tradewater	Unknown (Non-point sources)	Unknown (pH, suspended solids)
Salt	Point and non-point sources	Lead, cadmium, mercury, fecal coliform, nitrate nitrogen
Kentucky	Point and non-point sources	Nitrate nitrogen, lead

Water quality in the Big Sandy River, Licking River, and Green River basins was generally fair during 1980-81, with "fair" indicating violations of state standards in 25-74 percent of the basin and in 10-32 percent of the samples. Importantly, water quality in the Licking River basin improved from poor to fair during the two-year period, and it was the only basin in the state to show an overall improvement. The following table indicates the

Figure 6


1-Mississippi River Basin
2-Tennessee River Basin
3-Tradewater River Basin
4-Lower Cumberland River Basin
5-Green River Basin
6-Salt River Basin
7-Upper Cumberland River Basin
8-Kentucky River Basin
9-Big Sandy River Basin
10-Little Sandy River Basin
11-Tygarts Creek Basin
12-Licking River Basin
13-Ohio River Tributaries
Unknown
Good
Fair
Poor
KENTUCKY Base Map Series B 5
Compiled and distributed by
Kentucky Department of Commerce
Frankfort, Kentucky
1964

type/source of pollution contributing to each basin's water quality conditions and the known problem parameters.

River Basin	Pollution Source	Problem Parameters
Little Sandy	Unknown (Non-point sources)	Unknown (suspended solids)
Big Sandy	Point and non-point sources	Fecal coliform, phosphorus, iron, mercury, cadmium
Licking	Point and non-point sources	Mercury, manganese, suspended solids, phosphorus, iron, nitrate nitrogen
Green	Point and non-point sources	Nitrate nitrogen, lead, cadmium, mercury, iron, phosphorus

Three of Kentucky's river basins, the Upper Cumberland, the Lower Cumberland, and the Tennessee, exhibited generally good water quality, according to the 1980-81 305(b) report, with "good" indicating violations of state standards in less than 25 percent of the basin and in less than 10 percent of the samples. Further, all three basins appeared to display a stable (that is, not improving or degrading) trend.

River Basin	Pollution Source	Problem Parameters
Upper Cumberland	Not reported	Phosphorus, iron, manganese
Lower Cumberland	Point and non-point sources	Phosphorus, iron, manganese, cadmium, mercury
Tennessee	Point and non-point sources	Phosphorus, iron, manganese
Tygarts Creek	Unknown	Unknown

Finally in the areas draining directly to the Ohio River, although included as map components of major Kentucky basins for 305(b) reporting purposes, the water quality in these areas is not measured by state-operated ambient trend monitoring stations. The quality of the Ohio River mainstream is separately determined and reported to Congress by the Ohio River Valley Water Sanitation Commission (ORSANCO).

Using the information in the 305(b) report and other data, the Natural Resources and Environmental Protection Cabinet prepared a preliminary list of priority water bodies in Kentucky (Table 4). The list, prepared in association with U.S. EPA - Region IV, was to be used as a preliminary assessment of significant water quality problem areas in Kentucky and included in EPA's 1983 Environmental Management Report.

TABLE 4 : PRELIMINARY LISTING OF PRIORITY WATER BODIES IN KENTUCKY

Severity of each water parameter
1 - Slight or unquantified problem
2 - Moderate problem
3 - severe problem

Location	TOXICS	SEPTICITY	BACTERIAL	ENRICHMENT	SOLIDS, OIL & GREASE	THERMAL	PH	RADIOACTIVITY	TURBIDITY, SILTATION	INFORMATION SOURCE	COMMENTS
BIG SANDY BASIN											
Whole Basin	3		3	2					3	KY305B--22-6	Siltation problems and elevated levels of sulfate, iron and manganese due to coal mining activities. Elevated level of chlorides due to oil and gas drilling
Blaine Cr., Paint Cr.	3								2	KY305B--25	Due to oil and gas drilling, high chloride levels are present.
Dewey Lake, Fishtrap Lake									3	KY305B--113-15	Impaired recreation use due to turbidity and siltation from mining activities.
Little Sandy River									2	KY305B--27	Due to coal mining.
Tygarts Creek		1	1	1						KY305B--29	Due to municipal sewage.
LICKING BASIN											
Upper Licking River	3								2	KY305B--36	Elevated levels of silt, iron, and manganese due to coal mining. Elevated levels of chloride due to oil and gas drilling.
Lower Licking River	3		1	1						KY305B--36, 130-1	Agricultural and septic tank runoff and domestic sewage discharges contribute to elevated nutrient and bacterial levels. Trihalomethane exceedances in Kenton County Water Supply. Significant heavy metals concentrations.

Location	TOXICS	SEPTICITY	BACTERIAL	ENRICHMENT	SOLIDS, OIL & GREASE	THERMAL	PH	RADIOACTIVITY	TURBIDITY, SILTATION	INFORMATION SOURCE	COMMENTS
KENTUCKY BASIN											
Whole Basin	3						1		1	KY305B--37-42, 144	Siltation caused by coal mining and agricultural activities. Severe violations of heavy metals were noted. Trihalomethane exceedances in the Lexington Water Supply due to oil and gas drilling.
Red River	3		3							KY305B--40	Elevated levels of chlorides due to oil and gas drilling. Elevated bacterial levels due to septic tank and agricultural runoff.
South Fork Elkhorn Creek	3	3	3	3						Kentucky Intensive Survey	Impacts due to municipal WWTP and urban runoff from Lexington.
Clark's Run/Dix River	3									Kentucky Intensive Survey	Impacts due to municipal and industrial wastewater from Danville.
Carr Fork Lake									3	KY305B--113-15	Impaired recreation use due to turbidity and siltation from mining activities.
SALT BASIN											
Whole Basin	3		3	2					1	KY305B--51-4	Impacts due to agricultural runoff and domestic wastewater. Heavy metals violations are severe and widespread.
Pond Creek	3		2	2					2	KY305B--84-6	Impacts due to urban runoff from Louisville. Fish tissue concentrations of Chlordane well above FDA action level.

Location	TOXICS	SEPTICS	BACTERIAL	ENRICHMENT	SOLIDS, OIL & GREASE	THERMAL	PH	RADIOACTIVITY	TURBIDITY, SILTATION	INFORMATION SOURCE	COMMENTS
Salt Basin (Cont.)											
McNeely Lake				3						KY305B--112-13	Nutrient inflows from small domestic WWTPs.
Reformatory Lake		2		3						KY305B--112-13	Due to runoff from livestock operations.
Sympson Lake				2						KY305B--113-15	Water supply use impairment due to algal blooms.
GREEN BASIN											
Whole Basin	3						3		3	KY305B--59-62	Heavy metals violations are severe and widespread. Siltation and acid mine drainage were caused by extensive coal mining in that portion of the basin lying within the Western Kentucky Coalfield. Elevated chloride levels are due to oil and gas drilling.
Pond River	3			2			3		3	KY305B--61, 97-104, 143	Siltation, metals and acid mine drainage due to extensive mining activity. Elevated chlorides due to oil and gas drilling. Agricultural activities contribute to siltation and enrichment. Fish tissue concentration of chlordane well above action level.
Pond Creek	3						3			Kentucky Intensive Survey	Extensive degradation from coal mining activities.
Green River (From Greensburg to Munfordville)	2									Kentucky Oil and Gas Surveillance	Increased chlorides levels due to oil and gas drilling.

Location	TOXIC	SEPTIC	BACTERIAL	ENRICHMENT	SOLIDS, OIL & GREASE	THERMAL	PH	RADIOACTIVITY	TURBIDITY, SILTATION	INFORMATION SOURCE	COMMENTS
TRADEWATER BASIN											
Whole Basin	3						3		3	KY305B--69, 143 Kentucky Intensive Survey	Sulfates, acid mine drainage, and siltation due to coal mining have extensively degraded the basin.
Clear Creek	3						3		3	KY305B-143	Most seriously impacted watershed by acid mine drainage in the basin.
Loch Mary Lake	1								3	KY305B--113-14	Water supply use impairment due to surface mining runoff.
TENNESSEE BASIN											
Whole Basin	3			1					3	KY305B--73-4	Heavy metals violations were severe and widespread, and partly due to industrial impacts. Nutrient loading due to domestic effluent and urban runoff. Siltation due to agriculture cultivation.
Clark's River below Murray	3									KY305B--73 Kentucky Enforcement Investigation	Heavy metals violations from industrial source resulting in significant fish kill.
Tennessee River below Calvert City	2									KY305B--73 Kentucky/ORSANCO Ambient Monitoring Data	Priority pollutants from industrial sources in Calvert City may be causing impairment of Paducah Water Supply.

Location	TOXICS	SEPTICITY	BACTERIAL	ENRICHMENT	SOLIDS, OIL & GREASE	THERMAL	PH	RADIOACTIVITY	TURBIDITY, SILTATION	INFORMATION SOURCE	COMMENTS
MISSISSIPPI BASIN											
Whole Basin (KY)				1					3	KY305B--76	Nutrient problem due to agricultural runoff. The siltation problem is due to intensive cultivation.
Hickman Harbor (KY)	1									KY305B--76	Mercury problem occurred during harbor dredging in 1980, but subsided after the operation ended.
OHIO BASIN											
Pup Creek							1			KY305B--144	Previously impacted by AMD, but now recovered except for one small unnamed tributary.
Blackford Creek							3			KY305B--144	Acid Mine Drainage (esp. in Caney Creek and Butchers Branch).
Carpenter Lake				1						KY305B--114	Impaired recreation use due to excessive macrophytic growth.

Location	TOXICS	SEPTICITY	BACTERIAL	ENRICHMENT	SOLIDS, OIL & GREASE	THERMAL	PH	RADIOACTIVITY	TURBIDITY, SILTATION	INFORMATION SOURCE	COMMENTS
CUMBERLAND BASIN											
Upper Cumberland River	3		1						3	KY305B--47-9, 87-90	Impacts due to coal mining, oil and gas drilling, and municipal discharges.
Yellow Creek	2	3	3	3						KY305B--48 Kentucky-EPA Enforcement Investigations	Due to municipal WWTP and tannery.
Big South Fork	3									KY305B--47	Elevated chlorides due to increased oil and gas drilling.
Martins Fork Lake									2	KY305B--113-15	Impaired recreation use due to turbidity and siltation from mining activities.
Laurel Lake				2						KY305B--113-15	Point and nonpoint nutrient loadings impair recreation use in upper end of the lake.

Location	TOXICS	SEPTICITY	BACTERIAL	ENRICHMENT	SOLIDS, OIL & GREASE	THERMAL	PH	RADIOACTIVITY	TURBIDITY, SILTATION	INFORMATION SOURCE	COMMENTS
OHIO BASIN (cont.)											
Ohio R. from Big Sandy to Meldahl	1				1					ORSANCO305B--Table 19	Toxics were metals and phenolics. Solids were caused by natural and non-point sources.
Ohio R. from Meldahl to Little Miami	1				1					ORSANCO305B--Table 19	Toxics were phenolics. Solids were from natural and non-point causes.
Ohio R. from L. Miami to Great Miami	2	2	2		1					ORSANCO305B--Table 19	Toxics were mercury from a point source and phenolics. Solids were from natural and non-point sources.
Ohio R. from G. Miami to Kentucky	2	2	1							ORSANCO305B--Table 19	Toxics were mercury from a point source, chlordane in fish, and phenolics.
Ohio R. from Kentucky to McAlpine	2	1	1							ORSANCO305B--Table 19	Toxics were mercury from a point source, chlordane in fish, and phenolics.
Ohio R. from McAlpine to Cannelton	2	2	2		1					ORSANCO305B--Table 19	Toxics were mercury from a point source, chlordane in fish, and phenolics. Solids were from natural and non-point sources.
Ohio R. from Cannelton to Newburgh	1	1	1		1					ORSANCO305B--Table 19	Toxics were mercury from a point source, and phenolics. Solids were from natural and non-point sources.
Ohio R. from Newburgh to Wabash	1	1	1	1	1					ORSANCO305B--Table 19	Toxics were mercury from an unknown source, lead from a non-point source, and phenolics. Solids were from natural and non-point sources.
Ohio R. from Wabash to Smithland	1		1	1	1					ORSANCO305B--Table 19	Toxics were metals.
Ohio R. from Smithland to Mississippi	1	1	1	1	1	1				ORSANCO305B--Table 19	Toxics were lead from a non-point source and phenolics. Solids were from natural and non-point sources.

During 1980-81, Kentucky initiated a survey of the quality of the state's publicly owned lakes. Of the 49 lakes characterized in the 1982 305(b) report, 2 were hypereutrophic, 26 were eutrophic, 13 were mesotrophic, and 8 were oligotrophic. In non-scientific terms, the four classes refer to the availability of nutrients, degree of primary (algal) production, and dissolved oxygen sufficiency. Oligotrophic lakes, for example, have low nutrient input, little plant growth, and high oxygen levels. Eutrophic lakes, on the other hand, have high levels of nutrients, experience considerable plant growth, and can become oxygen depleted. Since the latter condition interferes with water use for recreation, agricultural, domestic, and industrial supply, can cause fish kills, and accelerates lake aging, it is considered undesirable. As more nutrients are added and as they accumulate, lakes advance (a process called succession) from an oligotrophic classification toward eutrophic or hypereutrophic conditions. Therefore, lakes experiencing advanced nutrient enrichment require corrective action or restoration to ensure that they can continue to be used for their intended purposes. While 57 percent of the lakes surveyed were classified as nutrient-rich (eutrophic and hypereutrophic), they represent only 21 percent of the approximately 350,000 total acres of lake surface in Kentucky. As of the end of 1983, the state had not established a program to manage Kentucky's publicly owned lakes.

Nor does Kentucky have a program to manage the state's wetlands. Nevertheless, limited university research on wetland areas, funded mainly by small amounts of assistance from the federal government, is continuing and should provide an initial data base, should the state decide to pursue wetland management.

2. Groundwater Quality

While precipitation and soils are contributing factors, natural groundwater quality in Kentucky is largely a function of the state's geology. The geology is also responsible for the characteristic development of the Commonwealth's six major physiographic provinces (Figure 5) and therefore allows for the study of groundwater systems on this basis.

Judgments concerning the quality of water bear a direct relationship to the intended use of the water. For instance, groundwater of a certain quality may be acceptable for industrial processes yet entirely unsuitable for other purposes.

In order to present a general picture of the suitability of groundwater in Kentucky, tables expressing the qualitative needs for four uses are presented. The four uses include domestic use (Table 5), irrigation (Table 6), livestock watering (Table 7), and industrial processing (Table 8). Each table compares partial use requirements and generalized information on groundwater quality conditions in Kentucky's six major physiographic provinces. In the cases of industrial and domestic use, numerous use requirements have been excluded because of the absence of regional quality data.

TABLE 5
Groundwater Quality for Domestic Use, in mg/l

Domestic Use Parameters (and Limits)*	Mississippian Embayment	Western Coal Field	Mississippian Plateau	Bluegrass Region	Eastern Coal Field	Ohio River Valley
Manganese (0.05 mg/l)	0 - 6.3	ND	ND	0 - 0.98	ND	ND
Nitrate (10 mg/l)	0.1 - 146	0 - 115	0.62 - 20.46	0.1 - 209	0.2 - 19	0 - 9
Sulfate (250 mg/l)	0.4 - 98	0.3 - 1740	3.4 - 278.1	0.4 - 1290	0.8 - 105	8 - 155
Fluoride (1 mg/l)	0.4 - 98	0 - 7.7	0.04 - 1.52	0.1 - 15	0.1 - 0.3	0 - 0.6
Total Dissolved Solids (750 mg/l)	50 - 558	86 - 17300	ND	183 - 4346	ND	174 - 691
Chloride (250 mg/l)	2 - 88	2.1 - 8680	1.4 - 36.2	1.4 - 14000	0.8 - 169	2.1 - 84
Fecal Coliform (2000/100 ml)	ND	ND	ND	ND	ND	ND
Numerous metals and other parameters	ND	ND	ND	ND	ND	ND

*Based on surface water source criteria

ND = No generalized range data available for entire province

Source: Data compilation and analysis, T. James Fries, NREPC.

TABLE 6
Groundwater Quality for Irrigation, in mg/l (except pH and as otherwise noted)

Irrigation Use Parameters (Threshold Limit)	Mississippian Embayment	Western Coal Field	Mississippian Plateau	Bluegrass Region	Eastern Coal Field	Ohio River Valley
Coliform Organisms (1000/100 ml)	ND	ND	ND	ND	ND	ND
Total Dissolved Solids (500 mg/l)	50 - 558	86 - 17300	ND	183 - 4346	ND	174 - 691
Electrical Conductivity (750 umhos/cm	ND	ND	ND	ND	ND	ND
pH (7.0 - 8.5)	5.2 - 7.6	6.1 - 8.2	5.8 - 8.2	6.7 - 8.1	5.8 - 7.5	6.4 - 8.0
Sodium Adsorption Ratio (6.0)	ND	0.07 - 0.98	ND	0.07 - 18.56	ND	0.15 - 0.68
Sodium (50 mg/l)	3.9 - 100	3.8 - 6.35	ND	1.6 - 1400	ND	3.8 - 38
Residual Sodium Carbonate (1.25)	ND	ND	ND	ND	ND	ND
Arsenic (1.0 mg/l)	ND	ND	ND	ND	ND	ND
Boron (0.5 mg/l)	ND	ND	ND	ND	ND	ND
Chloride (100 mg/l)	2.0 - 88	2.1 - 8680	1.4 - 36.2	1.4 - 14,000	0.8 - 169	2.1 - 84
Sulfate (200 mg/l)	0.4 - 98	0.3 - 1740	3.4 - 278.1	0.4 - 1290	0.8 - 105	8 - 155
Copper (0.1 mg/l)	ND	ND	ND	ND	ND	ND
Bicarbonate (200 mg/l)	5 - 635	44 - 1660	42 - 329	82 - 716	12 - 248	104 - 639
Temperature (13 - 29°C)	13 - 18°C	ND	ND	ND	ND	ND
Manganese (2.0 mg/l)	0-6.3	ND	ND	0 - 0.98	ND	ND

ND = No generalized range data available for entire province

Source: Data compilation and analysis, T. James Fries, NREPC.

TABLE 7
Groundwater Quality for Livestock, in mg/l (except pH)

Livestock Use Parameters (Threshold Limit)	Mississippian Embayment	Western Coal Field	Mississippian Plateau	Bluegrass Region	Eastern Coal Field	Ohio River Valley
Total Dissolved Solids (2500 mg/l)	50 - 558	86 - 17300	ND	183 - 4346	ND	174 - 691
Cadmium (5 mg/l)	ND	ND	ND	ND	ND	ND
Calcium (500 mg/l)	ND	0.8 - 208	ND	31 - 308	ND	41 - 152
Magnesium (250 mg/l)	0. - 6.3	0.2 - 190	ND	2.4 - 75	ND	5.8 - 50
Sodium (1000 mg/l)	3.9 - 100	3.8 - 6.35	ND	1.6 - 1400	ND	3.8 - 38
Arsenic (1 mg/l)	ND	ND	ND	ND	ND	ND
Bicarbonate (500 mg/l)	5 - 635	44 - 1660	67 - 523	82 - 716	12 - 248	104 - 639
Chloride (1500 mg/l)	2 - 88	2.1 - 8680	1.4 - 36.2	1.4 - 14000	0.8 - 169	2.1 - 84
Fluoride (1 mg/l)	0 - 0.4	0 - 7.7	0.04 - 1.52	0.1 - 15	0.1 - 0.3	0 - 0.6
Nitrate (200 mg/l)	0.1 - 146	0 - 115	0.62 - 20.46	0.1 - 209	0.2 - 19	0 - 9
Nitrite (0 mg/l)	ND	ND	ND	ND	ND	ND
Sulfate (500 mg/l)	0.4 - 98	0.3 - 1740	3.4 - 278	0.4 - 1290	0.8 - 105	8 - 155
pH (6.0 - 8.5)	5.2 - 7.6	6.1 - 8.2	5.8 - 8.2	6.7 - 8.1	5.8 - 7.5	6.4 - 8.0

ND = No generalized range data available for entire province.

Source: Data compilation and analysis, T. James Fries, NREPC.

TABLE 8

Groundwater Quality for Industrial Use, in mg/l (except pH)

Industrial Uses Parameters	Uses and Limits			Mississippian Embayment	Western Coal Field	Mississippian Plateau	Bluegrass Region	Eastern Coal Field	Ohio River Valley
	Food Processing and Canning	Boiler Water high - low	Distilling						
Total Solids	10 (end use)	0-5000	500-1000	Total Dissolved 50-558	Total Dissolved 86-17300	ND	Total Dissolved 183-4346	ND	Total Dissolved 174-691
Sodium	300	0-50	-	3.9-100	3.8-6.35	ND	1.6-1400	ND	3.8-38
Silica	50	1-30	-	0-28	4-37	ND	2.4-13	ND	ND
Nitrate	10	-	-	0.1-146	0-115	0.62-20.46	0.1-209	0.2-19	0-9
Manganese	0.1	0.01-0.3	0.1	0-6.3	ND	ND	0-0.98	ND	ND
Magnesium	40	1-20	-	ND	0.2-190	ND	2.4-75	ND	5.8-50
Iron	0.2	0.01-1	0.1	0.04-15	0.05-37	0-31	0.01-25	0.13-51	0.1-26
Fluoride	1.0	-	-	0-0.4	0-7.7	0.04-1.52	0.1-15	0.1-0.3	0-0.6
Chloride	250	-	-	2-88	2.1-8680	1.4-36.2	1.4-14000	0.8-169	2.1-84
Calcium	80	0-40	-	-	0.8-203	ND	31-308	ND	41-152
Bicarbonate	300	5-50	-	5-635	44-1660	42-329	82-716	12-248	104-639
pH	6.5-8.5	8.4-9.2	6.5-7.0	5.2-7.6	6.1-8.2	5.8-8.2	6.7-8.1	5.8-7.5	6.4-8.0
Hardness as $CaCO_3$	250	2-80	-	15-502	3-1300	38-304	33-4180	9-209	126-564
Alkalinity as $CaCO_3$	250	0-140	75-150	ND	ND	ND	ND	ND	ND
Sulfate	250	-	-	0.4-98	0.3-1740	3.4-278.1	0.4-1290	0.8-105	8-155

ND = No generalized range data available for entire province.

Source: Data compilation and analysis, T. James Fries, NREPC.

A listing of general sources or causes of groundwater quality problems was presented in the 1980-81 305(b) report. Sources of groundwater contamination include on-site wastewater treatment and disposal (septic tank and tile field) systems; waste landfills and pits, ponds, and lagoons; non-point pollution sources; excessive removal of groundwater and diminished aquifer recharge; and oil and gas drilling and injection. Currently, there are no direct groundwater quality standards to protect groundwater resources and public and private supplies in Kentucky. Indirect standards to prevent contamination of groundwater by waste landfills were established in conjunction with the state's solid waste management program. However, as can be seen in Tables 5-8, there is a paucity of needed data on groundwater quality in the Commonwealth.

Water Supply and Water Use

(Excerpted and edited from a paper entitled "Demographic Patterns and Water Use in Kentucky: The Necessity for Institutional Change", by T. James Fries, 1983)

An examination of water use in the state indicates that there is a paucity of reliable data on all types of water use; the limited data that have been collected or developed are widely dispersed; and available data lack definition and consistency and are often contradictory. A review of water use data from four sources, and the limitations of each, serves to point out the inadequacies of state-level data on past water use. The four sources include the U.S. Geological Survey's five-year water use report, the Kentucky Division of Water's computerized public water supply file and water withdrawal permit file, and a 1971 Kentucky Geological Survey water use report.

U.S. Geological Survey (USGS) data on public and self-supplied (private) domestic water use for 1965, 1970, 1975, and 1980 are presented in Table 9. While some of the Kentucky information is confusing and unexplained, an example being the decrease in total and per capita water use from 1965 to 1970 while the state's population grew slightly at the same time, the overall Kentucky trends reported by USGS appear generally to agree with national changes. Importantly, the reported increased in self-supplied domestic withdrawals from 1975 to 1980, which represents a reversal of past trends of decreasing private use, corresponds to the state's pattern of increased non-metropolitan and rural settlement during the same period. The major deficiency of the USGS data is the inability to disaggregate water use figures to substate or river basin levels.

A second data source is Kentucky's computerized comprehensive inventory of public (community and non-community) water supply systems. The inventory is one component of the Model State Information System (MSIS). It is maintained by the state's Division of Water pursuant to the Safe Drinking Water Act's (Public Law 93-523, as amended) Public Water Supply Supervision Program. The inventory contains information on every public supply in Kentucky and provides data on the characteristics or type of service (residential, recreational, institutional, commercial, etc.), the population served, the number of service connections and meters, system design and storage capacitites, average and maximum production volumes, and supply sources. However, a comparison of MSIS

community system inventory data at both the county and state level with detailed housing characteristics census data on sources of water (Urban Studies Center, 1982) indicates a considerable discrepancy in the number of service connections listed in the state file. Community systems in the inventory both under-report and over-report domestic service provision relative to 1980 census data. Another major deficiency with the community system inventory is that volumetric data on actual residential or domestic use are not provided.

A third source of water use data is the state's computerized water withdrawal permit file. At least four serious problems exist with this source, however. First, a cross tabulation with the MSIS inventory indicated that between 20 and 30 percent of the community water supply systems in the state meeting the statutory water withdrawal permitting requirement of 1,000 gallons per day had not obtained withrawal permits, and therefore were not reporting withdrawal data in 1980. Second, reporting for municipal systems, water districts and associations, and private suppliers consists of simply providing, on a semi-annual basis, an average use figure in million gallons per day for each month. No water use data are available, therefore, to assess variations in daily, monthly, or seasonal use patterns. (The Natural Resources and Environmental Protection Cabinet reports that raw data on monthly and seasonal water use patterns is on file). Third, the water use data in the file do not distinguish between volumes for end use. It is not possible, therefore, to separate domestic delivery from commercial, industrial, or agricultural use volumes where a community water system delivers to different categories of users. A fourth problem involves using data submitted by permitted users without independent verification. A comparison of self-supplied industrial use volumes, excluding thermoelectric uses, between the 1980 USGS report and 1980 Kentucky withdrawal permit file data indicates a substantial discrepancy; USGS reported a use level nearly eight times larger than the amount reported in Kentucky's permit file.

A fourth data source is a 1971 Kentucky Geological Survey report on 1968-69 public and industrial water supplies in Kentucky. While almost all of the information in the report is seriously out-of-date, it is still widely used because it provides data on service populations and average gallons of water distributed daily, by public and industrial use, for municipal, water district and association, and private supply systems in the state. Additionally, the report includes data on daily average water use for self-supplied industrial users by county and community.

The only present source of projected water use data at state and substate levels was developed in 1979 for use in a congressional report to estimate state and national water use tends. Table 10 presents the 1979 projections on public water withdrawals by major river basin for 1980, 2000, and 2020. Beyond forecasting a general trend of increasing use, projected withdrawal volumes are of questionable value. Reasons for the limitation include a considerable under-estimation of future growth by the demographic projections used in preparing the 1979 figures, the inclusion of non-domestic use volumes as a part of the community supply system figures obtained from the state's water withdrawal permit file and use in making the projections, and assumptions that current levels of per capita use would remain unchanged (despite increasing per capita use reported by USGS), that all new

TABLE 9

Kentucky Public and Self-Supplied Domestic Water Use, 1965-1980
(in million gallons per day, MGD, and gallons per day, GPD)

Year	Public Withdrawal MGD Surface Water	Public Withdrawal MGD Ground Water	Public Withdrawal MGD Total	Public Withdrawal Per Capita GPD	Self Supplied Withdrawal MGD Surface Water	Self Supplied Withdrawal MGD Ground Water	Self Supplied Withdrawal MGD Total	Self Supplied Withdrawal Per Capita GPD	Total Withdrawal MGD Surface Water	Total Withdrawal MGD Ground Water	Total Withdrawal MGD Total	Total Withdrawal Per Capita GPD
1965	180	22	202	135	16	49	65	41	196	71	267	86
1970	160	20	180	83	7	48	55	52	167	68	235	73
1975	220	38	258	101	4	34	38	45	224	72	296	87
1980	310	40	350	145	7	54	61	50	317	94	411	112

Note: Figures include distribution system losses.

Source: U. S. Geological Survey, 1968, 1972, 1977, and 1983.

houses would receive public system service, and that consumers not served by public systems in 1970 would receive service until 90 percent of the state's population would be served in 2020.

INSERT TABLE 10

Overall, the quality of past and future domestic water use data in Kentucky makes it virtually impossible to reach definitive use conclusions and to make reliable demand projections. Presently, a requirements approach to determining future domestic use (population x current per capita use) is the only demand projection methodology, given data deficiencies, that could be used in a state supply planning program. Yet as other sources point out, reliance on the requirements approach is a mistake, because it overlooks the relationship between per capita demand and price and, thus, ignores the question of optimum per capita water use. In addition to overlooking price and elasticity of demand, the accuracy of the requirements approach is limited by the fact that it does not consider conservation opportunities, the advantages of multiple purpose projects, or the future need of non-domestic uses.

TABLE 10
Projected Public Water Withdrawals (in MGD)

	Projected Withdrawals				
River Basin	1980	2000	Percent Change 1980-2000	2020	Percent Change 2000-2020
Big Sandy-Little Sandy-Tygart's Creek-	6.862	13.938	+103	20.231	+45
Licking	11.065	15.922	+44	20.415	+28
Kentucky	90.107	120.466	+34	146.537	+22
Salt		Included in Ohio-Tradewater			
Green	34.335	49.135	+43	63.285	+29
Upper Cumberland-Lower Cumberland	27.731	44.780	+61	61.918	+38
Tennessee	5.734	7.913	+38	10.118	+28
Mississippi	5.222	6.239	+19	7.452	+19
Ohio-Tradewater	228.213	261.211	+14	287.558	+10
Total	409.269	519.604	+27	617.514	+19

Source: Warren Viessman , Jr., 1980. State and National Water Use Trends to The Year 2000. The Library of Congress, Congressional Research Service, Washington, D. C.

Power Production and Water Use

Electrical energy in Kentucky is produced by three types of generating facilities: boiler-fired power plants, internal combustion or gas turbine engines, and hydroelectric power facilities. Individually, the three types of facilities account for ninety-five, one, and four percent, respectively, of the total 1983 installed electrical capacity of the state.

The following sections present information on each type of production facility. In addition, information is presented on synthetic fuel facilities because of their potental impact on the state's water resources.

Steam Electric Power

Typical steam electric power plants consist of a boiler, a steam turbine, a generator, and some type of cooling system or mechanism. In the plant boiler, heat produced by a fuel is transferred to water to produce high-pressure, high-temperature steam. The steam then enters a turbine, where it expands to a low-pressure and a low-temperature. The turbine turns a generator by means of mechanical energy. After the thermal or heat energy in the steam has been converted to mechanical energy, the steam is reconverted to water in a condenser, and the water is returned to the boiler. Waste heat must then be removed from the condenser by means of a cooling system.

Cooling systems are of four types: once-through cooling, cooling ponds, wet cooling towers, and dry cooling towers. Since steam electric power plants require large quantities of water for cooling, the availability of water is an important factor in plant siting decisions.

Once-through systems withdraw water from a source, circulate the water through the condenser, where it is heated, and return it to the source. Once-through systems are used where adequate water supplies are available; they result in less water loss than cooling pond and wet cooling tower systems.

Where water supplies are less reliable or limited in volume, cooling ponds can be constructed. Water flow through the production system is the same as for once-through cooling, except that a pond serves as the withdrawal and discharge source. Cooling ponds do, however, produce reasonably large evaporative or consumptive losses, and require a source to replace the amount of water that is evaporated.

Wet cooling towers are used where conditions for once-through and cooling pond systems are not favorable. In a wet cooling tower, water heated by the condenser is brought into contact with a naturally or mechanically produced flow of air. As a result, waste heat is dissipated by evaporation. Wet cooling towers, while withdrawing smaller volumes of water than once-through systems, consume large amounts of water.

Dry cooling towers circulate water in a closed system, much like an automobile radiator. Practically no water is consumptively used or lost in a dry tower system.

The following table presents approximate cooling water requirements for coal-fired power plants operating at a 38 percent efficiency factor.

Approximate Cooling Water Requirement
1000 MW Plant (in MGD)

Cooling Method	Intake	Consumed	Discharged
Once-through	825	0	825
Cooling Pond	25.2	15.1	10.1
Wet Cooling Tower	16.4	10.3	6.1
Dry Cooling Tower	0.3	0	0.3

The following map (Figure 7) presents information on nuclear and coal-fired steam electric facilities using water in or adjacent to Kentucky. Information on water use for steam electric facilities shown on the map is presented in Table 11.

Hydroelectric Power Resources

Hydropower is the production of energy that results from water flowing through a turbine which spins a generator. Energy from hydropower production is used to meet both baseload and peak load demands.

Hydropower facilities are classified according to their manner of electric energy production. The two types are "conventional" and "pumped storage." Conventional facilities are further subdivided as "storage" or "run-of-the -river." Conventional storage facilities usually involve large dams that accumulate water for later release to meet peak load energy demands. Run-of-the-river facilities provide baseload energy and often have water flowing continuously through their turbines. Many low dams with little or no adjustable storage capability are classified as run-of-the-river subsystems. Pumped storage systems are of two types: adjacent or integral, with the latter employing reversible turbines in conjunction with more conventional generating units.

Information on Kentucky's operational hydroelectric power resources is presented in Figure 8. Potential development locations are shown in Figure 9.

In addition to the projects shown in the maps, the U.S. Army Corps of Engineers (COE) is conducting or has authority to conduct several hydropower investigations in Kentucky. The COE studies are listed below.

Project Name (District)	River Basin Location	Status
1. Green and Barren River Navigation Study (Louisville)	Green River Basin	Study on-going
2. Kentucky River and Tributaries Study (Louisville)	Kentucky River Basin	Study on-going
3. Levisa Fork Study (Huntington)	Big Sandy River Basin	Study on-going
4. Cumberland River Reservoir Study (Nashville)	Upper Cumberland River Basin	Study on-going
5. Rockcastle River Reservoir Study (Nashville)	Upper Cumberland River Basin	Study deferred
6. Red River Basin Study (Nashville)	Lower Cumberland River Basin	Study deferred

FIGURE 7
STEAM ELECTRIC POWER FACILITIES, 1982

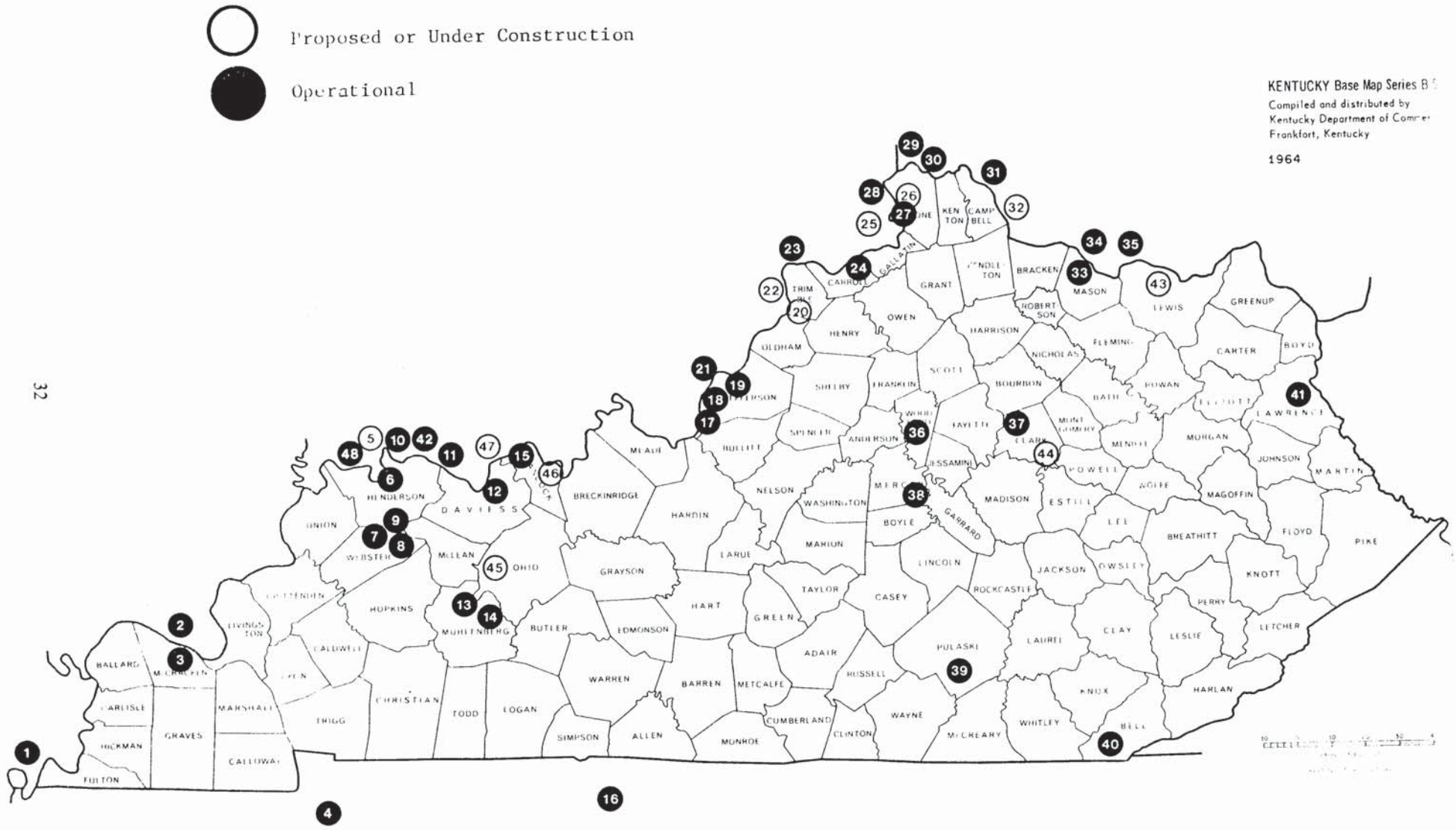


TABLE 11

STEAM ELECTRIC POWER PLANT COOLING WATER USE, BY RIVER BASIN, 1982

River Basin	Number of Facilities	Installed Capacity (MW)	Water Use (MGD)		
			Withdrawal	Consumptive Loss	Discharge
Mississippi	1	1200	953.55	6.71	946.84
Green	5	3616	723.45	40.88	682.57
Cumberland	4	4190	2859.86	3.31	2856.55
Kentucky	3	1051	360.8	16.34	344.46
Big Sandy	1	1080	18.91	13.06	5.85
Ohio	34	34,321	10,037.03	255.93	9781.1
Total Facilities:	48	45,458	14,957.6	341.13	14,616.47

KENTUCKY FACILITIES, BY RIVER BASIN

River Basin	Number of Facilities	Installed Capacity (MW)	Water Use (MGD)		
			Withdrawal	Consumptive Loss	Discharge
Green	5	3616	723.45	40.88	682.57
Cumberland	2	335	232.96	3.31	229.65
Kentucky	3	1051	360.8	16.34	344.46
Big Sandy	1	1080	18.91	13.06	5.85
Ohio	16	14,445	3162.54	106.52	3056.02
Total Facilities:	27	20,527	4498.66	180.11	4318.55

Source: Survey, T. James Fries, 1983

TABLE 11
(con't)

STEAM ELECTRIC POWER PLANT COOLING WATER USE

	Plant Name (state)	River Basin	Installed Capacity (MW)	Cooling 1/ System	Water Use (MGD) Withdrawal	Consumptive Loss	Discharge	Data 2/ Source
(1)	New Madrid (MD)	Mississippi	1200	OT	953.55	6.71	946.84	R
(2)	Joppa (IL)	Ohio	1050	OT	457.58	-0-	457.58	R
(3)	Shawnee (KY)	Ohio	1750	OT	1187.8	-0-	1187.8	R
(4)	Cumberland 1 and 2 (TN)	Cumberland	2600	OT	1883.9	-0-	1883.9	R
(5)	A. B. Brown (IN)	Ohio	500	M.W. Towers	10.0	8.5	1.5	R
(6)	Henderson 1 (KY)	Ohio	48	OT	9.86	-0-	9.86	R
(7)	Henderson 2 (KY)	Green	253	M.W. Towers	(See Reid)	4.56	(See Reid)	R
(8)	Reid 1 (KY)	Green	66	OT	96.48	0.34	91.58	R
(9)	Green 1 and 2 (KY)	Green	484	M.W. Towers	6.1	5.3	0.8	R
(10)	ALCOA (IN)	Ohio	732	OT	503.0	-0-	503.0	R
(11)	Culley (IN)	Ohio	397	OT	373.0	-0-	373.0	R/IN
(12)	Elmer Smith (KY)	Ohio	438	OT	216.0	-0-	216.0	R
(13)	Green River (KY)	Green	255	OT	299.07	20.68	278.39	R
(14)	Paradise (KY)	Green	2558	OT/N.W. Towers	321.8	10.0	311.8	R
(15)	Coleman (KY)	Ohio	460	OT	265.69	0.08	265.61	R
(16)	Gallatin (TN)	Cumberland	1255	OT	743.0	-0-	743.0	R
(17)	Mill Creek (KY)	Ohio	1549	OT/M.W. Towers	157.51	8.8	148.71	R
(18)	Cane Run (KY)	Ohio	1036	OT	169.64	1.48	168.16	R

TABLE 11
(con't)

Plant Name (state)	River Basin	Installed Capacity (MW)	Cooling 1/ System	Water Use (MGD) Withdrawal	Consumptive Loss	Discharge	Data 2/ Source
(19) Paddy Run (KY)	Ohio	149	OT	7.68	-0-	7.68	R
(20) Wise Landing (KY)	Ohio	990	N.W. Towers	10.32	10.32	-0-	R
(21) Gallagher (IN)	Ohio	680	OT	488.0	-0-	488.0	R/IN
(22) Marble Hill (IN)	Ohio	2380	M.W. Towers	42.05	36.5	5.55	R/IN
(23) Clifty Creek (IN)	Ohio	1300	OT	1424.0	-0-	1424.0	R/IN
(24) Ghent (KY)	Ohio	1100	M.W. Towers	71.69	26.14	45.55	R
(25) Patriot (IN)	Ohio	1950	M.W. Towers	43.2	25.5	17.7	R
(26) East Bend 1 (KY)	Ohio	600	M.W. Towers	15.5	5.8	9.7	R
(27) East Bend 2 (KY)	Ohio	600	M.W. Towers	15.5	5.8	9.7	R
(28) Tanners Creek (IN)	Ohio	995	OT	1095.0	0.7	1094.3	R
(29) Miami Fort 5 and 6 (OH)	Ohio	260	OT	308.16	-0-	296.35	R
(30) Miami Fort 7 and 8 (OH)	Ohio	1080	N.W. Towers	(See M.F. 5 & 6)	11.81	(See M.F. 5 & 6)	R
(31) Beckjord (OH)	Ohio	1300	OT	612.3	-0-	612.3	R
(32) Zimmer 1 (OH)	Ohio	792	N.W. Towers	72.9	15.3	57.6	R
(33) Spurlock 1 and 2 (KY)	Ohio	785	M.W. Towers	11.5	7.4	4.1	R
(34) Stuart (OH)	Ohio	2400	OT/N.W. Towers	839.1	15.0	824.1	R
(35) Killen 1 and 2 (OH)	Ohio	600	M.W. Towers	19.7	11.7	8.0	R
(36) Tyrone (KY)	Kentucky	140	OT	187.31	2.27	185.04	R
(37) Dale (KY)	Kentucky	176	OT/C.P.	148.0	1.9	146.1	R

TABLE 11
(con't)

	Plant Name (state)	River Basin	Installed Capacity (MW)	Cooling 1/ System	Water Use (MGD) Withdrawal	Consumptive Loss	Discharge	Data 2/ Source
(38)	E. W. Brown (KY)	Kentucky	735	M.W. Towers	25.49	12.17	13.32	R
(39)	Cooper (KY)	Upper Cumberland	300	OT	229.0	2.6	226.4	R
(40)	Pineville (KY)	Upper Cumberland	35	M.W. Towers	3.96	0.71	3.25	R
(41)	Big Sandy (KY)	Big Sandy	1080	N.W. Towers	18.91	13.06	5.85	R
(42)	Warrick (IN)	Ohio	732	OT	518.0	1.0	517.0	R/IN
(43)	Lewis County (KY)	Ohio	2600	N.W. Towers	45.52	31.44	14.08	R
(44)	J. K. Smith (KY)	Kentucky	600	N.W. Towers	4.4	4.2	0.2	R
(45)	D. B. Wilson (KY)	Green	440	M.W. Towers	6.25	5.36	0.89	R
(46)	Hancock County (KY)	Ohio	1300	OT	967.68	-0-	967.68	R
(47)	Rockport (IN)	Ohio	2600	N.W. Towers	42.5	28.0	14.5	R
(48)	Ohio River (IN)	Ohio	128	OT	30.0	-0-	30.0	IN
	Total Number of Facilities: 48		45,458		14957.6	341.13	14616.47	
	Total Operational: 38		31,206		13704.28	178.71	13528.57	
	Total Proposed or Under Construction: 10		14,252		1250.32	162.42	1087.9	
	Total Kentucky Facilities: 27		20,527		4498.66	180.11	4318.55	
	Total Operational: 21		13,997		3448.99	122.99	3326.0	
	Total Proposed or Under Construction: 6		6,530		1049.67	57.12	992.55	

NOTES: 1/ OT = Once Through
CP = Cooling Pond
N.W. Towers = Natural Draft Wet Towers
M.W. Towers = Mechanical Draft Wet Towers

2/ R = Reported
IN = Indiana State Water Plan

FIGURE 8
OPERATIONAL HYDROELECTRIC FACILITIES, 1983

	NAME	CAPACITY (MW)
A.	Kentucky Dam	175
B.	Barkley Dam	130
C.	Ohio Falls	80
D.	Dix Dam	24
E.	Lock No. 7	2.1
F.	Laurel River	60
G.	Wolf Creek	270
H.	Dale Hollow	54
I.	Markland Dam	81
J.	Cannelton Dam	71
Total Plants: 10		947.1

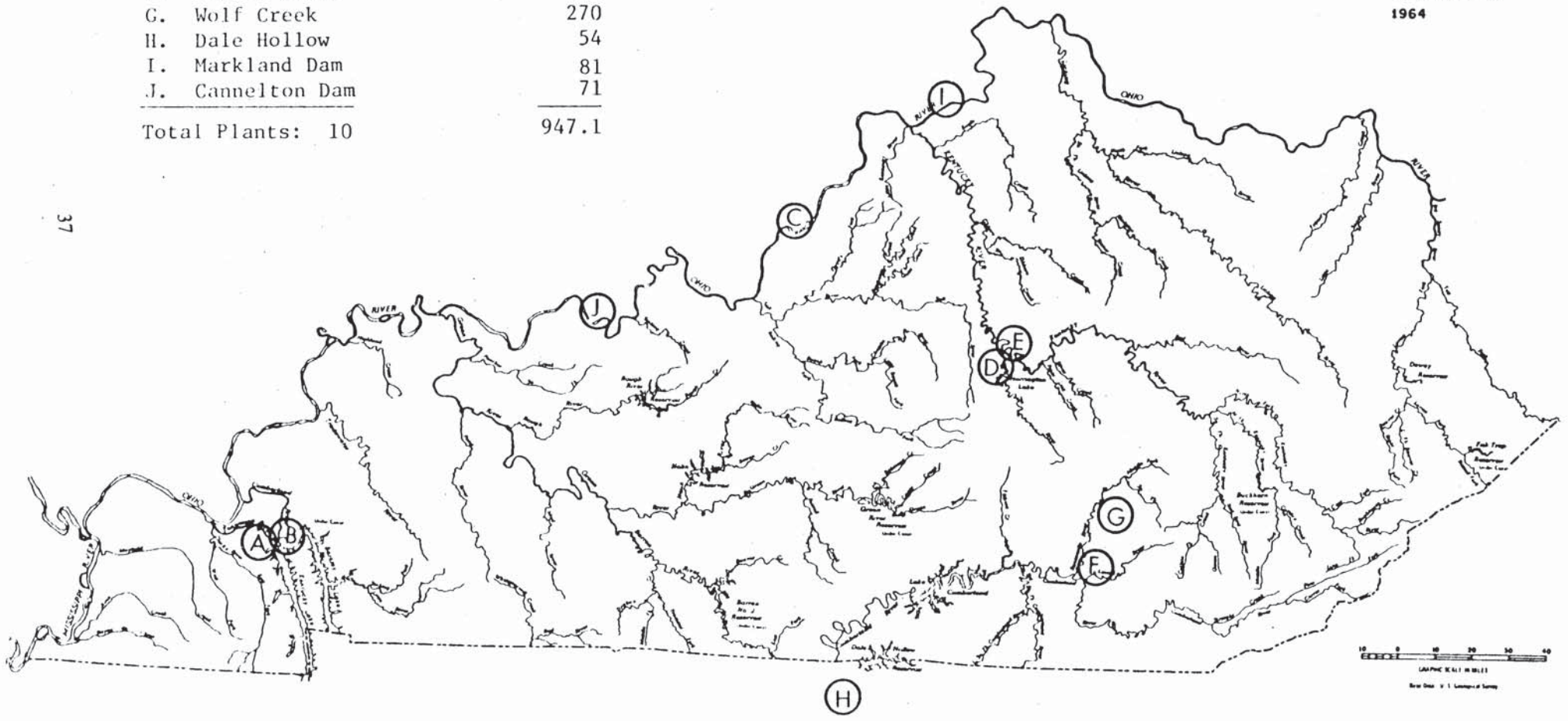
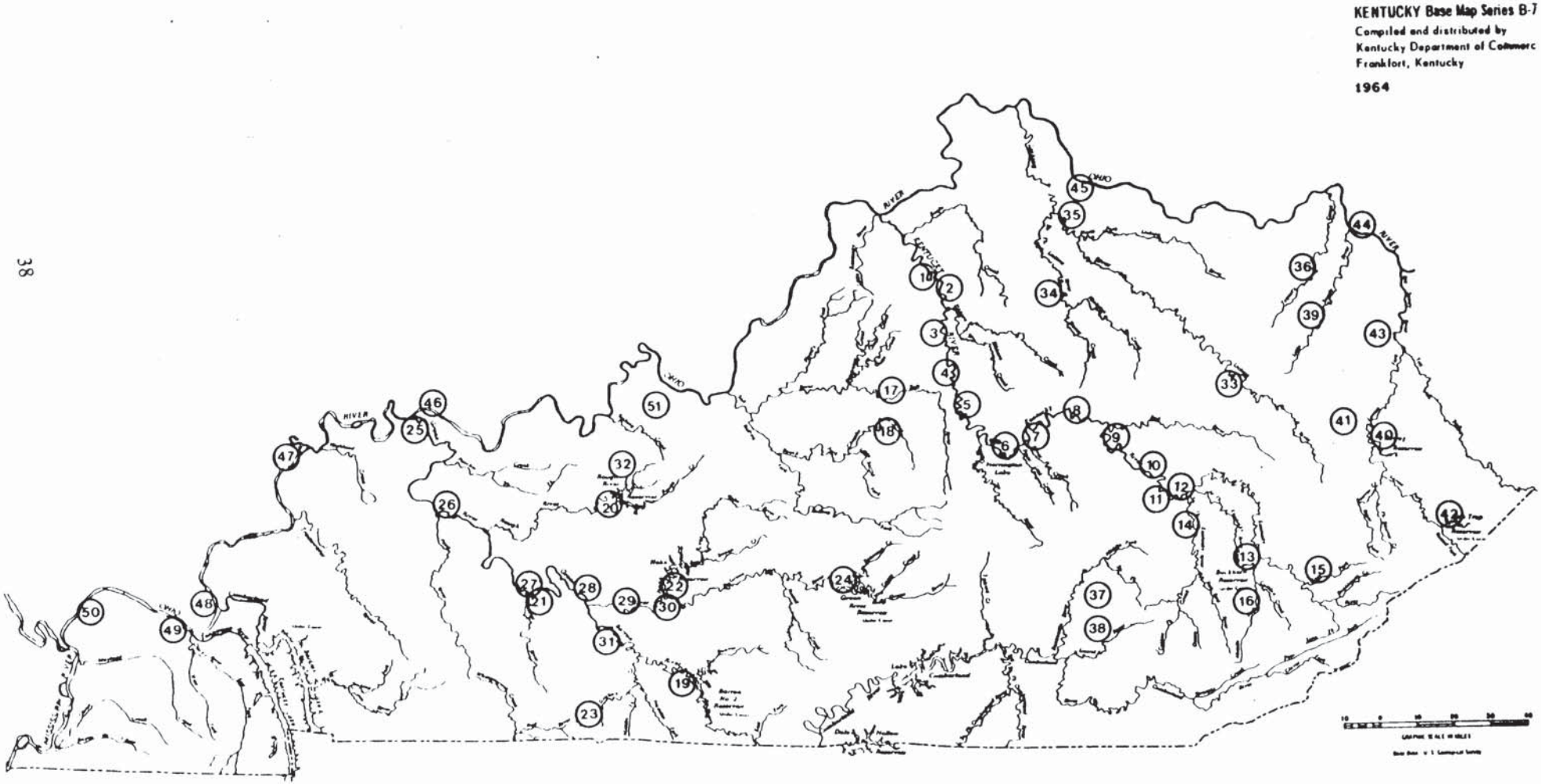


FIGURE 9

POTENTIAL HYDROELECTRIC POWER SITES, 1982



Synthetic Fuel Facilities

Several types of unconventional energy production projects have been considered at various times for development in Kentucky. These include coal gasification, coal liquefaction, oil shale, tar sands, and gasohol facilities.

One of the major concerns associated with these types of projects is their impact on water quality and water quantity. While most of the anticipated water quality problems, with the possible exception of hazardous substances, can probably be controlled by applying highly advanced wastewater treatment technologies, the impact of synthetic fuel facilities on localized and regional water availability is less known and less well defined.

The concern for processing water needs associated with these forms of energy production exists because of the potentially large volumes of water required to convert solid materials to liquid or gaseous form. Continued synthetic fuel development will necessitate that each facility be examined to determine its impact on existing and projected competing water use demands, including discharge volumes necessary for flow maintenance. Consumptive water use requirements for typical coal gasification, coal liquefaction and oil shale facilities are presented in Table 12.

TABLE 12

Consumptive Water Use Requirements for Typical Synfuel Facilities

Project Type	Size	Purpose	Consumptive Use Requirement
Coal Gasification	250 billion BTU/day (about 250 million standard cubic feet)	Processing, boiler make-up, cooling	10,000 AFY-45,000 AFY
Coal Liquification	100,000 BBL/day	Processing, boiler make-up, cooling	20,000 AFY
Oil Shale	100,000 BBL/day	Retorting, upgrading, mining, shale disposal	12,150 - 18,420 AFY

Source: U.S. Geological Survey. Water Demands for Expanding Energy Development. 1974.

Navigation and Water Use

Prior to the construction of railroads and the development of the steam engine, most transportation in the Commonwealth occurred by water because of the ease of movement compared to land travel. The location of Kentucky's major cities on principal rivers

or waterways points out the historic relationship between transportation and water access (Figure 10).

Water transportation has enjoyed several economic advantages over competing modes of transport. First, inland navigation has been highly subsidized through federal investment—until the imposition of a national waterways users fee in 1978. Second, navigation offers the ability to carry heavy items and take advantage of enroute inventory storage. The resulting low cost of water transport results from a high ratio of cargo to deadweight and the lower force energy required to overcome friction. As a consequence, energy costs are significantly reduced.

Navigation disadvantages include slow speeds, periodic closure of facilities due to floods and ice, limited service points, and the need for expensive port facilities.

Figures on the tonnage of waterborne shipments are not routinely compiled by NREPC's Division of Water. However, Table 13 provides somewhat dated tonnage amounts and a statement of problems affecting each navigable waterway.

One major question affecting the future of waterborne transportation in Kentucky is the impact the Tennessee-Tombigbee Waterway will have on navigation. Since completion of the waterway will shorten travel distance to the Gulf of Mexico by approximately 300 miles, it is anticipated that navigation traffic through Kentucky by way of the Tennessee River will increase. However, information which might indicate the effects on Kentucky is available at this time.

Another major issue facing Kentucky navigation is the increase in the waterway users fee. Results from a recently completed report by the CONSAD Research Corporation for the Ohio River Basin Commission indicate that higher fuel costs, as a result of the increasing user fee, will have a minimal cost and demand impact on major inbound and outbound commodities (petroleum, aggregates, and coal) at Louisville but that inbound and outbound commodities (petroleum, chemicals, coal, and grain) at Cincinnati will be subject to small to moderate changes in cost and demand.

Finally, development of coal slurry pipelines in Kentucky could have a substantial impact on the shipment of coal by water, as well as the state's water resources overall. Reliable information on the nature and extent of slurry pipeline effects is not presently available.

FIGURE 10

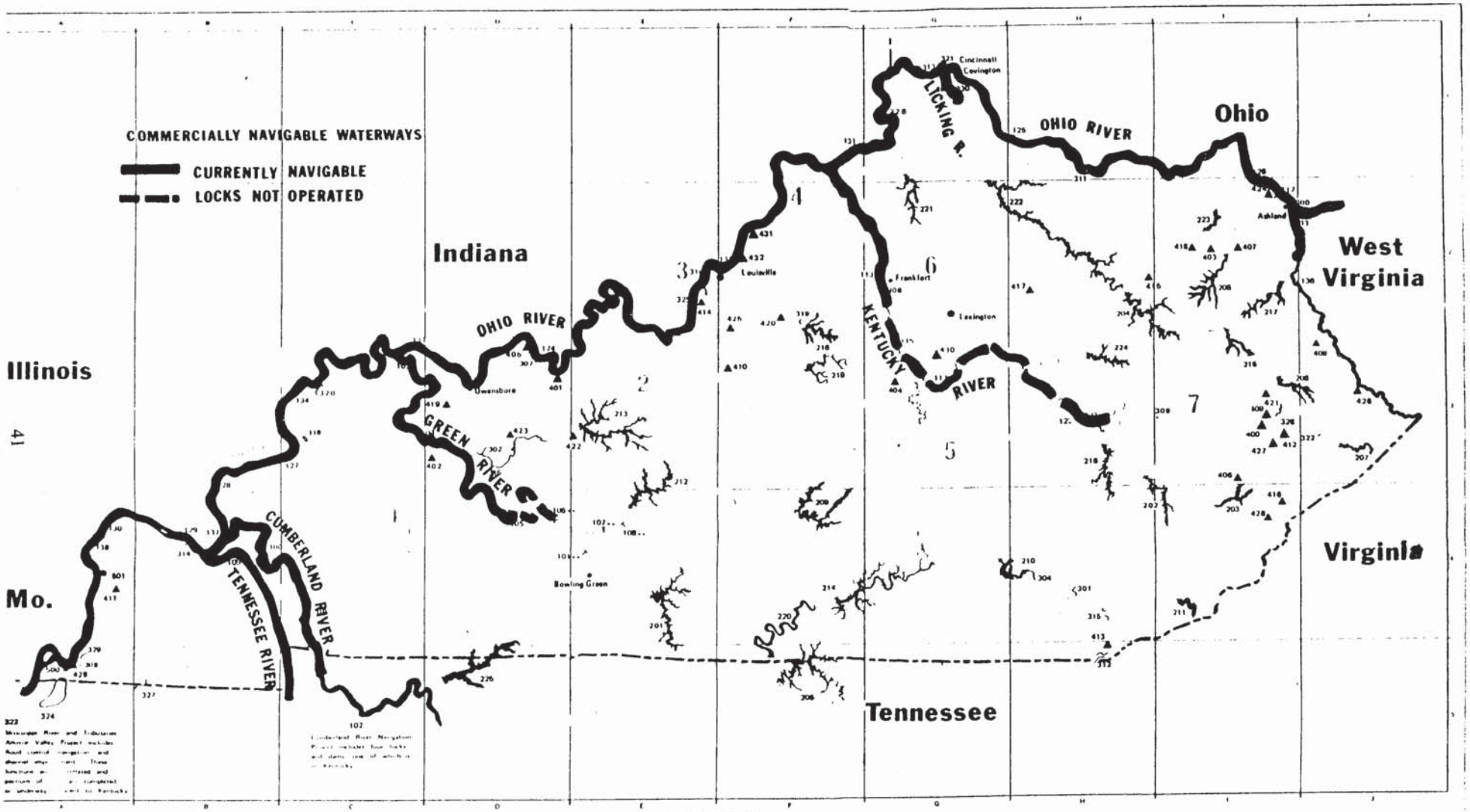

COMMERCIALLY NAVIGABLE WATERWAYS
CURRENTLY NAVIGABLE
LOCKS NOT OPERATED
Indiana
Illinois
Mo.
Ohio
West Virginia
Virginia
Tennessee
OHIO RIVER
GREEN RIVER
CUMBERLAND RIVER
TENNESSEE RIVER
KENTUCKY RIVER
LICKING R.
Louisville
Frankfort
Lexington
Owensboro
Bowling Green
Cincinnati
Covington
Ashland

TABLE 13

Kentucky Navigation

Waterway (KY miles)	Millions of Tons (year)	Problems/Issues
Mississippi (80)	124.1 (1977) Wickliffe, KY to Baton Rouge, LA	Sedimentation, Streambank erosion
Kentucky (259)	0.465 (1977)	Sedimentation, Shallow depth, Small locks
Licking (10)	———	Limited demand
Tennessee (63)	26.6 (1977) Paducah, KY to Knoxville, TN	Effect of Tennessee-Tombigbee Waterway
Cumberland (135)	12.8 (1977) Lake Cumberland to Ohio River	Crooked channel below Barkley Dam
Green (125.5)	13.5 (1977)	Narrow river bends, Sedimentation, Limited demand, Flooding
Big Sandy (7.2)	1.3 (1977)	Narrow channel, Sedimentation
Ohio (664)	McAlpine: 49.6 (1979) L & D 52: 70.3 (1979)	Wave damage, Streambank erosion, Lock capacity

CHAPTER IV

WATER INFRASTRUCTURE IN KENTUCKY

(Excerpted and edited from testimony prepared by T. James Fries and presented by Jackie Swigart, NREPC, to the Joint Economic Committee of the U.S. Congress, August 9, 1983, in Louisville, Kentucky.)

Perhaps more than any other type of public works structure, water facilities exemplify the capital dilemma facing the Commonwealth. Simply put, the problem is one of increasing need versus declining resources. The problem has resulted from facility obsolescence and deferred maintenance, expanded demand for services, and continued introduction of previously unaddressed environmental and performance standards.

This situation has not emerged overnight. As pointed out in a recent Congressional Budget Office (CBO) report on public works infrastructure, federal spending for water resources development and water supply has declined or remained constant since the early 1960's. Coincidentally, state and local expenditures committed for both purposes have remained constant (for water resources development) or increased only slightly (for single-purpose municipal water supply). While a new source of capital for municipal point-source wastewater treatment has been available since the early 1970's, aggregate federal and non-federal construction spending under Title II of Public Law 92-500 has been less annually, according to the CBO report, than the per annum amount spent by local jurisdictions for wastewater capital and operation and maintenance (O&M) costs during the 1960's and early 1970's. As a final note, increasing amounts of money, CBO reported, are being spent on water supply, wastewater treatment, and facility operation and maintenance relative to new construction costs.

A more detailed review of Kentucky's water quality and wastewater treatment, water supply, and water resources needs and expenditure trends serves to strongly validate CBO's national conclusions.

Water Quality-Wastewater Treatment

Any efforts to establish future capital requirements for water quality maintenance must begin by assessing past investment patterns. Although such figures would be only crudely representative, it is probably reasonable to conclude that previous public wastewater treatment expenditures, with the exception of any backlog of uncompleted projects, are roughly equivalent to past point-source control needs. Table 14 summarizes estimated public expenditures for point-source municipal wastewater treatment in Kentucky for the period 1972 through 1982. Private treatment expenditures are not reflected in the table. The $814 million total figure presented in Table 14 assumes a 75 percent federal and 25 percent non-federal matching requirement for conventional treatment and an 85-15 cost-share for innovative systems. Importantly, a review of past facility funding indicates that many similar communities have utilized loan and grant funds obtained from federal

agencies other than the U.S. Environmental Protection Agency (EPA) to provide most or all of their required non-federal match for the construction of wastewater treatment systems. Table 15 reflects the number and type of wastewater projects funded by the Farmers Home Administration from 1968 to 1982.

Table 14

Estimated Municipal Wastewater Treatment Expenditures

1972-1982
(in millions of dollars)

EPA Construction Grants Program	Other Federal Grants and Loans*,**	Local Debt and Revenues*,***	Total
485.3	129.0	200.0	814.3

*Extrapolated from 1975-1982 data.
**Based on FMHA, HUD, EDA, and ARC Data
***Based on 1982 Kentucky Local Debt Report

Table 15
FmHA Wastewater Projects in Kentucky

1968 to 1982

Total wastewater projects:	145	100%
New Facilities	53	37%
Existing Facilities	44	30%
Expansion/Improvement	27	19%
Extension	8	5%
Renovation/Replacement	9	6%
Unspecified	48	33%
Wastewater projects, by type	145	100%
Collection Projects	44	30%
Treatment projects	37	26%
Unspecified	64	44%

Source: Raw data compiled by David Ritchie, Legislative Research Commission, Summer, 1983

According to EPA's 1982 **Needs Survey**, point-source municipal wastewater treatment expenditures in Kentucky would need to total approximately $2.5 billion and $3.1

billion for 1980 population backlog needs and 2000 population projected needs, respectively, in order to meet water pollution control requirements for the eight previously eligible construction grant categories. However, eligibility and reserve capacity changes resulting from the 1981 Municipal Construction Grant Amendments, Public Law 97-117, reduce the 1980 population backlog needs level to approximately $372 million for the five facility categories currently eligible for funding. Table 16 presents a summary of Kentucky data by eligibility category from the 1982 **Needs Survey**. Elimination of eligible categories and reserve capacity (that is, capacity for future growth) should not be misconstrued to mean that a need for treatment no longer exists. Instead, the deletion merely shifts the burden for addressing certain problems from the federal level to state and local governments.

Table 16

Investment Needs for Wastewater Facilities
1982-2000
(millions of 1982 dollars)

	Facility	Backlog Needs 1980 Population	Projected Needs 2000 Population
I	(Secondary treatment)	294	397
II A	(Advanced secondary treatment)	83	112
II B	(Advanced treatment)	0	0
III A	(Infiltration/inflow)	104	104
III B	(Major rehabilitation of sewers)	5	5
IV A	(New collector sewers)	398	477
IV B	(New intercepter sewers)	161	524
V	(Correction of combined sewer overflows)	1,450	1,450
	Total	2,499	3,070

Source: Tables 15 and 21; U.S. EPA, 1982 needs survey cost estimates for construction of publicly owned wastewater treatment facilities; December 31, 1982.

In some categories, however, the **Needs Survey** may actually over-estimate the investment requirements for treatment facilities. A perfect example would involve those stream segments that are degraded by causes other than wastewater and where secondary or better treatment of municipal discharge will not, by itself, result in compliance with ambient or instream surface water quality standards. Since approximately 60 to 65 percent of the current pollution loading in the Commonwealth is attributable to non-point pollution sources, Kentucky may encounter many such stream segments. Clearly, the limited financial resources now contributed by the Soil Conservation Service, the Agricultural Stabilization and Conservation Service, and the Forest Service for land conservation and the control of non-point source pollution are wholly inadequate to address the magnitude of the problem. Capital investment requirements for the state to abate non-point sources of pollution

have not been quantified but could easily approach those dedicated to point source control.

The figures that have been presented do not include any real consideration of facility maintenance, repair, rehabilitation, or replacement costs. These amounts will become even more significant when the new Public Law 97-117 cost-sharing percentages (55 percent federal and 45 percent non-federal for conventional systems and 75 percent federal and 25 percent non-federal for innovative systems) for facility construction are imposed in federal fiscal year 1985. The impact of this conflict is inescapable when it is recognized that non-federal entities in Kentucky will have to almost double their current capital spending just to meet projected construction needs under the new cost-sharing formula.

Overall, congressional legislative changes in the construction grants program will make it exceedingly difficult for Kentucky's rural and smaller urban communities to properly plan for and construct wastewater treatment facilities. Their prospects look especially dim when we consider that rural communities, which have not benefited because of the past urban-industrial bias in wastewater funding, and where water quality has historically been less degraded, are projected to experience the state's greatest population growth through the year 2000 and beyond.

Kentucky's financial needs are not exclusively long-term. The problem is also immediate. Between 1983 and 1987, appproximately $195 million of federal and non-federal funds will have to be expended just to address the needs of large and small communities currently comprising Kentucky's construction grants priority list.

Water Supply, Treatment, and Distribution

Approximately three million people, or about 85 percent of Kentucky's 1980 population, presently rely on slightly more than 1,000 public systems to supply their water. Of the total number of systems, the rates of only 21 percent are regulated by the state's Public Service Commission. The remainder consist of municipal systems, systems operated by schools and educational institutions, and systems operated by and serving single business establishments. In addition, approximately one-third of Kentucky's rural population relies on private, individual water supply sources, such as wells, springs, and cisterns.

Problems plaguing Kentucky's water supply systems are virtually identical to those articulated by CBO in the national infrastructure report: (1) deteriorated or inadequate distribution systems, (2) the need for new supply sources, and (3) inadequate treatment facilities. Little data is available, however, to establish the severity of each problem, and therefore for estimating water supply investment need. Because of the lack of substantiating data, it is again necessary, as with wastewater, to assume, for the purpose of presenting a figure on future financial requirements, that past investment expenditures have basically met investment need. Such is not actually the case, because of the acknowledged problems of deteriorated or inadequate treatment and conveyance systems. In fact, if past expenditures and needs were roughly equivalent, the treatment and distribution system problems that are known in the state today would not exist.

Although we recognize the inherent discrepancy in the preceding assumption, we

present in Table 17 an historical summary of publicly-owned water supply system expenditures for the period of 1972-1982. Table 18 reflects the number and type of water projects funded by the Farmers Home Administration from 1962 to 1982.

Table 17

Historical Expenditures for Publicly-Owned Water Systems
(in millions of dollars)

	General Grants and Loans	Local Debt	Total
1972-1974*	94.4	130.4	224.8
1975-1982	251.7**	347.7***	599.4
Total	346.7	478.1	824.2

*Extrapolated from 1975-1982 data.
**ARC, EDA, FmHA, and HUD data
***1982 Kentucky Local Debt Report Data.

Table 18
FmHA Water System Projects in Kentucky

1962 to 1982

	Number	Percent
Total water system projects:	421	100%
New facilities	41	10%
Existing facilities	226	53%
Expansion/Improvement	97	23%
Extension	105	24%
Renovation/Replacement	24	6%
Unspecified	154	37%

Source: Raw data compiled by David Ritchie, Legislative Research Commission, Summer, 1983.

By combining historical expenditure levels with projected population growth, a first cut estimate of investment needs for water supply, treatment, and distribution can be derived. Use of this approach yields an approximate investment need of $1.4 to $1.5 billion between 1982 and 2000. This figure may not be truly representative, because of several factors. First, the figure does not reflect investment costs required to correct existing deficiencies. It must therefore be inflated to include them. Second, the inflated value would overestimate need, because (a) not all of the new population growth will be serviced by public systems, (b) variable levels of excess or growth capacity already exist in many systems, (c) system consolidation and regionalization will take advantage of scale economies to improve

efficiency and reduce costs, and (d) future demand is non-linear, and thus a saturation level of service provision will be reached, beyond which new construction will be economically infeasible. Third, the figure will again need to be inflated to reflect the treatment technology costs for controlling new contaminant parameters.

While the cost for water supply development in the Commonwealth will be very high, it is presently impossible to definitively ascertain the cost for future needs. It is reasonable to expect, however, that statewide need may in fact be in the range of one to two billion dollars for the period 1982 to 2000. Such a level of public capital investment would not be inconsistent with the national annual levels of funding of 10 to 15 billion dollars for urban and rural needs that were reported by CBO.

CHAPTER V

WATER PROGRAMS IN KENTUCKY

The following information summarizes the ongoing activities of the Natural Resources and Environmental Protection Cabinet, Division of Water, in the areas of water quality maintenance, water quality planning, drinking water, the water resources program, and enforcement.

Water Quality Maintenance Program

Under KRS 224.032, the Cabinet is charged with protecting the Commonwealth's water resources from pollution. This responsibility is carried out through a variety of operational and planning programs administered by the Division of Water. The Division is responsible for the following operational activities:

Developing Water Quality Standards
Developing technical standards for water quality, including ambient standards and water quality modeling for permits.

Permitting
Issuing construction and operating permits for industrial discharges and municipal discharges.

Certifying
Certifying the Corps of Engineers dredge and fill (Section 404) and navigable water (Section 10) permits.

Educating
Training and issuing competency certificates to the operators of wastewater treatment plants.

Technical Help
Providing technical assistance to municipal and industrial plant operators.

Responding to Water Quality Emergencies

Enforcement
Conducting compliance monitoring and surveillance inspection and following through with enforcement actions

Monitoring
Establishing and operating a statewide ambient water quality trend monitoring network (42 stations).

Administering Federal Funds
Operating or administering a major portion of the federal construction grants program, with delegation of some aspects completed in 1984.

Water Quality Planning

Section 201 planning has been the major type of water quality planning in Kentucky. Under the provisions of Section 201 of the Clean Water Act, wastewater facility planning is required for a community seeking funding for the construction of publicly-owned wastewater treatment systems. Until December 1981 costs for planning municipal wastewater treatment facilities were typically shared by the federal government and local communities on a 75 percent-25 percent basis. However, the 1981 Municipal Construction Grants Amendments (Public Law 97-117) changed the wastewater grants sections of the Clean Water Act to require that communities pay the full cost of facility planning, with the provisions that a community could be eligible for partial reimbursement following the award of a construction grant. The same reimbursement provisions apply for development of system design and engineering specifications.

The new amendments present a major obstacle to constructing publicly-owned wastewater treatment (POTW) facilities, because many moderate and small-sized communities are presently unable to provide the up-front financing necessary to prepare facility plans and designs. This problem will become particularly acute, since the majority of Kentucky's population growth is occurring in non-metropolitan and rural areas.

The cabinet's role in Section 201 planning is, by the nature of the federal law, limited. Essentially, the cabinet's participation consists of reviewing and, if acceptable, approving general facility plans and system engineering designs that have been prepared by consulting engineers. The cabinet is not engaged in actually preparing the various types of wastewater system plans. All of the cabinet's plan review costs associated with the Construction Grants program are paid for by federal Section 205(g) grant assistance. The total 205(g) award received by the state is approximately one million dollars a year.

Section 303(e) basin planning was completed in the mid-1970's. A further discussion of this activity is contained in Chapter VI.

Another on-going planning program for water quality has been the preparation of the point and non-point source water quality management plan required under Section 208 of the federal Clean Water Act. Preparation of the statewide 208 plan, with the exception of the Louisville and Northern Kentucky areas, where 208 areawide plans were prepared by regional planning agencies (KIPDA and OKI), was initiated in 1976.

The plan addresses municipal and industrial (non-municipal) point source discharge and diffuse or non-point source discharges for mining, agricultural, silvicultural, and light construction activities. With the exception of surface and deep mining sources, which are regulated by federal and state surface mining and underground mining laws, it remains the cabinet's commitment to use non-regulatory programs (education, technical assistance, and financial incentives) for agriculture, silviculture, and construction. Required planning work for other non-point sources, to include waste residuals, hydrologic modification, and urban stormwater, has not been undertaken. No work has been completed on the point source portions of the plan.

In addition to the development of voluntary programs, the cabinet is using 208 funds to reclassify the state's streams and rivers as required by 401 KAR 5:026. The cabinet

uses the stream use designation or classification activity to verify or establish uses of a water body, consistent with the Clean Water Act, by analyzing the existing uses or the potential of attaining a particular use. The instream numerical and narrative criteria associated with these uses are translated into effluent limitations, which serve as a mechanism for regulating and enforcing municipal and industrial wastewater discharges.

The 208 planning program was terminated in 1984. However, the work of reclassifying the state's surface waters will continue at a reduced level, using Section 205(j) federal funds of between $300,000 and $350,000 per year. The 205(j) non-point source funds were authorized by the 1981 amendments to the Clean Water Act.

A minor planning effort over the last two years has been dedicated to evaluating the quality of the state's publicly-owned lakes under Section 314 of the federal Clean Water Act. As with the preceding planning program, federal and state support for this activity has been discontinued. Only minimal effort is likely to be given to this inventory program in the future.

Funding for Water Quality Programs

The annual funding of water quality programs is presented by approximate amounts in the following sections.

Water Pollution Control

For fiscal year 1983, the water pollution control program received $1.6 million of state funds and $750,000 of federal funds. The $2.35 million total is used to fund all activities except the Clean Lakes, Water Quality Planning, and Construction Grants Programs. The total figure does not include fee income revenues for permitting programs.

Construction Grants

The Commonwealth receives 4 percent of the federal construction funds appropriated to Kentucky to administer the Construction Grants Program. For fiscal year 1982, Kentucky received $34.5 million in Construction Grants funds, of which $1,380,000 is assigned by Congress for program management, under Section 205(g).

Clean Lakes

Completion or phase out funding for the fiscal year 1983 Clean Lakes Program was approximately $16,000.

Water Quality Planning

No new funds were available in fiscal year 1983 for 208 water quality management planning. Ongoing work in this area was still being funded with grant monies received in 1976, 1978, and 1980. Section 208 funds available to complete partial non-point source planning and stream use designation totalled approximately $680,000 during fiscal year 1983. In addition, approximately $300,000 of Section 205(j) non-point source planning funds were also used to continue the stream use classification activity during 1983.

Total Funding

In summary, about $4.7 million was directly expended by the Division of Water for Kentucky's water pollution control efforts, exclusive of permitting fees, in fiscal year 1983. Indirectly, another $33.1 million was expended to construct wastewater treatment systems through the federal Construction Grants Program. The federal grants program is being phased out, however, with the program scheduled to end in 1991. Without question, discontinuance of the program will have a major impact on efforts to protect public health and water quality, to promote economic development, and to improve the overall quality of life for many Kentuckians. Because federal funds to support wastewater treatment system construction are scheduled for termination, the establishment of alternative funding mechanisms will be essential if Kentucky is to continue its efforts to control municipal point sources of pollution.

Drinking Water

The Commonwealth of Kentucky received primary administrative and enforcement responsibility for the federal Safe Drinking Water Act (Public Law 93-523) in 1977. This responsibility is carried out through a variety of operational programs administered by the Division of Water. These activities may be summarized as follows:

Administration and Program Development

This includes assignment of personnel, computer and word processing capability, collection of fees to support laboratory functions, public participation in regulatory development, and conducting of workshops.

Surveillance and Technical Assistance

This includes on-site inspections, investigation of complaints, sanitary surveys, and provision of technical assistance to correct problems.

Plan Review

Plans are reviewed and approved or denied for all new public water treatment facilities or for modifications of existing ones. Plan review is limited, however, to engineering aspects of meeting the maximum contaminant level requirements established by regulation.

Inspections

Inspections of new construction are conducted on a random basis to assure compliance with approved plans and specifications.

Laboratory Certification

The Division certifies bacteriological, organic, and inorganic laboratories that perform analyses of drinking water samples. The state also recognizes out-of-state laboratories through reciprocity. All laboratories are required to have written procedures and quality assurance or control plans.

Central Laboratory

State laboratory services are provided under contract with a professional laboratory. Public water supplies are sampled on a pre-determined schedule for bacteria, organic, and inorganic contaminants. Trihalomethane sampling is conducted in all communities above 10,000 population.

Operator Training and Certification

The training of water treatment plant operators is a continuing activity. Current activities call for 13 regional schools for water treatment and distribution system operators, to be held annually. The Division also operates a certification program for water treatment plant operators.

Enforcement and Compliance

Compliance surveillance is conducted through a computerized information system. Priority enforcement activities are directed toward maximum contaminant level (MCL) violations and systems failing to function.

Data support

Data support involves maximizing the use of a computerized system to track conditions at each water supply system covered by drinking water regulations. The system provides much of the basis for setting priorities and initiating field investigations and enforcement activities.

Drinking Water Planning

At the current time, drinking water planning consists only of regulation revision. Regulations are being revised to clarify definitions, spell out public notification requirements, include trihalomethane limits, and introduce sodium and corrosivity monitoring requirements.

Funding

Funding for the Safe Drinking Water Program in 1983 included $733,150 (including $190,000 in fees) of state funds and $282,700 of federal funds, for a total of $1,015,850.

Water Resources Program

The water resources activities of the cabinet primarily arise, directly or indirectly, from the statutory mandates of KRS Chapters 151 and 146. These mandates cover the areas of floodplain management, dam safety, water supply allocation, and water related outdoor recreation. Among the activities related to these mandates are the following:

Permitting and Monitoring Stream Construction

Pursuant to KRS 151.250, the cabinet permits floodplain development to prevent stream obstruction and the worsening of flooding along the streams of the Commonwealth.

National Flood Insurance Program Coordination

In this role, the cabinet provides technical assistance and information to local communities on floodplain management and the functioning of the National Flood Insurance Program.

Water Withdrawal Permitting and Records Maintenance

Pursuant to KRS 151.140 and 151.160, any water user (except those exempted in KRS 151.140) withdrawing more than 10,000 gallons of water per day must obtain a water withdrawal permit and must report the amount of water withdrawn.

Community Flood Damage Abatement Program

Through this program, the cabinet provides financial assistance to local governments on a cost-share basis for the purpose of abating local flooding problems. The primary emphasis of this program is to allow implementation of those structural and non-structural flood damage reduction measures beyond the financial capability of local governments and not eligible for funding under traditional federal flood control programs. Approximately $12.5 million has been expended for such projects since fiscal year 1976.

State-Owned Dam Repair Program

KRS 151.291 directs the cabinet to "take whatever actions it deems necessary to maintain, repair or remove dams . . . owned, acquired or constructed by the Commonwealth" to ensure their safety. For the years 1975-1982, $5.2 million was appropriated for this purpose.

The Kentucky Wild Rivers Program

Pursuant to KRS 146.220 through 146.360, the cabinet established a program to preserve the natural, scenic, scientific, and aesthetic values of certain outstanding and unique streams in the Commonwealth. Currently, there are eight segments designated Wild Rivers, totaling 110 stream-miles in length.

Dam Safety Inspection Program

Pursuant to KRS 151.295, the cabinet is charged with conducting regular inspections of dams and reservoirs within the state to protect the safety and welfare of the public. When conditions are found that could endanger public safety or welfare, the cabinet is empowered to direct the owner of the structure to remedy the situation.

Corps of Engineers Public Notice Coordination

Since 1975, the cabinet has been the state agency designated by the Governor to coordinate the responses of all state agencies to Corps of Engineers and Coast Guard public notices. As such, the cabinet is responsible for expressing the official state position on Corps and Coast Guard notices.

Water Resources Planning

Water resources planning activities for the cabinet are generally established in KRS Chapter 151. Planning consists of such activities as reviewing federal water resource project proposals and commenting, pursuant to 151.220, and carrying out the water quality planning efforts previously reviewed.

Funding

Specific figures for operating funds committed to all water resource program activities are difficult to separate from other budget items. Overall, the amount committed to water resource programs has decreased since fiscal year 1981.

Enforcement

A key to any regulatory water program is enforcement. The following description of the enforcement process for the Division of Water, Department for Environmental Protection, NREPC, was presented by the cabinet to the Task Force.

Compliance with Kentucky water regulations depends on a variety of sources of information. Permit holders have responsibility for submitting regular reports for most permits issued by the Division of Water. Field inspectors and central office personnel check the reports and also perform site and facility inspections.

Where violations occur because reports are not submitted or as a result of a field inspection, attempts to resolve the violations initially occur at the field office level. If the violations are not corrected by the field office, actions are taken by the enforcement branch in Frankfort. If the violations are still not corrected, the case is forwarded to the Cabinet's Office of General Counsel.

The enforcement process is summarized in Figure 11, and each step is discussed below. Enforcement of permit limits and conditions begins with the District Office determining that a violation exists. Unsatisfactory compliance with District Office efforts results in the case being forwarded to the Central Enforcement Branch. Following receipt of a request for action, an administrative conference is scheduled at the Central Office. Formal notification of the conference is given by certified mail. (See Central Office Enforcement Chart, Figure 11.)

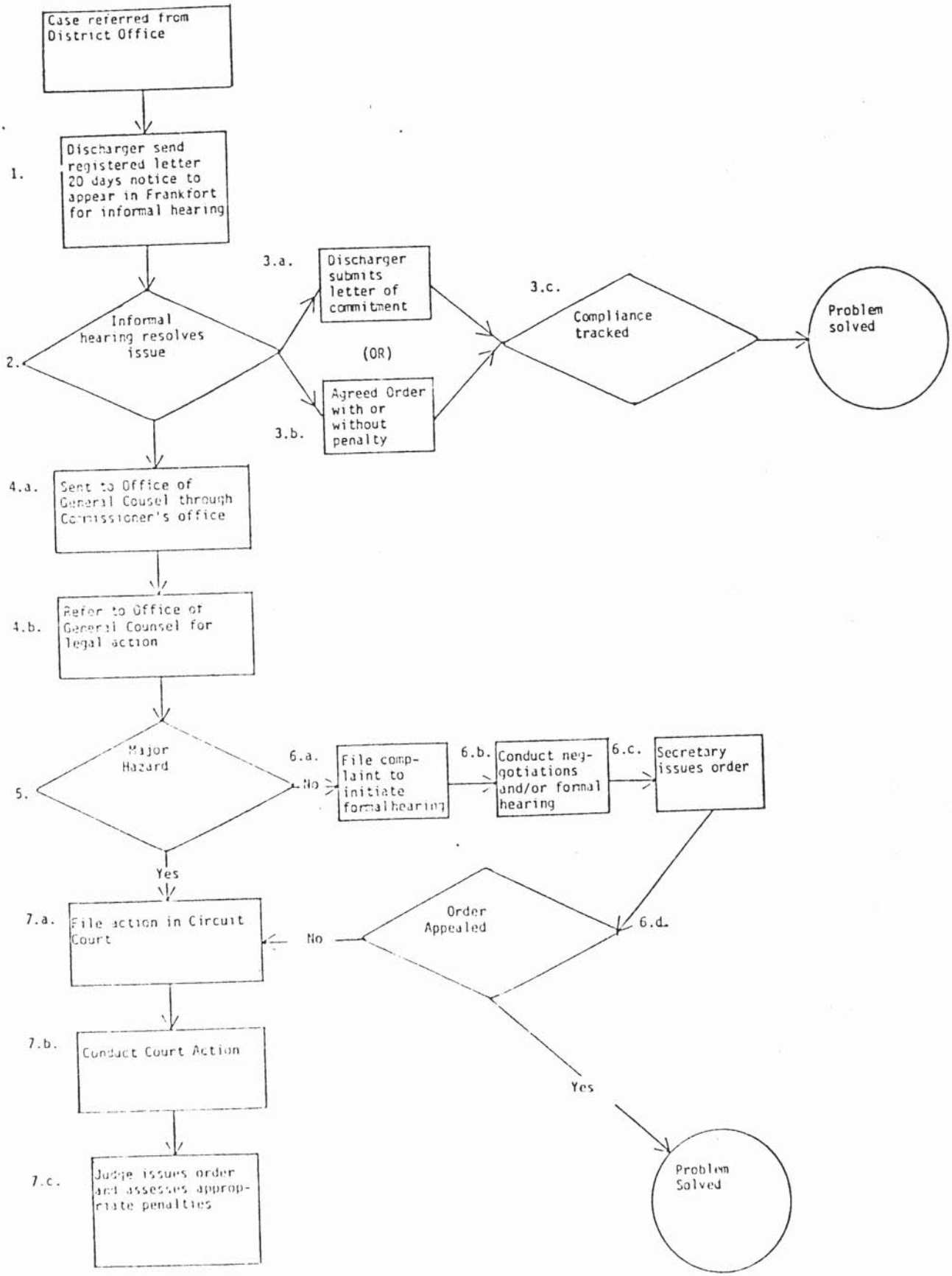
At the administrative conference (Step 2), a commitment to resolve the complaint may be obtained (Step 3 a.), and a schedule for corrective action may be negotiated. An Agreed Order, incorporating the schedule and an appropriate monetary penalty, is developed. The permittee, Director, Commissioner, Secretary, and General Counsel sign the Agreed Order. The compliance schedule is tracked through the Enforcement Status List (Step 3c.) by the Enforcement Branch until completion.

If there is no compliance, the case is developed further and forwarded to the Office of General Counsel (OGC) (Steps 4a. and b.). The Division, in general, and the Enforcement Branch, in particular, support OGC with additional data and documentation as necessary and track OGC action (See Step 5).

In complaints requiring quick action, OGC may directly petition the Franklin County Circuit Court for a Restraining Order and Injunction (Step 7a.), or the General

FIGURE 11

CENTRAL OFFICE ENFORCEMENT PROCESS



Counsel may file a complaint and schedule a formal hearing (See Step 6a.). If 6a. is the route followed, the hearing office (Administrative Law Judge) renders a report to the Secretary of the Cabinet. Appeal procedures are set out in Steps 7a., 7b., and 7c.

Funding

Costs for the enforcement process and actions are included in total funding figures presented in the preceding sections on the water quality maintenance, drinking water, and water resource programs.

CHAPTER VI

WATER RESOURCES PLANNING

(The material in this chapter was compiled and prepared by T. James Fries, NREPC).

Planning is a process which takes the goals of society, turns them into particular objectives, and then determines ways to fulfill them. A plan, therefore, is intended to be a design guide for the future. By definition, it is not neutral. It is, instead, a future-oriented, optimistic endeavor.

Need is established in one of two ways. First and most ideally, a discrepancy between what exists and what is desired is recognized. Second and more common, the public or its representatives raise questions of need because they feel endangered.

While planning results can be directive, service, or non-directive in nature, two basic decision-making models describe the planning process extremes. The first model is known as the rational-comprehensive model. It involves using a systems approach to (1) establish usually long-term goals, (2) determine needs and criteria measures, (3) identify alternatives to meet needs, and finally, (4) implement the optimum solution. Several process steps are involved. They include making policy (i.e., establishing goals and defining objectives), setting targets (i.e., quantifying the needs for goods and services), conducting a resource appraisal (i.e., inventorying the adequacy of the resource base), fixing criteria (i.e., setting standards for evaluating and selecting alternatives), reaching conclusions and making recommendations, and implementing solutions.

A second planning and decision-making model is known as incrementalism or successive limited comparisons. It does not involve the articulation of a goal; rather, goals are continuously changed or new ones are introduced. Decisions, as a result, are almost entirely remedial. They seek to move away from problems rather than toward goals. As a consequence, the number and types of alternatives that can be considered are severely limited, and because of the small steps involved, many opportunities are overlooked or ignored.

Water resources planning can occur at different levels or scales. The four types of physical resource plans commonly prepared are (1) framework or reconnaissance plans, (2) regional river basin or sub-basin plans, (3) project implementation or feasibility plans, and (4) special study plans. For the most part, water resource plans are directed at the project level. In this type of micro-planning, project feasibility studies and detailed engineering designs are prepared for a specific locale and project proposal. Project planning is usually conducted after an alternative solution has been chosen, and it is intended to find the best approach to implementing the selected alternative. In contrast to individual project planning, macro-level river basin or sub-basin plans are prepared for larger geographic areas encompassing a range of different water resource problems and needs. Basin plans inventory resources, identify or isolate problems, and assess and recommend feasible alternative solutions. Examples of river basin planning range from individual, single-purpose watershed

plans to comprehensive, multiple purpose plans covering entire river drainages. The following review of water resources planning in Kentucky and adjacent or nearby states is directed toward river basin rather than project planning.

Water Resources Planning in Kentucky

State Planning Activities

Water resources planning is considered to be the province and responsibility of the states, with the power to plan based on the principle of state sovereignty. Water resources planning and regulatory authority have been vigorously defended against federal intervention or usurpation, and states have argued before the U.S. Supreme Court that it is their prerogative to plan for the development of state water resources. The U.S. Congress has supported this position by including language in many pieces of legislation that acknowledges that the states have primary responsibility for water resources management. In this context, the federal government's role in water resources planning in Kentucky has been principally governed by application of the Commerce Clause of the U.S. Constitution and various public health and water resource development laws.

Kentucky's most recent experience with water resources planning coincides with federal passage of the Water Resources Planning Act of 1965 (Public Law 89-80) and the 1966 enactment of KRS Chapter 151. In response to the objectives stated in KRS Chapter 151, the availability of water resources planning grant matching funds through Public Law 89-80, and the need to evaluate several federal water resource projects, in particular Red River Dam, the former state Division of Water initiated a comprehensive water resources planning program. As an initial step in the process, the state contracted with Spindletop Research to design a water resources planning approach for the state. The Spindletop work concluded in 1967 with the publication of a report entitled **Water Resources Planning in Kentucky**. Foremost in Spindletop's recommendations was the creation of a water management information system, consisting of a basic data acquisition program and water resources modeling capability, and establishing an augmented planning program for the state. Neither Spindletop recommendation was implemented.

A second major water resources planning activity pursued under the authority of KRS 151, and with financial assistance from Public Law 89-80, was the preparation of a Level A or framework water plan by the state's Division of Water in 1971. The framework or reconnaissance plan attempted to qualitatively and quantitatively inventory the Commonwealth's water resources; identify water resource problems, needs, conflicts, and opportunities; and propose a variety of legal, institutional, financial, and project solutions. The plan focus concentrated on conventional water resource concerns, including flood control, water supply, water quality, navigation, power generation, and recreation. As in the case of the Spindletop effort, few of the recommendations from **The Kentucky Framework Water Plan** were ever pursued.

In a related planning support activity, the Legislative Research Commission reviewed the state's laws and programs for water resources management in 1972 and 1973. Its study, undertaken in response to Senate Concurrent Resolution 32 of the 1972 General

Assembly, did not directly specify particular planning activities; it did, however, strongly recommend that the Commonwealth "make water management one of its priority programs in the coming years."

Following completion of the framework water plan in 1971, state-initiated water resources planning activities continued on a limited yearly basis through 1981. During the ten-year period, planning work was funded 50 percent out of the general fund and 50 percent from federal funds, at a level of approximately $120,000 to $140,000 per year, for 1980-81, during which time the planning budget increased to over $500,000. Two factors accounted for the dramatic increase in funding. First, a decision to begin preparing a comprehensive state water plan was made by the former Division of Water Resources in 1980. Second, federal water resources planning assistance under Public Law 89-80 increased from $60,000-$70,000 per year to almost $300,000 for federal fiscal year 1981. However, reorganization of the three separate divisions of water quality, sanitary engineering, and water resources into one division delayed initiation of programmed planning activities, and about $265,000 of the 1980-81 federal assistance was returned to the federal government. Likewise, a comparable matching amount of state funds was reprogrammed to activities not related to water resources planning. Overall, planning work done between 1971 and 1981 was largely directed toward supporting operational or regulatory programs.

One continuing planning activity that did occur between 1971 and 1981 and that was supported by Public Law 89-80 assistance involved the Commonwealth's participation in the preparation of five regional river basin plans by the Ohio River Basin Commission (ORBC). The Commission was established under Title II of Public Law 89-80 and consisted of both federal and state members. Pursuant to Section 203(4) of Public Law 89-80 and Section 209 of the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500), five Level B, or river basin, plans, for the Big Sandy River, Cumberland River, Green River, Kentucky/Licking River, and Ohio River Mainstream basins, were prepared and finalized between 1978 and 1981. Because the Commission lacked implementing capability and was therefore forced to rely on the programs of its member agencies, few proposals from the river basin plans were implemented. The Title II Commission was abolished by Presidential Executive Order in 1982.

In 1972, the General Assembly established a state wild rivers system and program. Following major amendments of the law in 1976 and by utilizing Public Law 89-80 funds in concert with a General Fund appropriation, preparation of the wild river management plans called for in KRS 146.270 was finally undertaken in 1978. Six individual corridor plans, covering the Red River, the Rockcastle River, the Cumberland River, Martin's Fork of the Cumberland River, the Little South Fork of the Cumberland River, and Rock Creek, and a statewide wild rivers plan covering all eight rivers were prepared and reviewed at public hearings during 1980. Individual plans for the Green River and the Big South Fork of the Cumberland River were not developed by the state, pending cooperative agreements with the National Park Service and the Corps of Engineers, respectively, to jointly prepare the required plans. Through 1983, none of the recommendations from the statewide plan

and the individual plans had been implemented. Reasons for inaction include zero-budgeting of the wild rivers program for the 1982-1984 biennium and litigation challenging the program's constitutionality.

Other miscellaneous water resources planning activities have also been pursued by the state. These include cooperation with various federal agencies on river basin studies and investigations and participation in conducting the Corps of Engineers' Section 22 Planning Assistance to States Program and the Federal Emergency Management Agency's State Assistance Program. Almost without exception, the direction and output of these planning support programs have been operational rather than planning-related in nature.

Kentucky's involvement in water quality planning has involved several major efforts carried out as a result of passage of federal legislation. For the most part, preparation of federally mandated water quality plans has not been coordinated with comprehensive water resources planning efforts or activities.

Since 1972, five different types of water quality plans, all undertaken as a result of Public Law 92-500 or the 1981 Municipal Construction Grants Amendments, have been prepared or are under preparation. Of the five single-purpose plan types, four are river basin or statewide in their orientation.

Section 201 wastewater facility planning, which was reviewed in Chapter 5, is not covered in the following summaries because it deals with individual projects.

Section 303(e) of Public Law 92-500 directed that the state prepare river basin water quality management plans. The major purpose of the effort was to establish identifiable stream segments for point source waste assimilation, determine whether the receiving segments were water quality-limited or effluent-limited, and set forth effluent restrictions for point source dischargers to allow water quality standards to be attained in each segment. Kentucky completed preparation of the 303(e) plans during the mid-1970's. The state's wasteload allocation computer file and modeling programs are updated annually, but a total revision of the 303(e) plans has not been undertaken since their publication.

Section 208 of Public Law 92-500 required that Kentucky prepare a statewide water quality management plan that established strategies for abating both point and non-point sources of water pollution. Beginning in 1976, the state began preparing the plan. The non-point source portion of the plan, which was substantially redirected in 1980, was completed during 1984.

Section 205(j) of the Federal Clean Water Act, created by the 1981 Municipal Wastewater Treatment Construction Grant Amendments (Public Law 97-117) recognized that efforts to abate point sources of pollution, especially expenditures for the planning and construction of publicly-owned treatment works, were being impeded by the failure to control non-point pollution sources. Through the new section, funds were made available to continue the development of plans for non-point source (NPS) control through the construction grants phase-out period. However, 205(j) funds in Kentucky are being used for multiple activities allowed by the U.S. EPA.

Section 314 of Public Law 92-500 set forth a program designed to restore the

quality of publicly-owned lakes. The section provided grant assistance to states to assess the quality or condition of public lakes and to states or communities to develop and implement individual lakes restoration plans. Through 1983, Kentucky had completed a statewide lake inventory and assessment and had prepared one lake restoration plan. Due to elimination of funding, no efforts are underway to prepare an overall plan, either independently or in conjunction with Section 208 or Section 205(j) planning work, for the protection and restoration of the remainder of Kentucky's publicly-owned lakes.

Federal Planning Activities

A wide variety of water resources planning activities has been or is being carried out by federal agencies in Kentucky. The three federal agencies most frequently engaged in water resources planning in the state have been the U.S. Department of Agriculture, the U.S. Army Corps of Engineers, and the Tennessee Valley Authority. Other miscellaneous agencies have been or are involved in varying water resources planning pursuits.

The U. S. Department of Agriculture planning involved the preparation of two Type IV or Cooperative River Basin Surveys through 1981. The Green River Basin report, finished in 1975, and the Kentucky River Basin report, completed in 1981, presented water and related land resources evaluations and recommendations addressing water supply, flooding, agricultural production, recreation, and water quality. A less detailed cooperative study, covering the entire state and addressing non-point source pollution (erosion-sedimentation), flooding and agricultural productivity, agricultural resource conflicts, and agricultural water use needs, was initiated in 1981. It is programmed for completion in 1985. In addition to cooperative agricultural studies, the Department of Agriculture is involved in the preparation of five multi-county Resource Conservation and Development (RC & D) plans in the state. The five, which are in various stages of preparation, include the Big Sandy RC & D, the Cumberland Valley RC & D, the Pennyrile RC & D, the Cumberland-Green Lakes RC & D, and the Green River RC & D. The purpose of the planning effort is to develop a long-range program of resource conservation and development necessary to promote viable rural communities. Another major U.S.D.A. water resources planning activity has been the Public Law 566 Small Watershed Protection and Flood Prevention Program. Through the 566 Program, approximately 45 watershed improvement projects have been planned and undertaken since 1954. Project purposes under the program include flood prevention, public water supply, irrigation, drainage, sedimentation control, and public water-based fish and wildlife recreation.

River basin planning activities carried out by the U.S. Army Corps of Engineers represent the most comprehensive water resources planning done in Kentucky in recent years. In 1969, two major Corps of Engineers water resource studies were completed. The first study, the Ohio River Basin Comprehensive Survey, was completed in August 1969. The multi-volume plan presented an overall framework program for the development and management of the water and related land resources of the Ohio River Basin. Included in the survey were resource evaluations and recommendations for water supply, pollution control, groundwater, agriculture, fish and wildlife resources, outdoor recreation, electric

power, navigation, flood control, and institutional considerations. In December of 1969, the Corps' Office of Appalachian Studies completed a multi-volume planning report entitled **Development of Water Resources in Appalachia**. The study, which was carried out in response to section 206 of the Appalachian Regional Development Act of 1965, was directed at promoting regional growth within the thirteen-state Appalachian region. Water and related land resources matters addressed in the plan included aesthetics and recreation; electric power supply; mine drainage pollution; water supply; water pollution control; fish and wildlife resources; groundwater; and agricultural, forest, and land conservation and treatment. In 1974, the COE completed another multi-volume plan covering the Lower Mississippi River Basin, which includes the Jackson Purchase region of Kentucky. As with the two previous comprehensive surveys, the Lower Mississippi River plan inventoried resources within the area; assessed problems and needs; and proposed an overall framework program and recommendations covering recreation, water use, fish and wildlife resources, environmental and water quality, flood control, navigation, hydropower, sedimentation and erosion, land drainage, and archeological and historical resources. Many of the recommendations made in these plans have been or are being pursued through the Corps' ongoing programs and congressional authorizations. In addition to comprehensive surveys, the Corps completed the Lexington Metropolitan (Urban-Regional) Survey in 1978. This four-volume study proposed a plan for the development, utilization, and conservation of water and related land resources for the central Kentucky study area. Two other metropolitan surveys for Louisville and Cincinnati are authorized, but they have not been funded. Finally, the Corps has conducted or is authorized to conduct about twenty river basin investigations and surveys in the Commonwealth, most similar in nature and purpose to the ongoing Kentucky River and Tributaries Survey.

While only the lower portion of the Tennessee River basin, consisting of Kentucky Lake and direct draining tributaries, is located in Kentucky, the Tennessee Valley Authority (TVA) is involved in a number of other projects affecting various parts of the state. As an initial step in preparing a comprehensive water and related land resources plan for the Tennessee River basin, TVA completed the preparation of a regional resource and project baseline inventory in June 1981. Only limited work on the planning effort has occurred since that time.

A wide variety of miscellaneous interstate and independent agencies are also involved in planning for the development of Kentucky's water and related land resources. Examples of these groups include the Ohio River Valley Water Sanitation Commission (ORSANCO), the Mississippi River Parkway Commission, which is responsible for planning associated with the Great River Road, and the Tennessee-Tombigbee Waterway Study Commission.

Substate Planning Activities

Substate units of government in Kentucky have participated in numerous planning studies conducted by federal and state agencies. In addition, two significant water related planning efforts have been carried out by Kentucky's Area Development Districts

(ADDs). First, the ADDs prepared regional water and sewer development plans during the early 1970's. The plans, most of which have not been revised and are seriously out-of-date, identified water supply and wastewater treatment needs and proposed solutions. A similar effort aimed at documenting localized flooding problems and recommending corrective actions was completed in 1976 and 1977. Much of the information contained in the community flood damage abatement plans served as a basis for funding decisions made through the Community Flood Damage Abatement Program (CFDAP). While not as dated as the regional water and sewer development plans, the regional flood control plans are in need of major revision.

Water Resources Planning Comparision

One of the major charges given to the Task Force in its enabling resolution was to assist in the preparation of a state water plan. To provide the Task Force with a realistic perspective on planning and to aid in reaching conclusions and making legislative, organizational, and programmatic recommendations for planning in Kentucky, a comparison of factors that have resulted in the successful preparation of comprehensive water plans in adjacent or nearby states was developed.

To obtain the necessary comparative information, a survey that examined the status and nature of water planning in six adjacent states, as well as North Carolina, South Carolina, and Pennsylvania, was conducted. The nine states were selected for comparison because eight of the nine are located in the Ohio River Basin and, in effect, share the Ohio River and its tributaries with Kentucky. South Carolina was included because it recently initiated an intensive, short-term effort to prepare a formal state water plan.

Tables 19 and 20 provide a summary of the information that was obtained by the survey. While the tables are relatively self-explanatory, a brief review of the major components of comparison is necessary before presenting overall conclusions.

Plan Authority

Seven states, including Kentucky, have a legislative mandate to conduct water resources planning or to prepare a water plan. Three states rely on executive or administrative directives in preparing their water resources plans.

Plan Status

Kentucky and the other nine states have all undertaken water plan preparation at one time or another since 1967. Only seven states have completed or anticipate completing their water planning efforts. Further, only three of the states which have completed their planning operate programs designed to be kept up to date. It is expected that Illinois, South Carolina, and Tennessee will also operate ongoing planning programs after their state water plans are finalized.

Plan Philosophy

Three of the ten states, including Kentucky, categorized their planning philosophy as reactive in nature, while eight states employed an anticipatory approach. Two states,

TABLE 19

STATE WATER PLAN PROFILE

State Name	Plan Authority		Water Plan Status			Philosophy			Geographic Scope		Agency Responsibilities		
	Legislative	Executive	Under Preparation	Completed	Under Revision	Reactive	Anticipatory	Proactive	Statewide	Basin	Centralized	Lead Agency	Decentralized
Illinois	-	1980	1980	1983	-	-	X	-	X	-	-	X	-
Indiana	-	1977	1977	1980	-	-	X	-	X	-	-	X	-
North Carolina	X	-	1977	-	-	X	X	-	-	X	-	-	X
Ohio	X	-	1967	1977	X	X	X	-	-	X	X	-	-
Pennsylvania	X	-	1970	1983	X	-	-	X	-	X	X	-	-
South Carolina	X	-	1983	1984	-	-	X	-	-	X	-	X	-
Tennessee	-	1983	1983	1986	-	-	X	-	X	-	-	X	-
Virginia	X	-	1982	-	-	-	X	-	X	-	X	-	-
West Virginia	X	-	1973	1982	X	-	X	-	-	X	-	X	-
Kentucky	X	-	1971	-	-	X	-	-	-	-	-	-	X
	7	3	10	7	3	3	8	1	4	5	3	5	2

Ohio and North Carolina, indicated that their plans were deliberately intended to be both reactive (able to address unforeseen problems as they arise) and anticipatory (designed to direct or guide future development patterns and decisions). Pennsylvania classified its approach as proactive, that is, utilizing extensive public involvement in planning decisions.

Geographic Scope

Four states are preparing a single macro-level (statewide) plan. Alternatively, five states are preparing individual plans for each major river basin in their states. The choice of the appropriate spatial coverage of a water plan exerts a major influence on the time required to complete planning. Where planning has taken a number of years (Pennslyvania, Ohio, West Virginia), states have usually prepared separate plans for each major river basin.

Agency Responsibility

Three states have used or employed a centralized point of authority for plan preparation. Coordination with other agencies on direction and implementation approaches may or may not take place. A lead agency concept is used by five other states in their planning efforts. The lead agency concept involves choosing a single agency, from all participants, to direct a team of representatives from other involved agencies. Each participant is responsible for its particular resource area, with the lead agency coordinating all work efforts. Two states (Kentucky and North Carolina) reported decentralized or uncoordinated planning responsibility.

Resources

Resource requirements for planning include both funds and personnel. The range for personnel and costs is highly variable, with lower annual costs associated with preparing individual basin plans. However, the total cost for basin planning may be higher than statewide planning, because of the longer preparation time involved. Most often, the money for plan preparation is provided through an agency's operating budget as a separate line item.

Implementation

Preparation of a plan is meaningless unless the plan's recommendations can be implemented. In order to implement planning proposals, the states surveyed utilize a mix of regulatory, educational and technical assistance, and capital construction programs.

Three types of capital construction activities are most common among the surveyed states. Six states operate state-funded capital construction programs. Most often, the state programs are involved in the construction of water supply reservoirs. Eight states, including Kentucky, participate in federal-state cost-sharing agreements for a variety of water resource project purposes. Kentucky is a party to several Public Law 89-72 recreation cost-sharing agreements. Kentucky is not, however, participating in any water supply cost-sharing contracts. The third type of capital construction program operated at the state level provides assistance for wastewater facility construction. Seven states, including Kentucky,

through the state's Pollution Abatement Authority, currently provide wastewater treatment assistance for publicly-owned projects.

Plan Content

The eleven elements or components listed in Table 20 reflect the areas of concern that are almost always addressed as a part of state water planning. Based on the survey, there appears to be a reasonable correlation between the resources expended by each state and the number and significance of planning issues that are addressed. According to Table 20, state water planning priorities among the nine states (not including Kentucky) are as follows:

1. Municipal, Industrial, Rural Water Supply
2. Instream Flow Maintenance
3. Water Quality Maintenance
4. Flood Damage Abatement
5. Legal and Institutional Issues
6. Water-Related Outdoor Recreation
7. Land Conservation and Management
8. Fish and Wildlife Resources
9. Waterborne Transportation
10. Power and Energy
11. Natural, Historic, and Cultural Resources

Data Collection and Research

All but one of the states contacted specifically include a data collection program component among the individual elements addressed in their state water plans. The reason for including data collection is that it is absolutely essential to establish a data and information base if the state's objective is to identify emerging issues, problems, needs, and opportunities early enough to prevent, mitigate, respond to, or take advantage of them.

TABLE 20
State Comparisons

State Name	Planning Resources		Implementation Tools			Plan Content & Importance												
	Personnel	$/YR	Regulatory	Ed. & Tech. Assit.	Capital Construction	NHC	FDA	LCM	WT	WROR	F&W	WQM	M,I,R, WS	PE	LI	IF	Other	State Totals
Illinois Initial: Update:	9 P-Y 3 P-Y	265,000 100,000	X	X	3 Programs: $10m/yr State and Fed. cost-share, Wastewater Grant	-	M	M	-	m	m	m	m	-	m	M	Data collection, Research	3 Major 5 minor DC, R
Indiana Initial: Update:	10 P-Y 13 P-Y*	300,000 400,000	X	X	3 Programs; $5m/yr State, Fed. Cost-share, Wastewater Grant	-	M	M	M	M	M	M	M	M	M	M	Data collection, Research	10 Major DC, R
North Carolina Initial: Update:	10 P-Y 20 P-Y*	300,000 600,000	X	X	2 Programs: $2m/yr Fed. Cost-share, $30m/yr Clean Water Bond	m	F	S	F	S	m	m	M	F	M	M	-	3 Major 3 minor 4 Federal 2 Saate
Ohio Initial: Update:	2 P-Y 5 P-Y	90,000 150,000	X	X	2 Programs: $5m/yr State, $0.5m/yr Fed. Cost-share	m	M	m	-	m	m	M	M	-	m	m	Data collection, Research	3 Major 6 minor DC, R
Pennsylvania Initial: Update:	- 12 P-Y	- 360,000	X	X	2 Programs: $8-10m/yr State, $0.5m/yr Fed. Cost-share	-	M	M	m	M	m	M	M	m	-	M	Data collection, Research	6 Major 3 minor DC, R
South Carolina Initial: Update:	15 P-Y 6 P-Y	500,000 200,000	X	X	2 Programs: State construction, Fed. Cost-share	m	M	m	M	M	m	M	M	m	M	M	Data collection, Research	7 Major 3 minor DC, R
Tennessee Initial: Update:	6 P-Y 15 P-Y*	180,000 450,000*	X	X	1 Program: Wastewater Loan	m	m	M	m	M	M	M	M	m	M	M	Data collection	7 Major 4 minor DC
Virginia Initial: Update:	25 P-Y* -	750,000* -	X	-	2 Programs: Fed Cost-share, Wastewater Grant	-	F	S	S	S	S	M	M	m	m	M	Data collection	3 Major 2minor 1 Federal 4 State, DC
West Virginia Initial: Update:	- 4 P-Y	- 120,000	X	X	3 Programs: $9-10m/yr State, Fed. Cost-share, Wastewater Loan & Grant	-	F	F	F	S	S	M	M	F	m	M	Data collection, Research	3 Major 1 minor 4 Federal 2 State DC, R
Kentucky	-	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Totals Initial Range Update Range	2 - 15 P-Y 3 - 12 P-Y	90,000 - 500,000 100,000-600,000	10	9	State Construction: $5-10m/yr, Fed. Cost-share: $0.5m/yr, Wastewater Loan & Grant	4m	5M 1m 3F	4M 2m 1F 2S	2M 2m 2F 1S	4M 2m 3S	2M 5m 2S	7M 2m	8M 1m	1M 4m 2F	4M 4m	8M 1m	8 Data Collection 6 Research	3 - 10 Major 1 - 8 Major

*Figure includes some operational activities (data collection, regulatory functions, etc.)

M = Major.
m = Minor
F = Federal
S = Other State Agency

NHC — Natural, Historic, and Cultural Resources
FDA — Flood Damage Abatement
LCM — Land Conservation and Management
WT — Waterborne Transportation
WROR — Water Related Outdoor Recreation
F&W -- Fish and Wildlife
WQM -- Water Quality Maintenance
M,I,R WS -- Municipal, Industrial, Rural Water Supply
PE — Power and Energy
LI — Legal and Institutional Issues
IF — Instream Flow Maintenance

Conclusions

Based on the survey, the following conclusions can be made:

A. The expressed purpose of planning in the states that were contacted was to improve the quality of decision-making on program needs, economic development, and environmental quality. Accordingly, the states believe that planning results in tangible dollar savings that exceed the cost of the planning program.

B. All states agree that it does absolutely no good to begin to plan after a crisis has emerged. However, many of the states indicated that a crisis has often been the reason to undertake planning.

C. Planning is usually considered a low-priority, expendable activity. A significant gubernatorial or legislative commitment, in addition to an administrative priority on the part of involved executive agencies, is necessary if planning is to succeed.

D. The time horizons selected as part of the planning process must be sufficient to influence the future. Quite simply, the longer one waits to initiate action, the fewer the number of alternatives available.

E. Water management consists of six basic components: data collection, planning-related research, special studies, river basin planning, implementation studies, and implementation. The degree or level of activity for each is a function of legal requirements, institutional objectives, and resource availability.

F. Planning is ineffective without corresponding implementing authority, and an effective implementation program necessarily involves the use of a deliberately selected, balanced mix of regulatory, educational and assistance, and capital construction tools. As a caution, a state must be very careful not to become over-reliant on a single tool or approach. For example, regulations often become ends rather than means. Also, a bias toward reactive plans, which tend to produce a project-specific emphasis and to rely on capital-intensive structural solutions rather than policy-related or program initiatives, can prevent consideration of non-structural alternatives for flood control, water supply, and water quality problems.

G. The actual identification and selection of alternative program and structural and non-structural project solutions is largely controlled by the availability of funding. Consideration of financing mechanisms must be a fundamental component of state water plan preparation.

H. A state may not need to prepare a comprehensive water plan all at once. Priority issues can be selected and existing reports or plans revised or updated and included in an overall plan. Responsibility for plan preparation can be assigned to different agencies through the use of a lead or coordinating agency or group. Further, plan content should be a function of organizational arrangement. Finally, the cost and personnel required to prepare a plan is a

function of plan content, geographic scope, and time.

I. Data collection and supporting research must also be recognized as a fundamental component in water planning. Informed decisions cannot be made without access to data.

J. A water plan must be continuously updated to be of value. Furthermore, the plan must be flexible enough to respond to unforeseen events, needs, and problems, as well as to pursue its primary purpose of influencing future actions.

In summary, the states that were surveyed believe that federal support for water development, already reduced, will be further diminished. Given this prospect, the states generally believe that whatever needs to be done will have to be undertaken more and more by the states. Kentucky water management officials concur with this conclusion and are currently responsible for developing a unified interstate response that acknowledges the need for greater state and local self-sufficiency.

As evidenced by their actions, the nine states surveyed believe that the only intelligent way to assume increased responsibility for water management and ensure the optimum use of their fiscal and physical resources is to prepare a responsive, tailored plan that allows each state to address its individual needs and problems. Furthermore, preparation of individual state plans can potentially serve as a basis for preventing or reducing the severity and frequency of interstate conflicts over and competition for water.

APPENDIX I

A JOINT RESOLUTION establishing the Kentucky Water Management Task Force.

WHEREAS, water is essential to life; and

WHEREAS, Kentucky has more miles of streams than any state in the 48-contiguous states; and

WHEREAS, this abundant supply of water is not always available where it is needed or at the time it is needed; and

WHEREAS, the ever-increasing demand for water is placing an even greater priority on its importance;

NOW, THEREFORE,

Be it resolved by the General Assembly of the Commonwealth of Kentucky:

Section 1. That the Legislative Research Commission shall appoint members to serve on the Kentucky Water Management Task Force, the chairman of which shall be a member of the General Assembly. The task force shall consist of legislative members from both houses of the General Assembly; the agency head, or designee from each of the following agencies: Department for Natural Resources and Environmental Protection, Water Resources Authority of Kentucky, Flood Control Advisory Commission, Kentucky River Task Force, Kentucky Geological Survey, and Department of Energy; one member from each of the

following: Kentucky Municipal League, Kentucky Association of Counties, Kentucky Rural Water Association, Inc., and Kentucky Rivers Coalition; and such other members as the commission desires; however, the total membership of the task force shall not exceed 15 members.

Section 2. That the primary mission of the task force shall be the development of a plan for the total management of the state's water resource. The task force shall consider all of the uses of water and its quantity and quality in developing a management plan for the state's water. An important aspect of this state water management plan shall be an evaluation of the present organization of state government relating to water and a determination of the proper organization of state government for the management of the water resource. This management plan, along with all other findings, conclusions, recommendations, and legislative proposals shall be reported to the Legislative Research Commission not later than July 1, 1983.

Section 3. That each of the state agencies having a member on the task force shall assign a staff person to work with the task force to assure that the task force can accomplish its purpose. The role of the Legislative Research Commission staff shall be to coordinate the staff assigned by the state agencies.

Section 4. That the members of the task force shall

be reimbursed their expenses in attending meetings. It is estimated that the operation of the task force will cost approximately $24,000, such monies to be provided from the regular budget of the Legislative Research Commission.

APPENDIX 2

KENTUCKY WATER MANAGEMENT TASK FORCE

WORK PLAN AND SCHEDULE

I OBJECTIVE: REVIEW AND EVALUATE EXISTING STATUTES AND RESPONSIBILITIES FOR WATER RESOURCE MANAGEMENT.

STAFF ASSIGNMENTS: Hyland/Talley

II OBJECTIVE: REVIEW DATA ON WATER QUALITY, WATER QUANTITY, AND WATER USE IN THE COMMONWEALTH IN ORDER TO ASSESS GENERALLY WATER RESOURCE MANAGEMENT AND INFORMATION NEEDS.

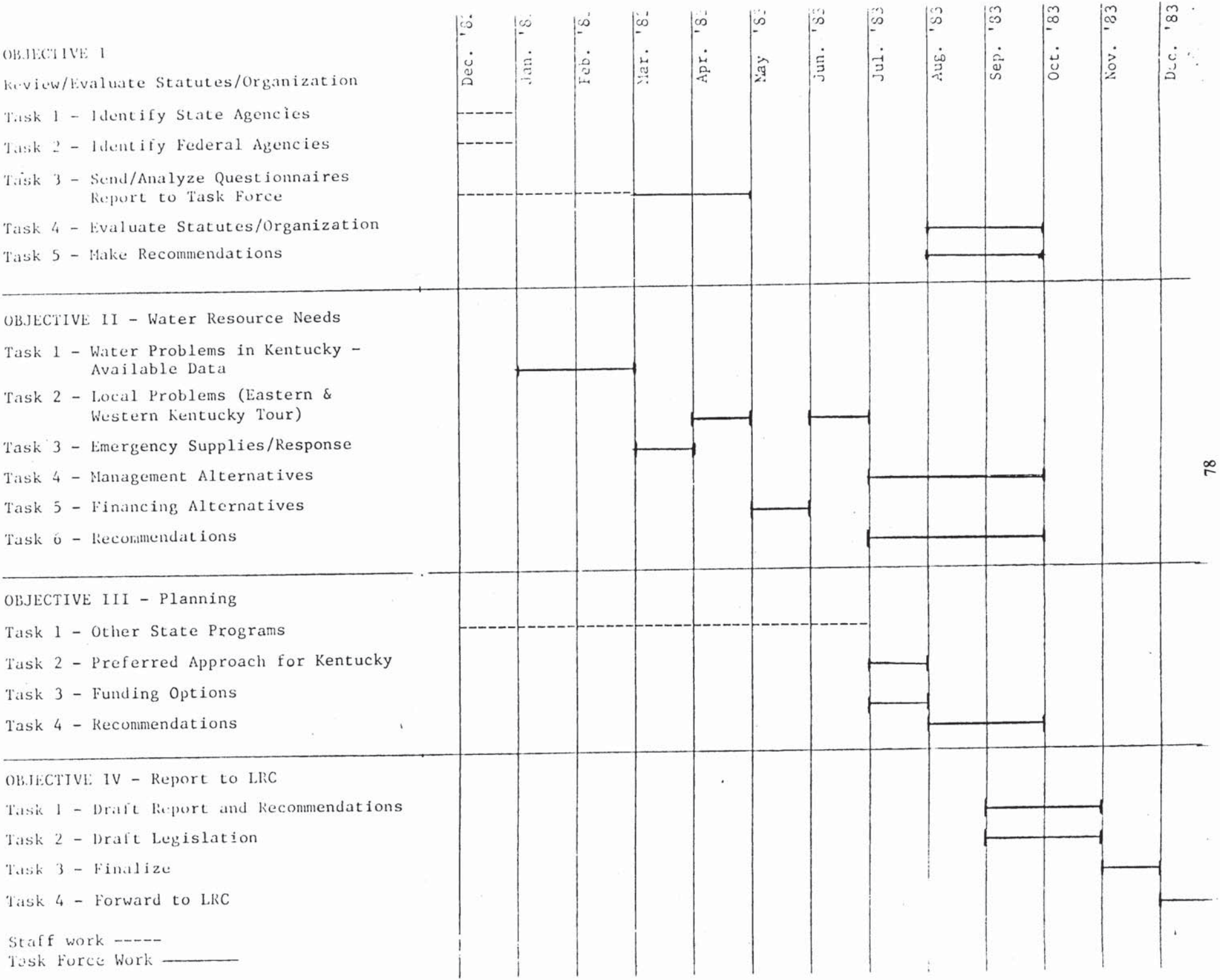
STAFF ASSIGNMENTS Fries/Dinger/Reed/Sauer/Hyland

III OBJECTIVE: DEFINE A PROGRAM AND PROCESS NEEDED TO PROPERLY PLAN FOR MANAGEMENT OF KENTUCKY'S WATER RESOURCE.

STAFF ASSIGNMENTS: Fries/Talley

IV OBJECTIVE: MAKE RECOMMENDATIONS TO THE LEGISLATIVE RESEARCH COMMISSION FOR CONSIDERATION BY THE 1984 GENERAL ASSEMBLY.

STAFF ASSIGNMENTS: Hyland/Talley/Fries/Dinger/Reed/Sauer


Dec. '8
Jan. '8
Feb. '8
Mar. '8
Apr. '8
May '8
Jun. '83
Jul. '83
Aug. '83
Sep. '83
Oct. '83
Nov. '83
Dec. '83
OBJECTIVE I
Review/Evaluate Statutes/Organization
Task 1 - Identify State Agencies
Task 2 - Identify Federal Agencies
Task 3 - Send/Analyze Questionnaires
Report to Task Force
Task 4 - Evaluate Statutes/Organization
Task 5 - Make Recommendations
OBJECTIVE II - Water Resource Needs
Task 1 - Water Problems in Kentucky -
Available Data
Task 2 - Local Problems (Eastern &
Western Kentucky Tour)
Task 3 - Emergency Supplies/Response
Task 4 - Management Alternatives
Task 5 - Financing Alternatives
Task 6 - Recommendations
OBJECTIVE III - Planning
Task 1 - Other State Programs
Task 2 - Preferred Approach for Kentucky
Task 3 - Funding Options
Task 4 - Recommendations
OBJECTIVE IV - Report to LRC
Task 1 - Draft Report and Recommendations
Task 2 - Draft Legislation
Task 3 - Finalize
Task 4 - Forward to LRC
Staff work -----
Task Force Work ————

OBJECTIVE I

I. OBJECTIVE: REVIEW AND EVALUATE EXISTING STATUTES AND RESPONSIBILITIES FOR WATER RESOURCE MANAGEMENT.

December - January -

Task 1. Search the statutes for agencies with water management responsibilities including water quality, water quantity, water use, wastewater treatment, flooding, and development.

Task 2. Identify federal agencies with water management responsibilities.

Task 3. Request the appropriate agencies to provide information on:

a) their statutory responsibilities for water management
b) the programs they have for carrying out these responsibilities
c) How they interface with other agencies with water responsibilities
d) problem areas they are aware of relating to overlapping, conflicting or deficient statutory responsibilities relating to water management, including enforcement and permitting
e) recommendations for eliminating conflicts or deficiencies in statutes.

February - Analyze Questionnaires

March - April - Report to Task Force

August - September -

Task 4. Evaluate the present organization of state government as it relates to water resource management for overlapping or conflicting authority and deficiencies in authority.

Task 5. Recommend changes in the organization or statutory responsibilities in state government relating to water management.

OBJECTIVE II

II OBJECTIVE: REVIEW DATA ON WATER QUALITY, WATER QUANTITY, AND WATER USE IN THE COMMONWEALTH IN ORDER TO ASSESS GENERALLY WATER RESOURCE MANAGEMENT AND INFORMATION NEEDS.

January

Task 1. Request the appropriate agencies to:

a) provide information on water quantity and water quality in surface and ground waters of the Commonwealth

b) pinpoint areas of existing or potential problems of ground water or surface water availability for:

domestic use
agriculture use
commercial use
industrial use
recreation use
fish and wildlife resource use
hydropower
navigation
other use

c) pinpoint surface and ground water resources of greatest concern from the perspective of point and nonpoint source pollution

d) provide available data and data needs regarding water availability for development of Kentucky's natural resources (coal, oil, gas, oil shale, etc)

e) provide available projections on water quality, quantity and use for a twenty-year period.

Speakers: Dr. John D. Kiefer
Assistant State Geologist
Kentucky Geological Survey

Natural Resources and Environmental Protection Cabinet

Letter to: Farmer's Home Administration
Soil Conservation Service
Department of Local Government
Agricultural Stabilization & Conservation Service

February (Continuation of Task 1, January meeting)

Speakers: Commerce Cabinet

Energy Cabinet

Transportation Cabinet

Department of Fish and Wildlife Resources

Flood Control Advisory Commission

Department of Parks

March - Task 2. Request DES and other appropriate agencies to address the issue of state agency response to emergency situations, including water shortages, flooding, and pollutant spills.

Speakers:

DES

Natural Resources and Environmental Protection Cabinet

April (Eastern Kentucky Tour)

Task 3. Request representatives from rural areas, water districts and local government to address problems associated with water quality, water supply, and flooding.

Organizers/Speakers:

Kentucky Flood Control Advisory Commission

Kentucky Rural Water Association

Kentucky Municipal League

Kentucky Association of Counties

Kentucky Rivers Coalition

Area Development Districts

Case Study: Kentucky River

James Rehmann, Planner
Lexington-Fayette Urban County Government

Robert Edens or other official
Kentucky-American Water Company

Don Hassell, Executive Director
Bluegrass Area Development District

May - Task 4. Look at alternatives for financing Kentucky's activities relating to water.

Speakers: Natural Resources and Environmental Protection Cabinet, Other States

Pollution Abatement Authority

Water Resources Authority

Public Service Commission

Bonds person

TVA

June (Western Kentucky Tour)

Organizers/Speakers: Kentucky Flood Control Advisory Commission

Kentucky Rural Water Association

Kentucky Municipal League

Kentucky Association of Counties

Kentucky Rivers Coalition

Speakers:

Dr. Nick Crawford
Western Kentucky University

Dr. Jim Howard
Howard Consultants, Inc.

July - September - Task 5. Look at alternatives for meeting Kentucky's water needs and for managing the quality and quantity of its water resource.

Task 6. Recommend action for addressing Kentucky's information and program management needs relating to water availability and water use including appropriate funding mechanisms.

OBJECTIVE III

III OBJECTIVE: DEFINE A PROGRAM AND PROCESS NEEDED TO PROPERLY PLAN FOR MANAGEMENT OF KENTUCKY'S WATER RESOURCE.

December - June	Task 1.	Examine approaches employed by other states to develop water plans and programs.
July	Task 2.	Outline an approach for water resources planning appropriate for Kentucky and associated costs.
	Task 3.	Examine alternatives for funding water resource planning in Kentucky.
August - September	Task 4.	Recommend action to provide for the development of a plan to manage Kentucky's water resource.

OBJECTIVE IV

IV OBJECTIVE: MAKE RECOMMENDATIONS TO THE LEGISLATIVE RESEARCH COMMISSION FOR CONSIDERATION BY THE 1984 GENERAL ASSEMBLY.

September - October	Task 1.	Prepare a draft report and recommendations.
	Task 2.	Draft any recommended legislative changes.
October	Review initial draft	
November	Task 3.	Finalize and approve the report, bill drafts, and recommendations.
December	Task 4.	Forward the report and recommendations to the Legislative Research Commission by December 1, 1983.

APPENDIX 3: Minutes of the Kentucky Water Management Task Force Meetings

KENTUCKY WATER MANAGEMENT TASK FORCE

Minutes of the First Meeting
of the 1982-83 Interim

September 24, 1982

The Kentucky Water Management Task Force held its first meeting Friday, September 24, 1982 convening at 1:30 p.m. in Room 104 of the Capitol Annex. The meeting was called to order, and the secretary called the roll.

Present were:

Members: Senators Fred Bradley and Joe Lane Travis; Representatives Pat Freibert and Henry List; Deputy Secretary David Drake, Energy Cabinet; Secretary Jackie Swigart and John Smither, Water Resources Authority, Natural Resources and Environmental Protection Cabinet (NREPC) were represented by Jim Fries; Dr. John D. Kiefer, Kentucky Geological Survey; Dr. G. L. Simpson, Flood Control Advisory Commission (FCAC); Mayor Harold Cooley, Kentucky Municipal League; Mr. Hank Graddy, Kentucky Rivers Coalition; Mr. Bob Hicks, Kentucky Associations of Counties; Mr. Gary Larimore, Kentucky Rural Water Association; and Mr. Terry Regan, Kentucky River Task Force (KRTF).

LRC Staff: Peggy Hyland, Brooks Talley, Dan Risch, Jim Curtis, and Stephanie Kirtley.

Other Staff: Bruce Sauer, Energy Cabinet; and James S. Dinger, Kentucky Geological Survey.

Dr. Jim Peyton, Deputy Director for Research, welcomed all the members and staff to the task force and briefly explained House Concurrent Resolution 62. He then added that the resolution directs that the chairperson of the task force be a legislator; therefore, upon agreement of the legislative members, Representative List will serve as the Chairperson and Senator Bradley as Vice-Chairperson.

Representative List explained House Concurrent Resolution (HCR) 62. He stated the purpose of HCR 62 was to try and resolve jurisdictional problems that developed prior to the 1982 session and to study problem areas of water quality and water quantity and the state programs that address these.

Jim Fries, Natural Resources and Environmental Protection Cabinet, discussed the cabinet's current activities in the area of surface and ground water resource planning. Mr. Fries said that the cabinet operates primarily under two statutes, KRS Chapter 151 and KRS Chapter 224. KRS Chapter 151 is a state water resources law that was last substan-

tially amended in 1966, and it is very specific legislation that identifies individual programs and performance standards; the cabinet relies to a small extent on regulations to implement the legislation. On the other hand, KRS Chapter 224 provides only broad enabling language, and the cabinet has promulgated numerous regulations to implement the basic programs.

Mr. Fries continued by saying that the cabinet's work principally is in the area of flood damage abatement, water related outdoor recreation, water quality maintenance, and water supply. He said that the NREPC has indirect responsibility for other activities with other state agencies and the federal government. Mr. Fries said the largest resources planning activity in the Commonwealth is the water quality management program, which has been ongoing for sometime. Water resources studies were done in 1945, 1958, and 1973.

Mr. Fries said that KRS 224.033 requires the cabinet to prepare and develop a comprehensive water management plan and KRS Chapter 151 indicates the purposes and content of the water management plan.

Mr. Fries said that a biennual report, 305(b) report, is required to be prepared for the U. S. Congress by the Commonwealth on the status of water quality and quantity problems in Kentucky. A copy of the 1982 report was distributed to all members.

Representative List asked Mr. Fries what public laws have been passed that mandated the cabinet to deal with the water problems. Mr. Fries responded that the management of water resources is the state's responsibility and that PL 93-573, Safe Drinking Water Act, and PL 92-500 Clean Water Act are the two most important public laws. There are numerous federal regulations and standards on water quality that must be met; there are few on water resources.

Secretary Drake asked Mr. Fries if there exists anywhere an inventory of the Commonwealth's water resources. Mr. Fries stated the information is available, but it is not compiled into a single source or report. Mr. Fries added that in 1972 the cabinet prepared ten river basin plans to locate and identify point source dischargers of waste water and to project treatment level that would allow state water quality standards to be met, but these reports are now substantially out of date.

Mr. Graddy asked Mr. Fries to comment on the National Pollutant Discharge Elimination System (NPDES) program. Mr. Fries said that Mr. Bill Gatewood, Chief of Permits, has been assigned the responsibility of preparing the necessary regulations. Mr. Fries also commented that Kentucky is still responsible for certifying every NPDES permit that is

issued in the state. He said that the Environmental Protection Agency (EPA) prepares a draft permit in response to a permit application from industry with some limits and discharge numbers and submits that to the cabinet, and they review it and certify that if permitted at that level state water quality standards will not be violated. NREPC returns that certification to EPA, and EPA issues the permit. He said if Kentucky assumes NPDES then the NREPC will issue permits. Secretary Drake commented there is intense interest in economic development in the eastern Kentucky coal fields and there has never been a determination as to whether the water resources of eastern Kentucky will support the types of activity all the way from power generation to synthetic fuels that the people would like to see develop there. He said someone needs to determine that because no ones knows what kind of water resources are available to support industry in eastern Kentucky.

Mr. Simpson asked if any studies had been done on sources of water in the event of an atomic attack. Mr. Fries replied that the Corps of Engineers is making preliminary investigations to determine the availability of water in a national emergency. They are also in the process of inventorying all water users in the Commonwealth, industrial and public, and obtaining information about those users. Representative List commented that at a future committee meeting the Division of Disaster and Emergency Services (DES) would be invited to address the issue of water supply in a national emergency.

Dr. Kiefer asked about a water use study being conducted with the U. S. Geological Survey. Mr. Fries stated that the study is being discontinued because of lack of federal funds. Mr. Fries stated the information obtained to the present time would contribute to a report that is prepared every five years by the U. S. Geological Survey entitled "Estimated Water Use in the United States."

Representative List then asked each Task Force member to comment on his or her interest in water resources.

Mr. Regan, a member of the KRTF, gave a brief summary of the task force. Mr. Regan said that HCR 8 created the task force to be an advisory committee to the Legislative Research Commission on all aspects of the Kentucky River. He also said that House Bill (HB) 147 enacted by the 1982 General Assembly permits the Secretary of the NREPC to negotiate an agreement with the Corps for continued navigation on the Kentucky River and to use state funds appropriated by the General Assembly to fulfill this agreement. Mr. Regan said there were several interim recommendations made by the KRTF to the Legislative Research Commission. Those were: (1) it is the Corps' responsibility to maintain operations on locks 1-14; (2) the Corps retain full responsibility for the protection of navigational traffic on the Kentucky

River; (3) the Corps remain responsible for major repairs on the Kentucky River; (4) the Corps repair lock and dam number 7, which is in the worst shape; (5) the Corps provide NREPC with an engineering report and an individual cost of repair for each lock and dam; and (6) in the event there is failure to get funding of the locks, the Commonwealth establish a lease agreement with the Corps of Engineers to maintain the locks and dams on the Kentucky River.

Dr. Simpson spoke on behalf of the FCAC. The Commission has some recommendations on flood problems. They are: (1) remove the Department of Transportation's (DOT) exemption from KRS 151.250 for permits from NREPC for construction across any stream or in the floodway of any stream; (2) the Kentucky Housing Corporation should require all homes in designated flood areas to be flood proofed; (3) the Kentucky Building Code (KBC) should be amended to cover single family dwelling; (4) the KBC should be amended to include flood-proofing regulations developed by the Corps of Engineers; (5) the KBC should be amended to include a certification program for local building inspectors who enforce the state building code; and (6) the Federal Emergency Management Agency (FEMA) is currently enforcing a policy of applying 75/25 percent matching requirements on disaster assistance funds and local governments are having difficulty certifying the local match at the time of disaster; the state should establish a floating loan fund for this purpose in the amount of $5 million.

Dr. Kiefer stated that the Kentucky Geological Survey was interested in a total study of the Kentucky River Basin and has initiated a small study with the U. S. Geological Survey. A study on the ground water supply in eastern Kentucky has lost its funding. Dr. Kiefer stated there was a preliminary study done in Johnson and Martin counties, in eastern Kentucky, on water from coal mines. He said the preliminary study indicates this may be a source of quality water for auxiliary or emergency supplies.

Mayor Cooley said the concern of municipalities is for water supply. Mr. Hicks stated he would like to see a survey done on the availability of water in the Kentucky River Basin. Water districts and sewer districts are also of concern.

Mr. Larimore indicated his interest in small water systems and auxiliary supplies in emergencies.

Mr. Graddy indicated that the Kentucky Rivers Coalition is interested in water quality. He stated there appears to be a multitude of laws to insure clean water but they are not being enforced. He also added that the laws do not address the water problems that are ongoing at the present time.

Representative List told the committee they would receive a questionnaire prepared by staff for them to address the issues and goals of the committee during the interim. He also wants included on the questionnaire suggestions from persons or organizations to present testimony in the area of water management.

Mr. Fries indicated that recommendations from the cabinet are that water resources authority between agencies, as well as within NREPC, be reviewed; that the role of the federal government is significant, especially in the area of water resources development, and should not be overlooked; and that the task force not develop a plan but study issues and make recommendations to the General Assembly, including addressing financial aspects. Mr. Fries said that the Water Resources Authority recommends that the task force review state financial assistance for water development, flood control, and water supply.

Representative List thanked all the committee members for their input into the organizational meeting.

The committee agreed to try to meet a certain day of each month.

The meeting was adjourned at 3 p.m.

KENTUCKY WATER
MANAGEMENT TASK FORCE

Minutes of the Second Meeting
of the 1982-83 Interim

October 29, 1982

The Kentucky Water Management Task Force held its second meeting, Friday, October 29, 1982 convening at 1:30 p.m. in Room 104 in the Capitol Annex. Representative Henry List, Chairperson, called the meeting to order, and the secretary called the roll.

Present were:

Members: Representative Henry List, Chairperson; Representative Pat Freibert; Senator Fred Bradley; Mr. Bob Hicks; Mr. Bruce Sauer, representing David Drake; Dr. John Kiefer; Mr. Gary Larimore; Mr. Terry Regan; Dr. G. L. Simpson; and Mr. John Smither.

Guests: Dr. Richard Ausness, Professor, U. K. College of Law; Andrew Cammack, Environmental Quality Commission.

LRC Staff: Peggy Hyland, Brooks Talley, Dan Risch, and Stephanie Kirtley.

Other Staff: Jim Fries; John Reed; James S. Dinger.

The minutes of the previous meeting were approved.

Dr. Richard Ausness, Professor, U. K. College of Law, gave a presentation on the state's water law and suggestions for its amendment. Dr. Ausness said originally in the eastern United States the allocation rules that prevailed were called the riparian system, which allowed those who owned property along a lake or water course to make use of the water that went by. Dr. Ausness stated that those rules were not efficient, particularly in times of water shortages. One problem with the system was that only riparian owners could make use of the water. Therefore, those who did not own land along the water course could not legally use the water. He stated another problem was that the allocation rule is called "reasonable use" and that can mean almost anything. The problem was that water rights under this system were insecure, indefinite, and water was not available to some potential water users.

Dr. Ausness stated in response to these limitations of the riparian system a number of states in the eastern United States have enacted permit systems and Kentucky is one of them. He said the main purpose was to make water available to nonriparian owners. Dr. Ausness said a secondary purpose

for some states was to set up a regulatory structure to have more control of the use of water; a water user would apply to a state regulatory agency for a permit to make use of a specified amount of water. The water rights system in the western United States is the "prior appropriation" system. This is the "first come, first served" system of rights to water. It involves the use of a permit, a requirement that the proposed use be beneficial or non-wasteful, and that the water right be defined specifically in terms of the amount of water being used, the time and place of the water use, and the purpose for which the water will be used. The user who first makes use of the water has a vested right to continue making that use.

Dr. Ausness then focused on Kentucky's law. He pointed out several problem areas.

(1) The standards upon which water is granted is not clear. Although "beneficial use" is implied, it should be specifically defined. He said once all the water is appropriated there is no method to reappropriate it under an absolute standard of "beneficial use" since one use is not weighted against another.

(2) There is a question on whether or not NREPC has the power to deny a permit if water is available. Dr. Ausness said he interprets the statute that NREPC would have to issue a permit even though it might be desirable to reserve some of the water for future use. A good plan for water management would be helpful.

(3) It is not clear whether or not the state has the power to maintain instream flow and minimum groundwater levels in order to prevent an undesirable environmental impact. He said probably the power is there because there is some language providing that the withdrawal of water will not be detrimental to the public interest. Dr. Ausness said that concept could be used to preserve navigation, recreational interest, etc; however, it needs to be spelled out because "public interest" is a broad concept.

(4) The statute exempts domestic users, agricultural users including irrigation, which is a major consumptive use of water, and water used in some steam generating plants. Also exempted is water injected underground connected with the production of oil and gas. He said probably each one of these exemptions can be justified but collectively the only groups being regulated are industrial and manufacturing users. The exemption of these other large users raises a serious question as to the effectiveness of the permit system.

Dr. Ausness said one alternative to exemptions by category would be to have an exemption based on the amount of water used; the amount could be set relatively high. The

standard most frequently used is an exemption for users of 100,000 gallons a month or less.

Mr. Jim Fries, NREPC, commented that according to Kentucky regulations those using 10,000 gallons per day or less are exempted from permits.

Dr. Ausness added that one of the positive aspects of this exemption based on water usage is that it can be raised or lowered by regulation.

Dr. Ausness stated one problem with having a large number of exempted users is that permit holders are placed in some jeopardy because the exempt users are free to increase their use at any time because they are not being regulated. The power to regulate exempt users during water shortages is not at all clear in the statutes.

(5) Kentucky statutes do not specifically address the duration of a permit. He said one alternative is to use a perpetual permit as opposed to one of limited duration. However, if there is no way to terminate or transfer permits once all of the water is allocated there is no way to change the allocations. Another alternative is to establish permits of a fixed duration. The problem here revolves around the fact that the activity or life of the physical plant might exceed the duration of the permit and have no guarantee of renewal. Dr. Ausness indicated he thought overall that a permit of limited duration was preferable to a perpetual permit.

(6) The authority of NREPC at the time of a water shortage is not clear. NREPC can temporarily allocate between water users and restrict permit holders; it is not clear if nonpermitted water users can be regulated. A priority system for use of water during shortages needs to be developed.

Representative List asked how planning and zoning related to permits for water use. Dr. Ausness responded that there are different people doing the regulating. He said the state agency will regulate the water, local government the zoning, and the concerns are different.

(7) Kentucky statutes have some very fine planning provisions, however, there is no explicit coordination between the planning and the permit system. He said in order to get a permit one should have to show that the proposed use is not inconsistent with the state water plan. Dr. Ausness said the state water resource laws include groundwater.

Representative List asked Dr. Ausness if he had copies of his earlier study on water law for the task force. Dr. Ausness said he had a few copies he would supply. Repre-

sentative List thanked Dr. Ausness for appearing before the task force and presenting such valuable information.

Mr. John Smither, Director, Division of Water, discussed the state's water quality planning, water resource and availability planning, and public water supply planning. Mr. Smither stated the water quality planning is determined by the Clean Water Act. Section 201 of that act relates to planning for wastewater treatment facilities, Section 208 relates to the development of a point and nonpoint source water quality management plan, and Section 314 relates to planning for publicly owned lakes.

Under the 201 program, 1981 amendments require communities to pay the full cost of facility planning with partial reimbursement later. Mr. Smither stated that the new stipulations present a major obstacle because small communities will not be able to come up with upfront money which is required before obtaining construction financing.

Mr. Smither said the 208 point and nonpoint source plan is scheduled to be completed in June 1983. He said the plan is to address municipal and non-municipal point source discharges from mining, agriculture, silvaculture, and construction activities. He added it remains the cabinet's commitment to use nonregulatory programs for agriculture, silvaculture, and construction activities. In addition, the 208 program will be used to reclassify the state's streams and rivers. Once that program terminates funds available under Section 205(j) of the Clean Water Act will be used to continue the reclassification. Federal funding for publicly owned lakes under Section 314 has been discontinued.

Mr. Smither stated that the cabinet is also charged with protecting the Commonwealth's water resources from pollution. He added that the division is responsible for the following: development of technical water quality standards, issuance of construction permits, certification of National Pollutant Discharge Elimination System (NPDES) permits and dredge and fill permits, licensing of operators of treatment facilities providing technical assistance to industrial plants, establishing and operating a water quality monitoring network, and operation of a major portion of the federal construction grant program.

Mr. Smither said the funding for the program will be $1.6 million from the state and $750,000 from the federal government making a total of $2.35 million. He said the Commonwealth receives four percent of the funds appropriated and allocated to Kentucky to administer the construction grant program. He said for fiscal year 1982, Kentucky received $34.5 million in grant funds, of which $1,380,000 is assigned for program management.

Mr. Smither said only about $4.5 million is being

directly expended by the Division of Water for Kentucky's water pollution control efforts and indirectly another $33.1 million is expended to construct wastewater treatment systems as a result of the federal grant program.

Mr. Smither concluded by saying the state should consider alternative funding mechanisms in order to continue to improve and maintain water quality because of the decrease in federal support.

Representative List asked if the Clean Water Act is responsible for grants relative to dredging or is there another source of funds. Mr. Smither replied that most of the dredging is done by the Corps of Engineers under contract. Mr. Regan added that the Corps will only dredge if it is a navigable stream and water supply does not enter into it.

On the drinking water program, Mr. Smither said Kentucky received enforcement responsibility for the Safe Drinking Water Act in 1977. He said the responsibilities are the following: administration and program development, surveillance and technical assistance, permitting, laboratory certification provision of a central laboratory services, operator training and certification, enforcement and compliance, and data support.

Mr. Smither said that they are currently revising their drinking water regulations to clarify definitions, and include public notification requirements, adoption of trihalomethanes regulations, introduction of sodium monitoring, and monitoring for corrosivity. The state received in fiscal year 1983 $232,700 from the federal government and $733,150 from the state (which includes $190,000 in fees).

Mr. Smither briefly discussed the water resources program. He said the water resources activities arose from KRS Chapter 151. He said these activities cover the areas of floodplain management and flood damage abatement, dam safety, the Kentucky Wild Rivers Program, water withdrawal permitting, and permitting and monitoring stream construction.

Dr. Kiefer asked Mr. Smither what type of enforcement they have. Mr. Smither said in a dam inspection they do have enforcement powers and they can breach the dam.

Mr. Smither and Mr. Fries pointed out activities in other states relating to financing local programs for water related purposes.

Representative List thanked Mr. Smither for appearing before the committee.

The committee agreed on the draft work plan as to the

mission of the task force and asked that the tasks be further developed with a time line.

The committee tentatively set Tuesday, November 30 at 1:30 p.m. as the next meeting date.

The meeting was adjourned at 3:25 p.m.

KENTUCKY WATER MANAGEMENT TASK FORCE

Minutes of the Third Meeting
of the 1982-83 Interim

November 30, 1982

The Kentucky Water Management Task Force held its third meeting Tuesday, November 30, 1982 convening at 1:30 p.m. in Room 104 of the Capitol Annex. Representative Henry List, Chairperson, called the meeting to order, and the secretary called the roll.

Present were:

Members: Representative Henry List, Chairperson; Representatives Pat Freibert and Roy Joe Head; Senator Fred Bradley; John Smithers; Dr. G. L. Simpson; Terry Regan; Bruce Sauer, representing David Drake; Mayor Harold Cooley; Bob Hicks; Gary Larimore; and Jim Dinger, representing John Kiefer.

Guests: Mr. Tim Weston, Deputy Secretary for Resource Management, Department of Environmental Resources, State of Pennsylvania; Tony Sholar, Chamber of Commerce; Paula Moore-Carson, Office for Policy and Management, Finance Cabinet.

Natural Resources Staff: Jim Fries.

LRC Staff: Peggy Hyland, Brooks Talley, and Stephanie Kirtley.

The minutes of the October 29 meeting were approved.

Mr. Tim Weston, Deputy Secretary for Resource Management, Department of Environmental Resources, gave a presentation on the water law and water resources planning in Pennsylvania. Mr. Weston explained the department's organization. In 1976, a water resources management team was established within the Department of Environmental Resources to coordinate water policy decisions by pulling representatives from the different bureaus involved in water areas. So many issues cross program boundaries that this mechanism is extremely important.

Mr. Weston said that resource planning is not an academic exercise. He said they view plans in Pennsylvania as a basis for making decisions and taking action. He also said it is a way to be organized in advance of a crisis. Plans are a tool, not an end in themselves.

Mr. Weston gave a brief history of water planning in the state. He said a water management plan was first pre-

pared in 1913 due to a drought in Pennsylvania. An inventory was completed, but the plan was dropped for 50 years until the major drought in the 1960's. The legislature directed that the 1913 plan should be updated. Mr. Weston said the plan took 12 years to complete. It is not construction oriented like some plans. It basically identifies problems and resources, projects demands, and screens solutions. It focuses on physical, legal and institutional difficulties. It took $1 million annually to complete the plan mainly because of the detailed work involved.

Mr. Weston said that the plan included a data inventory of water resources including an assessment of stream gauges records and a determination of flood flows and low flow frequency durations. He said they catalogued all the dams, reservoirs, and lakes in detail as to ownership, size, available capacity, current operation, and uses. They developed a computerized water data system to know where the water was being used and routed. They also developed a systematic way of looking at groundwater monitoring wells and studied well drilling records that had been collected since 1956.

A series of subbasin assessments were made including natural resources and economic and social factors. A detailed analysis of every water supply system was made for adequacy, future problems, and possible solutions, including consolidations of systems.

Mr. Weston said that they surveyed the industries, power companies, and agriculture users to determine how much they were using and consuming, and projected use including changing technologies. The survey of water users took four years. In addition, flood damage and protection, outdoor recreation, wild and scenic river potentials, water quality problems and erosion sedimentation problems were examined. The water plan looks at the total perspective of water quality, water resources, and flooding not individual program solutions to one aspect of the water problem. Legal and institutional assessment were also made, and new areas of legislation proposed. Concurrently with the water plan, a water quality plan was being developed and has led to reforms in water quality programs. Integrating water quality and quantity is a key problem. In addition to the water resources management team, a Water Resources Policy Advisory Committee was established and helped develop a pending water resources management code.

Mr. Weston said that the plan uncovered many problems, including inadequate supply, poor quality, and incompatible uses.

Currently pending before the legislature is a water resource management code. Part of the code is a mandate for continuous water planning to institutionalize updating of

the plan. It also requires the water quality and water resource plan to be one plan. The code would formalize the Regional Advisory Commissions set up in each watershed to advise the department on the plan. Local priorities relating to water resources prevail unless there is an overriding state interest.

Mr. Weston said that according to the pending legislation, they are required to balance the withdrawal uses with instream uses, assess instream needs and come up with a policy for managing instream uses. Mr. Weston said one of the most important factors in the legislation is a mandate from the legislature to prepare a basin water budget to balance the water among users and distribute the water accordingly. He said one of the requirements of the management code is registration for water use for users taking more than 100,000 gallons per day in any 30 day period. In addition, in more troubled areas that 100,000 gallons could be lowered to 10,000 gallons per day. He said the bulk of the water users are domestic well owners and fall outside the 10,000 gallons per day. Mr. Weston indicated that industry came up with a proposal that if a user was taking more than 100,000 gallons of water per day and wanted to expand or have a new use, the user would have to consult with the Department of Environmental Resources in order to pinpoint potential problems of water supply or incompatible use.

Mr. Weston said that the water resource management code also has provisions for water resource protective areas where the use is now threatened to exceed the available supply. The department would be allowed to propose a groundwater or surface water protected area. Upon approval of that proposal through an elaborate process, all use over 10,000 gallons per day would come under a water allocation permit system. Permits would be for 25-50 years and would be renewable. Pennsylvania's bill also contains special provisions for dealing with drought emergencies. Most states are weak in this area.

Mr. Weston said that they have established a water project development plan that identifies potential projects; the state water plan helps determine which projects get priority. In addition, they have a grant and loan program for small water companies. All grants and permits must be consistent with the state water plan.

In response to a question on the Regional Advisory Boards, Mr. Weston said originally anyone interested sat on the board. The new legislation streamlines the composition to balance interests.

In response to the question of what type of permits are presently required for water withdrawal and what type of permits are being proposed, Mr. Weston said that the state regulates all water withdrawals from springs, streams,

lakes, and ponds by public water supply systems only and not other withdrawers. Groundwater withdrawals are not covered at all. He added that the Delaware River Basin Commission regulates all uses by everyone over 100,000 gallons per day and all groundwater use over 10,000 gallons per day. The Susquehenna River Basin Commission regulates all users over 100,000 gallons per day. The current proposal is that the state continue its regulation of public water supply systems and expand it to groundwater users and have the authority to create protective areas to regulate all users over 10,000 gallons per day with no exemptions.

Mr. Smither asked Mr. Weston if their department attempted to implement plan provisions as they went along and if Pennsylvania is looking into any type of financing approaches that would supplement the reduction of federal funds. Mr. Weston replied that they did implement provisions as they went along because of the continued day-to-day problems. The planners were the program people; this integration is essential. Pennsylvania is looking into other areas of financing. Presently, they have a $300 million bond issue for small water system restoration. It is a loan program with full interest.

Representative List commented on the problem of brine from oil and gas drillings. Mr. Weston said that brine disposal is a serious problem. He suggested that re-injection into the same formation and even the same well is technically feasible and is the preferred disposal alternative. However, it interferes with gas well drilling operations. Strict restrictions on underground injection of fluids aggravated the situation in Pennsylvania since it discouraged oil and gas drillers from obtaining permits. Pennsylvania is currently working on the problem.

Mr. Weston said Pennsylvania spends about $1.5 million annually on water planning. The proposed new package would cost $2-$3 million annually with a staff of 40-50 people (planning, engineering, regulatory, and technical assistance). Costs of running the entire state program could be paid for by regulated water users by a fee of $15 per 500,000 gallons per day of water used; this is not currently the situation. In developing the water plan the staff consisted of about 18-20 in planing, 6 in conservation and 20 in flood control engineering. Most of the work on the water plan was done in-house except for the computer modeling of the Delaware Basin, special groundwater studies, and individual project sites and special environmental studies.

Representative List thanked Mr. Weston for his informative presentation to the committee members.

The committee discussed the task force work plan as to their mission set forth by House Resolution 62. The work plan was adopted by the committee.

Representative List announced there would be no December meeting.

The meeting was adjourned at 3:25 p.m.

KENTUCKY WATER MANAGEMENT TASK FORCE

Minutes of the Fourth Meeting
of the 1982-83 Interim

January 31, 1983

The Kentucky Water Management Task Force held its fourth meeting Monday, January 31, 1983 convening at 1:30 p.m. in Room 104 of the Capitol Annex. Representative Henry List, Chairperson, called the meeting to order, and the secretary called the roll.

Present were:

Members: Representative Henry List, Chairperson; Representative Pat Freibert; Senator Joe Lane Travis; John Smithers; Dr. John Kiefer; Bruce Sauer, representing David Drake; Bob Hicks; Gary Larimore; and Hank Graddy.

Guests: Donald Challman, Bill Gatewood, and Jon Simpson, Natural Resources and Environmental Protection Cabinet (NREPC); Peg Dillinger, Winnie Hepler, Paddlewheel Alliance; and Andrew Cammack, Environmental Quality Commission.

LRC Staff: Peggy Hyland, Brooks Talley, Dan Risch, Don Stosberg, Barbara Rhoads, and Stephanie Kirtley.

Other Staff: Jim Fries, John Reed, and Dr. James Dinger.

Press: Dick Brown, WKYT-TV; and Al Cross, The Courier-Journal.

Dr. John Kiefer, Assistant State Geologist, Kentucky Geological Survey, showed slides and gave a presentation on the geology of Kentucky relative to the problems of water quality, water quantity, and water use. Dr. Kiefer explained Kentucky's situation by regions.

Mississippi Embayment

The Mississippi Embayment Region consists of the eight-county Jackson Purchase area and the adjacent portions of Trigg, Lyon, and Livingston Counties. Deposits consist mainly of soft, poorly cemented sands, gravels, clays, and silts.

The region contains an abundance of water. Surface water supplies can be found in the Mississippi, Ohio, Tennessee, and Cumberland Rivers and several large lakes. Surface water is of fairly good chemical quality with less than 300 parts per million (ppm) dissolved solids (the safe

drinking water standard is 500 ppm or less). The depth of fresh water is greater than anywhere else in the state, and groundwater supplies of 1,000 gallons per minute (gpm) are common. Wells yielding more than 200 gpm can be obtained almost anywhere. The groundwater is commonly low in dissolved solids (less than 200 ppm) and soft.

The low flows and discharges of the rivers are large, and with the combined surface and groundwater supplies, the area is capable of supplying water needs for a highly industrialized region.

Water problems are relatively few. Some of the valley areas are subject to extensive flooding. This causes heavy damage to agricultural areas in the flood plains. There has also been some loss of wetlands to agriculture and industry.

As in other agricultural areas, there is danger of contamination of surface and shallow groundwater supplies by non-point source pollution from fertilizers, herbicides, and pesticides.

One potential danger is the earthquake danger. A moderate to intense earthquake could reduce the supply of water needed to fight fires, operate utilities, and provide services in general. As is the case throughout the state, there is a need to take a serious look at emergency or auxiliary supplies.

Mississippian Plateaus

Mississippian-age rocks of western and central Kentucky form two extensive plateaus. The outer plateau is underlain by soluble limestone and is characterized by tens of thousands of sinkholes, sinking streams, streamless valleys, numerous caverns and many large springs. It is within this region that Mammoth Cave National Park is located.

An upland plateau, underlain by a sequence of alternating sandstones, shales, and limestone, is present between the lower sinkhole plain and the western Kentucky coal field. Springs are common in this area.

A complex series of faults in the area complicate the groundwater system and pose problems in locating reliable water supplies. They also make it very difficult to locate suitable sites for such things as injection wells and waste disposal. Much of the groundwater is associated with this fracture porosity.

Surface water supplies for the region can be provided by several of the larger streams such as the Green and Barren Rivers. Because most of the drainage is in the subsurface, there are large areas with virtually no surface streams. The groundwater not only provides water supplies

for much of the area but it also contributes much of the surface water supply in the form of baseflow to the streams.

Contamination of groundwater in the region has been caused by animal and other agricultural and solid wastes on the karst (sinkhole) plain as well as discharge from septic tanks and direct discharge of sewage into underground drainage systems. Several major interstate commerce routes cross the area, and the danger of contamination from accidental spills of hazardous and other wastes is great.

Another major problem caused by the failure to recognize the nature of these underground storm sewers is flooding resulting from blocking subsurface drainage.

The susceptibility of karst areas to pollution was brought home recently by the hepatitis epidemic in Meade County.

Throughout much of the area, groundwater supplies sufficient for domestic purposes (100-500 gallons per day) are available. Some springs in the area can yield more than 1,500 gpm, and such large supplies are probably available throughout much of the area. Unfortunately the lack of data or short-term data on many of these springs can be grossly misleading.

The groundwater is generally of the calcium bicarbonate or calcium sulfate type with total dissolved solids of less than 300 parts per million. However, the composition has been altered in several areas where salt water has entered the fresh water zone.

Western Kentucky Coal Field

The western Kentucky coal field is a region where the bedrock consists primarily of shale, siltstone, and sandstone of Pennsylvanian age. These rocks exceed 3,000 feet in thickness in some areas. Locally, many of the Pennsylvanian sandstones are good sources of groundwater.

The western Kentucky coal field is drained by the Ohio, Green, and Tradewater Rivers. In addition to water in these rivers themselves, thick stream deposits of sand and silt provide sources of groundwater for some areas.

Water quantity problems result from the complex geology, and although many areas will provide sufficient water for moderate domestic supplies (500 gpd) at depths of less than 300 feet, adjacent areas may provide little water at all. In addition, faults within the area further complicate the geology, and yields in some areas are totally unpredictable because of the faulting.

Some of the deep sandstone aquifers such as those in

Muhlenberg County are excellent sources of groundwater, as much as 300 gpm. However, they may receive little or no recharge from the surface and may rapidly be depleted.

Salt brine disposal problems do exist. Hundreds of small active, inactive, and abandoned oil and gas pools lie within this region.

Another factor which affects the groundwater regime, but has yet to be assessed, is the hundreds of abandoned underground coal workings in the area.

After discussing water problems in the area with several agencies and individuals, three major problems were consistently noted. These were surface mining, flooding, and erosion of farm lands. All three are interrelated in many cases.

Ohio River Valley

The Ohio River forms over 666 miles of the boundary of Kentucky on the north and west can be considered the state's major supply.

The Ohio River Valley contains water available for use in three interconnected systems: on the surface, in the bedrock valley walls, and especially in the porous sands and gravels which fill the valley.

The major danger of the Ohio River Valley is contamination of the aquifer and of the river itself by industrial pollution.

Other problems include flooding which has been and will continue to be a problem along the Ohio. Bank erosion is also a serious problem which has become increasingly prominent over the past decade. An unusual, but serious, situation exists in the Louisville area where groundwater levels have risen as much as 32 feet since 1972. Levels have temporarily stabilized, but this is due primarily to a temporary drop in annual rainfall.

Blue Grass and Knobs Area

The Blue Grass is located in central and northern Kentucky. The inner Blue Grass is an area of gently rolling topography. The region is pitted with sinkholes and caverns, and although the streams on the upland surface appear to provide normal surface drainage, large portions of the area have no surface drainage.

Groundwater in the area occurs in caverns and solution openings in these limestones, although extensive cavity development is generally limited to about 100 feet below land surface. Some wells will produce about 300 gpm near

large stream valleys, about 50 gpm in the rolling uplands and near the smaller stream valleys, and 5 gpm or less on hilltops and steep slopes. Large springs are common.

The outer Blue Grass is an area of relatively steeper topography caused by interbedding of shale with the limestone layers. Sinkholes, solution cavities, open fractures, and springs are present in many areas though not as common as in the inner Blue Grass. Extensive solution development has taken place near the more fractured zones such as along the Kentucky River fault system.

Groundwater is not as abundant in the outer Blue Grass. In both inner and outer Blue Grass areas groundwater use is limited mostly to domestic and stock supplies and a few small public supplies. Recharge to water-bearing zones in the shaly limestones may be slow, and wells may become unreliable during periods of extended drought. Zones of relatively high sulfate water occur in some areas, and during periods of drought extensive pumping allows these waters to move into wells. This results in a number of complaints about wells becoming sulfurous.

Because of the karst nature of the area, it is difficult to seal ponds to retain water. In addition, the underground drainage systems may result in inadequate surface runoff to keep ponds filled. Recharge to springs is shallow, and they are, therefore, highly susceptible to contamination.

Many of the water problems of the Blue Grass are those typical of karst areas and are similar to those previously discussed under the Mississippian Plateaus. As noted, flooding caused by blocking of underground drainage has been a problem in Lexington and Frankfort. Nonprofit source pollution from agricultural activities has been a problem in several areas, and accidental spills have resulted in contamination in others. Such problems can be particularly severe in karst areas because of the fracture and solution porosity and the rapid recharge to wells and springs.

The outer edges of the Blue Grass are characterized by a belt of hills and ridges developed on shales of Devonian and Mississippian age. This horseshoe-shaped belt is referred to as the Knobs area. These Devonian shales are a major interest because not only do they serve as reservoir and source rocks for large natural gas deposits but they also comprise Kentucky's oil shale resource. Very little groundwater can be found in these shales, and when present, it is generally of poor quality. Natural contamination from the shale can affect groundwater quality in the underlying rocks. A more serious problem involves water and the mining of oil shale. The oil shale contains numerous trace elements, and information is inconclusive to date as to what effect mining, reclamation, and disposal of spent shale

wastes might have on surface and groundwater.

The green Mississippian clay shales are relatively impermeable and contain little groundwater. The shales do contain occasional thin beds of siltstone or sandstone which may transmit some water. Kentucky's infamous Maxey Flats low level nuclear waste disposal site is located in these shales, and it is these minor sandstone beds which are the cause of much of the problem. It is important to note that if handled properly these shales are impermeable and can provide excellent lining material for solid waste landfills.

Eastern Kentucky Coal Field

The eastern Kentucky coal field contains the most rugged topography in the Commonwealth. Locally, some of the sandstones may provide yields of moderately good quality water sufficient for domestic supplies.

The steep rugged topography and the lack of water of sufficient quality or quantity are the major natural drawbacks to the area. These problems have been compounded by the human activities.

With the exception of the Kentucky, the Licking, and the Big Sandy Rivers, most of the surface waters of the eastern Kentucky coal field do not have sufficient low flows to provide reliable water supplies. Even in the case of the major streams mentioned, it is questionalbe whether flow will be adequate during times of drought, and this may limit future industrial growth.

The groundwater supply is complicated by the complex geology. Aquifers in the traditional sense of a widespread water-bearing unit do not exist. Much of the porosity is due to fractures rather than intergranular porosity. Much of the shallower groundwater is readily susceptible to surface pollution transmitted along the fractures, and where deeper groundwater can be found, recharge from the surface is very slow or non-existent, making both sources unreliable.

While some of the causes of dry or contaminated wells can be traced to blasting and surface mining, much of the problem is simply the result of overpumping and lack of sufficient rainfall and recharge.

Many consider surface mining and its accompanying problems of reduced water quality and increased sedimentation to be the major water-related problems in eastern Kentucky.

Problems caused by acid mine drainage, while not found in all areas have resulted in major water-quality problems in others.

Perhaps overtaking surface mining as the number one problem in eastern Kentucky is the production and disposal of oil field brines. Initial production of many oil wells in Kentucky tends to decline rapidly. Less than one-fourth of the available oil may be produced in primary production. The wells are then converted to "stripper" of "secondary-recovery" wells where oil is produced by injection of water or other fluids into the rock to force or strip the oil out. Unfortunately, this also results in producing increasing amounts of natural brine along with the oil. This may amount to 20 barrels or more of brine for one barrel of oil. According to a recent survey, there are over 14,000 stripper wells in the Commonwealth.

Other problems which should at least be noted are:

(1) Many individuals and towns have inadequate sewage treatment and solid waste disposal facilities, and this contributes to deterioration of surface and groundwater quality.

(2) Few of the towns have considered auxiliary supplies in the event of drought or interruption of their primary supplies. A preliminary study conducted by the Kentucky Geological Survey and the U.S. Geological Survey indicates that water from abandoned deep coal mines offer some potential.

(3) Forestry practices - Discussions with personnel from the U.S. Forest Service indicate that these problems have been greatly reduced, but improper timbering practices can cause serious problems of erosion and sedimentation and result in deterioration of water quality.

(4) Acid rain - A major problem in some areas, there is insufficient evidence to document whether this is a problem in eastern Kentucky. In one case a sample of a snowfall across the border in West Virginia reportedly gave a pH of less than 3.0 (5.5 to 6.0 would be normal and 7.0 is neutral).

(5) Flooding - Flooding, especially flash flooding, has been a constant problem in eastern Kentucky. The Department of Disaster and Emergency Services is participating in a flash flood early warning system.

(6) Barium - 1 ppm drinking water standard. Barium has been measured at 12 ppm in a groundwater supply for a school in Buckhorn, and approximately 15 wells in a 5 square mile are have barium above the drinking water standard.

Following his presentation, Dr. Kiefer made several recommendations. Numerous individual studies addressing specific problems or special areas need to be undertaken. Two that KGS has proposed to undertake in cooperation with

the U.S. Geological Survey are:

(1) A comprehensive study of the entire Kentucky River Basin. Water problems affecting this area could have a serious impact on the water needs of Lexington, Richmond, and Frankfort as well as many other areas in eastern Kentucky and the Blue Grass which rely on the Kentucky River for water supplies; and (2) A study of the hydrogeology of the eastern and western Kentucky coal fields. There is no comprehensive or well coordinated effort to evaluate the water needs of the state as a whole and to set priorities. What we need first and foremost is a comprehensive water management plan.

Dr. Kiefer said another way of obtaining data on groundwater is through a reporting or certification process for water well drillers.

Because of the time, John Smither, Natural Resources and Environmental Protection Cabinet, agreed to give the report of the Division of Water on water quality, water quantity, and water use at the next meeting.

The committee made suggestions for a committee tour. A tentative agenda will be drawn up for committee approval.

The next meeting has been scheduled for February 24 at 10 a.m.

The meeting was adjourned at 4:10 p.m.

KENTUCKY WATER MANAGEMENT TASK FORCE

Minutes of the Fifth Meeting
of the 1982-83 Interim

February 23, 1983

The Kentucky Water Management Task Force held its fifth meeting on Wednesday, February 23, 1983, convening at 10 a.m. in Room 104 in the Capitol Annex. Representative Henry List, Chairperson, called the meeting to order and the secretary called the roll.

Present were:

Members: Representative Henry List, Chairperson; Senator Fred Bradley; Dr. G. L. Simpson, Terry Regan, Dr. John Kiefer, Mayor Harold Cooley, Gary Larimore, and Hank Graddy.

Guests: Leon Smothers and Don Challman, Natural Resources and Environmental Protection Cabinet (NREPC); Tom Grissom, Commerce Cabinet; Walter Gaffield, Department of Parks; Jim Kennedy, Department of Local Government; Peter Pfeiffer and Don McCormick, Department of Fish and Wildlife Resources; Bruce Siria, Dick Cirre, Ron Hyatt, and Jerry Tolliver, Transportation Cabinet; Etta Ruth Kepp, Environmental Quality Commission; Margaret Loeb and Gertrude Nahinsky, Save Our Streams; Ralph Madison, Kentucky Audubon Council; Tony Sholar, Kentucky Chamber of Commerce; Greg Guess, Kentucky Petroleum Council; Tim Murphy, Kentucky Rivers Coalition; and Paula Moore-Carson, Finance Cabinet; General Wilbur Buntin, Department of Military Affairs.

LRC Staff: Peggy Hyland, Brooks Talley, Dan Risch, and Stephanie Kirtley.

Other Staff: John Reed, Jim Fries, and Bruce Sauer.

Press; Lola Potter, WKYT-TV; Al Cross, Courier Journal; and Channel 36.

The minutes of the January 31 meeting were approved.

Representative List explained the materials in the committee folders.

Mr. Leon Smothers, Assistant Director, Division of Water, NREPC, reported to the committee on water quality, water quantity, and water use in Kentucky. He outlined the types of information available from the Division of Water. This includes: (1) water withdrawal data although several major withdrawal activities are exempted from permit requirements by statute; (2) finished water quality data for public and semipublic water supplies; (3) ambient stream

monitoring data from a series of gauging stations around the state that provide physical, chemical, and biological information about the conditions of Kentucky streams; (4) outstanding resource water candidates. This study is being performed by the Nature Preserves Commission (NPC) and a draft should be available in the next month. It will list some of the streams that have outstanding water quality. Mr. Smothers said that they hope to make designations in about one year. (5) A preliminary listing of priority water bodies with significant water quality problems; (6) point source pollution with the most recent studies being done in 1975 and 1976 on the Kentucky River. Mr. Smothers said that the Cabinet is in the process of assuming delegation of the National Pollution Discharge Elimination System (NPDES) that will provide them with further information in the future on discharge monitoring reports that are required from all dischargers. (7) Coal field studies. Two studies by the NPC and the Division of Water will look at the specific parameters related to discharges from surface mining operations; (8) a report on delineating drinking water aquifers in the state is being prepared by the Kentucky Geological Survey; (9) a study of potential contamination of surface impoundments by toxic chemicals is also being conducted; and (10) the Department of Surface Mining Reclamation and Enforcement has begun a study using Landsat satellite information and computers to produce information on landslopes, rainfall data, and soil erosion. Mr. Smothers said they have other studies ongoing relating to groundwater pollution in Bowling Green and Rio Springs, and nonpoint source pollution from silviculture, and agricultural practices.

Mr. Smothers discussed surface water availability and showed slides on average daily flows and problem areas. Consumptive use in the Green River is 1/3 of the 7-day, 10-year low flow discharge. The Salt River has a consumptive use that is ten times the 7-day, 10-year low flow discharge. In the Kentucky River Basin consumptive use is 50-100 percent higher than the 7-day, 10-year low flow; the Licking River use is five times what the 7-day, 10-year low flow is; and in the Big Sandy, steam electric plants withdrawal exceed the low flow discharge. Permits are issued on the condition that as low flow is approached use must cease; this is difficult to enforce. Two major problem areas for water supply are the Green River and Lexington areas. If all of the proposed synfuel plants were built a serious strain would be placed on the Green River. Because of the rapid rate of growth in Lexington, water availability may be a problem in the foreseeable future with increased industrial withdrawals. Water availability problems exist also in portions of the Big Sandy and the Ohio. In the Ohio, water discharge permits are conditioned on the 7-day, 10-year low flow. If flow is below this level, the dilution that is required to maintain water quality is insufficient. Water withdrawal exemptions in the statute are a problem.

For 30 percent of the water withdrawn the Division can put stipulations on the permits that the water withdrawers do not withdraw water when the levels are low. However, on agriculture and domestic uses, and steam electric power plants, the Division has no control.

Mr. Smothers indicated there are about 1,000 miles of navigable water in Kentucky with a potential for 210 more miles if the locks on the Kentucky and Green River are operated.

Mr. Smothers outlined the distinction between nonpoint and point source pollution. He then cited groundwater problem areas as Bowling Green (seeps and spills into solution channels including septic tanks and underground storage systems), Lousville (septic tank contamination), Magoffin County (contamination from oil and gas well brine and increased pumping rate), and Harlan county (underground mining leading to the drying up of wells and acid mine drainage from abandoned mine lands).

Mr. Smothers said the public is not aware of the seriousness of water problems. In a poll conducted by the NREPC, 71 percent of those asked said water pollution was a small or no problem; 79 percent said water pollution had not gotten worse; the major causes of water pollution they cited were coal mining (51 percent), industries and factories (50 percent), and septic tanks (44 percent); and 85 percent said farming caused little or no pollution. In 1977, the Division of Water ranked water pollution sources in the state as 1) agriculture; 2) septic tanks; 3) mining; 4) solid waste disposal; and 5) construction. Oil and gas brine discharges and sewage treatment discharges are also problems. Agriculture problems include use of pesticides, nutrients from fertilizers, and erosion.

Mr. Smothers indicated that there is very little data available on water availability for natural resources development.

The only studies available for projecting water use are areawide studies such as the Lexington Urban area conducted by the U.S. Army Corps of Engineers and nationwide studies such as the second national water assessment.

Mr. Smothers said that in order to resolve some of the problems, the Division needs to expand their water use planning capability, develop a method for determining accurately the amounts of water for agriculture, steam electric plants, oil and gas users, and to develop a staff to go out and monitor the users to verify their water withdrawal amounts. He said that the Division needs to improve its water use modeling capabilities for projecting demand and developing allocation systems. He also said a groundwater planning and regulatory program was needed. Alternatives for water

facility financing need to be examined to provide community water supply storage, repair water supply dams, and support the nonpoint source pollution abatement program. A public relations and information program is needed because the public does not know the severity of water pollution problems in their areas. A regulation has been filed to establish an oil and gas brine disposal regulatory program.

Mr. Larimore indicated that financing for water storage is a big problem across the state. In response to a question by Hank Graddy, Mr. Smothers said the Division is studying water availability for oil shale to update its 1978 data. Mr. Smothers said that the Division does attend speaking engagements, has a few leaflets, and attends other public gatherings on the problem but it does not have a specific public relations program. Representative List suggested that the Cabinet put together a proposal for a public information program for the task force to consider.

The committee recessed for lunch.

After lunch, Mr. Bruce Siria, Director, Division of Mass Transportation, Transportation Cabinet, reported to the committee on his Division's functions related to water. Mr. Siria said that the Division's chief mission is to provide the Commonwealth with a total transportation system that will meet every increasing transportation demand for all modes of commercially navigable waterways. He said Kentucky's economy is closely tied to its ability to produce and transport coal and other major bulk commodities. Kentucky's waterway averages 65 million tons of commodities annually, 70 percent of the tonnage is Kentucky products. The tonnage is expected to increase to 87 million tons by 1990 and 100 million tons by the year 2000.

Mr. Siria said they have limited staff in the area of water transportation to monitor all navigation related studies. Mr. Siria said they are currently establishing an inventory of all navigation facilities and projected future use that will enable them to address waterway uses impacting Kentucky. Mr. Siria said they are working closely with and support the efforts of the Corps of Engineers on the problems of Kentucky waterway systems.

Mr. Tom Grissom, Executive Assistant to the Secretary, Commerce Cabinet, reported to the committee. He said the Cabinet supports the efforts made by the agencies within the Cabinet to improve Kentucky's capabilities for managing water. He said that Kentucky's annual public expenditures for water resources are over $160 million, with the major investor in Kentucky water resources being the Corps of Engineers ($77 million). He said these federal funds flow through state agencies to serve the functions of environmental protection, flood control, recreation and wildlife, economic development, and public health. Mr. Grissom made

the following suggestions: (1) do a status report, by watershed, based on current water data utilizing the NREPC's geographic information system; (2) consider legislation that would provide capital for financing water resource development through the Water Resource Authority and the Pollution Abatement Authority; (3) become more knowledgeable about water utility rate structures in Kentucky and determine if Kentucky's formulas and guidelines are realistic and if some economics can be achieved through coordination and consolidation; (4) give proper attention to ground as well as surface water resources; and (5) review the nature and extent of coordination between the state water agencies and the University of Louisville and the University of Kentucky, which have mechanisms for receiving grants for water resource, research, and planning.

Mr. Grissom said that more conflicts will occur as economic development accelerates changes in land use, intensifies statewide water utilization and magnifies our dependence on water for survival. He added that because Kentucky's tourism industry depends on the volume, quality, productivity, and beauty of our natural waters, resolving these conflicts will be of great importance.

Mr. Walter Gaffield, Staff Assistant, Department of Parks, said that 13 of Kentucky's 15 state resort parks have lakes in them or adjacent to them and in most cases are the principal attraction, and that 9 of Kentucky's 27 recreation parks and historic sites have bodies of waters. He said that in 1981, tourism in Kentucky generated $1.8 billion into the state's economy.

Mr. Gaffield said that some of the problems threatening the tourism benefits include solid waste dumped into streams, siltation from mining, agriculture, and improper sewage disposal involving sewage treatment plants and septic tank systems. He said that funding may be necessary the next biennium to upgrade several of the Department of Park's sewage treatment plants. Some beaches have had to be closed because of the water quality; enforcement of standards is a problem. Development of some lakes has been limited because of siltation.

In concluding, Mr. Gaffield said that the maintenance and improvement of water quality in Kentucky is vital to the Department of Parks, the tourism industry, and the state's economy.

Mr. Don McCormick, Assistant Commissioner, and Mr. Peter Pfeiffer, Director, both of the Department of Fish and Wildlife Resources, spoke to the committee. Mr. McCormick said that the Department of Fish and Wildlife has been involved with water management since its beginning and is charged with protecting and conserving the wildlife of the Commonwealth to ensure a continued supply of wildlife to the

state.

Mr. Pfeiffer said that Fish and Wildlife has complete jurisdiction of 22 lakes. Its programs related to water quality involve fish kill investigations and a water pollution surveillance program. Since 1977, over 600,000 fish valued at $122,000 have been lost from water pollution and confined animal feeding operations, domestic sewage, and chemical spills have been problems.

Mr. Pfeiffer said that one of their greatest concerns regarding the availability of ground and surface water relates to the rapidly vanishing wetland habitat. From 1957 to 1977 there was a 30 percent decline in the resource in western Kentucky.

The greatest number of incidences of water pollution, as reported by county conservation officers, has occurred in the upper Cumberland and Kentucky River drainage from mining, sewage and oil production.

As far as projections for the future, Mr. Pfeiffer said that based on the rate of increase in fishing license sales over the past decade, there should be a 40 percent increase in the demand for fishing opportunities by the year 2000. Mr. Pfeiffer provided the committee with a list of program and individual reports for their review.

Mr. Jim Kennedy, Director, Development Finance, Department of Local Government, said that the most significant program in Local Government concerning water are the Appalachian Regional Commission Program, the Area Development Fund, and the Land and Water Conservation Fund. He said it is the department's responsibility to develop a comprehensive outdoor recreation plan that addresses water resources as they relate to recreation activities.

The Land and Water Conservation Fund is used for the planning, acquisitions, and development of needed land and water areas and facilities. He said they have $1,107,000 available for fiscal 1983 that will be used for outdoor recreation development.

General Wilbur Buntin added that Local Government has gotten together with the Commerce Cabinet and NREPC to try to identify and alleviate some of the long term water problems associated with disasters. He said they will need legislative assistance in order to make some progress and they will come back to the committee at a later date with a proposed funding plan for the future.

Mr. Bruce Sauer, representing David Drake, Energy Cabinet, reported on Kentucky's energy development activities and related water needs. Mr. Sauer said that coal production and utilization, oil and natural gas drilling, and

hydroelectric power production all have their unique water requirements and impacts on water quality. Also, because Kentucky's economy depends heavily upon energy resource development, it requires the maintenance of a water quantity and quality infrastructure adequate to support the growth in industries and the demands of ancillary business organizations. Because the Energy Cabinet's activities address water quantity, quality, and use, the Cabinet divided the activities into segments.

The Department of Energy Research and Demonstration has made major contributions to water related issues including: (a) identification of operating parameters of coal conversion, oil shale and tar sand projects; (b) preliminary environmental impact and socioeconomic impact assessment for the synfuel projects; (c) oil shale regulations review and comment; and (d) feasibility study for a hazardous waste treatment industrial park.

The Department of Energy Production and Utilization has worked in three major areas related to water issues. These are: (a) Hydroelectric Power Potential and Environmental Impact Analysis; (b) Small Operator's Technical Assistance Program; and (c) Administration of a grant to the Kentucky Rural Water Association.

The Kentucky Energy Cabinet's evaluation of hydroelectric's potential in Kentucky has identified several sites that are actively under development. The nature of Kentucky's projects will not create a diversion of water flow from its original path.

The Small Operator's Technical Assistance Program provides technical expertise in reclamation to the coal operators least able to afford such expertise.

The Kentucky Rural Water Association has received $46,400 in grants from the Kentucky Energy Cabinet for this fiscal year through the Kentucky Energy Conservation Plan for the implementation of a leak detection program and for water system operator training. This project will reduce energy consumption through distribution losses while improving the efficiency of rural water distribution systems.

The Institute for Mining and Mineral Research of the University of Kentucky is the prime contractor for energy research and development to the Energy Cabinet. Specific projects addressing such problems as sediment pond design, slope stability, revegetation, artificial regeneration of trees and hydrology/sedimentology have been pursued.

The Energy Cabinet made the following recommendations for the task force to consider: (a) continue support for the funding of studies through the Energy Cabinet that address the water quantity and quality issues associated

with synfuel projects; (b) increase attention to the problems associated with water distribution and sewage disposal in energy production areas such as eastern Kentucky; (c) consider the need for improved technology transfer and education for the mining industry with regard to hydrological issues; and (d) support responsible brine control regulations that establish well-researched standards and cost effective control procedures.

Mr. John Reed, representing Stuart Brown, reported for the Flood Control Advisory Commission. He said that the Commission was created by the 1980 General Assembly to serve as a public body to advise the Governor and the LRC on flood problems and prevention and related matters in the Commonwealth. He also said that they have made recommendations to the U.S. Department of Agriculture concerning soil and water conservation and are presently working with the Department of Housing, Buildings, and Construction to incorporate the Corps of Engineers' floodplain regulations into the state building code. He said they are working with the Division of Water and the Federal Emergency Management Agency in selecting counties for national flood insurance studies and developing some type of public program for local communities. Mr. Reed recommended to the committee that they reactivate the Community Flood Damage Abatement Program in the Division of Water and look at a water resource authority to provide funds for water systems and floods.

Representative List thanked all the speakers for their presentations.

The committee discussed the optional agendas for an April tour of eastern Kentucky. The committee chose Option A.

The next meeting has been scheduled for Tuesday, March 29.

The meeting was adjourned at 3:15 p.m.

KENTUCKY WATER MANAGEMENT TASK FORCE

Minutes of the Sixth Meeting
of the 1982-83 Interim

March 29, 1983

The Kentucky Water Management Task Force held its sixth meeting on Tuesday, March 29, 1983 convening at 1 p.m. in Room 104 in the Capitol Annex. Representative Henry List, Chairman, called the meeting to order, and the secretary called the roll.

Present were:

Members: Representative Henry List, Chairman; Senator Fred Bradley; Representative Pat Freibert; John Smither; Terry Regan; Dr. John Kiefer; Bruce Sauer, representing David Drake; Mayor Harold Cooley; Bob Hicks; and Hank Graddy.

Guests: General Wilbur Buntin, Tom Little, and Ronn Padgett, all of the Department of Military Affairs; Richard Shogren, and Bill Burger, of the Natural Resources and Environmental Protection Cabinet (NREPC); Andrew Cammack, Environmental Quality Commission; and Bill Wolejsza, Department of Local Government.

LRC Staff: Peggy Hyland, Brooks Talley, Dan Risch, Barbara Rhoads, Gay Trevino, Scott Payton and Stephanie Kirtley.

Other Staff: Jim Fries and John Reed.

Press: Channel 36; Channel 18; Al Cross, Courier-Journal; and Herb Sparrow, Associated Press.

The minutes of the February 23rd meeting were approved.

General Wilbur Buntin, Director of the Division of Disaster and Emergency Services (DES), Department of Military Affairs, introduced Tom Little and Ronn Padgett, also of the DES.

General Buntin briefed the committee on the state's ability to respond to water emergencies, including shortages, accidental spills and flooding. General Buntin said that one of the biggest problems facing Kentucky is having a good and adequate supply of water. General Buntin stated that the statute covering his agency in regard to short term response to water emergencies is adequate and in fact a model. However, the statutes covering other agencies are not adequate for long term response to water problems.

General Buntin indicated that a committee has been appointed with representatives from the DES, NREPC, Department of Local Government, and the Commerce Cabinet to report on the statutory responsibility of each agency and ways of funding the long term water problems in the state.

Tom Little, Director of Operations, briefed the committee on the responsibility of DES to respond to emergencies. Mr. Little stated they are to coordinate response for any kind of an emergency whether it be a flood, hazardous material spill or whatever. He added that it is their responsibility to care for those immediate needs after an emergency. There are 14 area coordinators across the state. Mr. Little said that in a typical water emergency they may work with the State Fire Marshal's Office, NREPC, Coast Guard, U.S. Environmental Protection Agency (EPA), local governments, or anyone that has the role of preventing any further damage or cleaning up and protecting people from what has occurred. He added they also deal with the media to assist in keeping the public informed. Mr. Little said they are not an enforcement agency and they need no more legislation to deal with water problems or emergencies. They deal strictly with short-term emergencies. It is their job to help communities get water who need it, through locating a water pump the locality might lease, arranging for water to be hauled in, loan pumps and pipe, etc.

Representative Freibert asked with whom the long-term authority rests. Mr. Ronn Padgett, Director of Plans and Recovery Program, replied that the authority is scattered among agencies. Mr. Padgett said that one of the problems is having money for long-term and interim activities. Even disasters now require a 25 percent local match for federal monies, and these are difficult for local communities to raise. He added that one option would be a state loan authority; another would be to set aside a portion of community development block grants for water problems.

Representative List asked in an emergency how large a community could the National Guard get water to at one time. Mr. Padgett replied that the National Guard does not have the equipment to haul water for a large community. Also, use of federal equipment for civil disasters requires approval by the Pentagon every 48 hours. DES has identified sources of trucks to haul water, such as dairies, and places to rent pumps, etc. Although sufficient water to drink can be hauled, water for all functions could not likely be provided. The Federal Emergency Management Agency (FEMA) is organizing an integrated emergency management system that will require a plan for providing food and water for every county in the state in case of any disaster. A rough plan for moving people into any county now exists and coop students will be used to further define various degrees of shelter in each county.

Mr. Hicks asked if it is practical to utilize a fire department and their equipment for water. General Buntin replied, no, because those pumps are not designed to be run 24 hours a day but are developed for high pressure for a short period.

Representative Freibert asked Mr. Padgett to expand on their role in regard to the oil spill on the Kentucky River. Mr. Padgett said they sent coordinators to the scene of the accident to determine the extent of the problem. They notified Natural Resources, who was responsible for the cleanup, and the State Fire Marshal's Office of the spill and assisted in keeping the public informed. He added that a lot of the oil settled on the banks of the Ohio River and at the bottom of the river.

Mr. Richard Shogren, NREPC, explained to the committee their responsibility in relation to water emergencies. He said the NREPC response to water emergencies is shared by the Division of Water (DOW) and the Environmental Response Team (ERT). The ERT serves as a coordination and communication center for the Cabinet and assists DES in water and other emergencies which involve the Cabinet.

Mr. Shogren stated that the DOW also responds to water emergencies and assumes the responsibility for cleanup and enforcement actions against individuals and companies that created the emergency. Mr. Shogren said that with the approval of the Water Resources Authority, the DOW may allocate a public water supply and restrict water usage in the event of unusual water shortages. Generally, technical assistance is provided to local public water supplies where water shortages occur and allocation decisions are made by local agencies.

Mr. Shogren indicated the weakest response authority exists for groundwater shortages. These shortages are usually localized problems affecting private wells in coal mining and oil and gas drilling areas. The major difficulty with groundwater problems is identifying the cause of a loss of groundwater or pollution of a groundwater aquifer. He said that the Cabinet has met with the U.S. Geological Survey and the Tennessee Valley Authority to develop a coordinated program to document groundwater resources and problems.

In regard to flooding, Mr. Shogren said it is their responsibility for the protection from potential health hazards which may exist due to pollution of public water supplies or wastewater treatment systems. He said that public water supply systems may have problems associated with pollution or excessive sediment at locations of water intakes.

Mr. Shogren stated that other problems are associated

with sanitary sewer systems which may become inoperable during periods of flooding because the systems are located at low elevations that are more susceptible to flooding, causing improperly treated sewage to be released in the flood waters. In these cases, the DOW works closely with local jurisdictions in identifying actions which may limit pollution problems.

In regard to chemical spills, Mr. Shogren stated that the ERT's and the DOW's first action is to respond to any possible impacts to public water intakes which may exist downstream from the spill. When the spill is found, prompt notice is provided to the public water supply, temporarily halting water withdrawals, and taking extra sampling and analyses of the water. The next major action is to identify and halt the source of pollution. The DOW initiates an extensive sampling program to identify pollution sources.

In addition to responding to other emergencies, the ERT and DOW respond to emergencies associated with the potential failure of existing dams. The DOW has the authority to direct emergency actions when there is a possibility that a dam may break and cause loss of life or major property damage if the owner does not take major immediate action to correct the problem.

Mr. Bill Burger, NREPC, made some additional comments. He said that the ERT is in the process of creating an environmental response center that will have a 24-hour call-in number. He added that Natural Resources handles emergencies from an oil spill, automobile wrecks, and others. They are the coordinating center for the NREPC.

Representative List asked if the state has a main laboratory to examine all test samples. Mr. Burger replied that all resources should be unified in one laboratory facility by April.

Mr. Bill Wolejsza, Department of Local Government, stated that the department will assist the task force in achievement of its goals for statewide water resource management. He said that the department has no statutory mandate relating to water management projects or activities. However, the department would like for the task force to provide them with recommendations and suggestions that would be appropriate as to how they may assist in statewide water management projects.

Mr. Wolejsza said that local government can provide input to help solve the long-range problems of water resources. He said they work with the small funding sources and work closely with the federal agencies in coordinating activities and programs. Mr. Wolejsza said that local government works with EDA programs, community block grants, and Farmer's Home Administration to provide a single funding

package for long term solutions. He said the department can be helpful in identifying various funding sources that have the capability of assisting communities.

The committee agreed on the agenda for the tour in April in eastern Kentucky.

The meeting was adjourned at 3:25 p.m.

KENTUCKY WATER MANAGEMENT TASK FORCE

Minutes of the Seventh Meeting
of the 1982-83 Interim

April 20 and 21, 1983

The Kentucky Water Management Task Force held its seventh meeting on April 20 and 21, which included public hearings in Salyersville, Kentucky and Natural Bridge State Resort Park, briefings on drinking water problems from brine pollution, and a tour of the oil fields. Representative Henry List, Chairman, called the meeting to order, and the secretary called the roll.

Present were:

Members: Representative Henry List, Chairman; Representative Pat Freibert; Senator Fred Bradley; John Smithers; Dr. John Kiefer; Mayor Harold Colley; Gary Larimore; Hank Graddy; and Bruce Sauer, Representing David Drake.

Guest Speakers at Salyersville: Jerry Hardt, Citizens of Magoffin County for a Clean Environment; Gary Larimore, Kentucky Rural Water Association; Roger Recktenwald, Water Resources Assistance Corporation; David Gardner, City of Salyersville; Ms. Mollie Prater, Salyersville; Mr. W. A. Watson, Inland Gas Company; and Dr. Snyder, Midwest Well Company.

Guest Speakers at Natural Bridge State Park: Robert Edens, Kentucky-American Water Company; James Rebmann, Lexington-Fayette Urban County Government; Don Hassall, Bluegrass Area Development District; Edward Norman Wilson, Geologist; Douglas Brandenburg, County Judge/Executive, Lee County; Ron Willenbrink, Kentucky Oil and Gas Association; Tom FitzGerald, Appalachian Research and Defense Fund; Pamela Wood, Kentucky Rivers Coalition; Sam Davidson, Samar Oil and Gas Company; Jim Day, Shelby Kincaid and Bill Benton, Jr.

Other Guests Attending the Meeting: Representative Clarence Noland; Horace Brown, Chairperson, Charles Martin, Vice Chairperson, Environmental Quality Commission (EQC), and Etta Ruth Kepp and Andrew Cammack, also of EQC.

LRC Staff: Peggy Hyland, Brooks Talley, Barbara Rhoads, Don Stosberg, and Stephanie Kirtley.

Other Staff: Jim Dinger and John Reed.

Press: Larry Tye, The Courier Journal.

Upon arrival in Salyersville on April 20, Mr. Jerry

Hardt, representing the Citizens of Magoffin County for a Clean Environment, arranged for the task force to view several examples of pollution from oil operations and the impact on local residents.

The first public hearing was held at the Salyersville Community Center.

Mr. Gary Larimore, Kentucky Rural Water Association, made some comments on the drinking water problems. Mr. Larimore stated that a number of problems contribute to unclean and unsafe drinking water such as the system design, operation and management, and poor financial conditions. The main problems stem from the failure to monitor for coliform bacteria, failure to resample when coliform bacteria is present in initial samples, and failure to submit a monthly operating report. Mr. Larimore said that his association has planned and designed a full-time training program for the benefit of rural community water system directors, employees, and other interested persons with emphasis on developing a greater awareness and knowledge of the Safe Drinking Water Act. Poor financial conditions could be improved by consolidation of small water systems.

Mr. Larimore made the following recommendations: (1) Water quality problems can best be solved through training and technical assistance; (2) Public relations are important among rural water systems and keep awareness of the problem of furnishing the rural areas with drinking water high; (3) Cooperation between the legislature and state and federal agencies who are involved in funding and/or monitoring rural water system activities must continue; (4) The handling of nonprofit water supply systems by the Public Service Commission is the same as for private systems, and this is a hardship; (5) Some type of financial assistance for communities that have no emergency or backup plan is needed; and (6) Technical business assistance is also needed to keep providing clean and safe drinking water at the lowest possible cost.

Mr. Roger Recktenwald with the Water Resources Assistance Corporation made a few comments. He said that the WRAC deals primarily with public water systems, water districts, and small municipalities. Mr. Recktenwald said the regulations concerning water quality and water quantity are conflicting and there is a need for more funding sources. Mr. Recktenwald made the following recommendations: (1) to have effective legislation on public water systems requires coordination at the state level; (2) legislation should require the amalgamation of water districts for public water systems within a county; and (3) the state should seek to influence the coordination of federal funding agency application deadlines to eliminate conflicts.

Mr. David Gardner, City of Salyersville, said brine in

the river will be a problem for the new water plant.

Ms. Mollie Prater addressed the committee saying that private wells are contaminated from oil well drillings. She said the water is distasteful and changes the coloration of clothing. She said she does not know what chemicals are in the water. She added the regulation concerning brine pollution does not help or stop the problem but only allows oil companies to continue drilling.

Mr. W. A. Watson, Supervisor of Inland Gas Company, said they have been operating wells in Magoffin County since 1928 and, in his opinion, there have been no problems that were not worked out with the individual.

Mr. Jerry Hardt said the brine regulation needs to be in place and enforced. Although there is a cost to properly handle brine, there are also costs to local citizens compensating for lack of clean drinking water if the regulations are not implemented.

Dr. Snyder, Midwest Well Company, said that the source of pollution needs to be pinpointed in order to solve the problem.

A brief discussion followed.

The second public hearing was also held on April 20 at 7:00 p.m. at Natural Bridge State Resort Park.

Mr. Robert Edens, Vice President and General Manager of the Kentucky-American Water Company, addressed the committee on water supply. Mr. Edens said that the KAWC is the largest water supplier in central Kentucky and gets most of its water supply from the Kentucky River. Mr. Edens said that water plants are not in the business of cleaning up pollution from other sources but that cost should be borne by the polluting industry. Mr. Edens expressed concern about the closing of the locks and dams on the Kentucky River and the need to maintain the pools for the water intake.

On the issue of the proposed oil brine regulation, Mr. Edens said there is a void in the regulations because they do not have any numerical standards. He also suggested that some consolidation of authority over oil drilling operations now shared by the Department of Mines and Minerals and the Natural Resources and Environmental Protection Cabinet was needed.

Mr. James Rebmann, Planner, Lexington-Fayette Urban County Government, showed a slide presentation on the oil and brine problems in eastern Kentucky.

Mr. Don Hassall, Director, Division of Economic Development, Bluegrass Area Development District, said that of

the 17 counties in the Bluegrass Area Development District, Nicholas County is the only one that does not receive its public water supply from the Kentucky River. He reviewed water demand as a percentage of system capacity in the Development District. Mr. Hassall concurs on the concern for maintenance of the pools in the Kentucky River for water supply. Mr. Hassall ended by saying the efforts to address water quantity needs to increase; overall there will be a need for more water and no one has made a concerted effort to find a solution to the problem.

Mr. Douglas Brandenburg, County Judge/Executive of Lee County, expressed his concern that the proposed oil and gas brine regulation would ruin Lee County economically.

Mr. Charles Beach, Mayor of Beattyville, said they have noticed no change in water quality and oppose the proposed oil brine regulation.

Mr. Ron Willenbrink spoke on behalf of the Kentucky Oil and Gas Association (KOGA). He said that in the past 10 years discharges from oil and gas production operations have not caused violation of Kentucky's water quality standards except under extraordinary circumstances such as severe drought. KOGA supports the NREPC in its attempt to develop an oil brine regulation. He said the problem of trihalomethanes has been found in communities in Kentucky that could not be impacted by oil and gas operations. Mr. Willenbrink said there is a need to reevaluate Kentucky's water quality standards and stream use designations to allow for the fact that some stream segments will not in the foreseeable future meet existing standards.

Mr. Tom FitzGerald, Appalachian Research and Defense Fund, addressed the need for action by the NREPC relating to ground water protection. He said the law mandates protection of ground water but that this mandate has been neglected by NREPC. He gave two examples involving the impact of underground mining on private wells and brine pollution from oil and gas production. Mr. FitzGerald said statutory and regulatory protection is needed to assure that those who affect water supply, restore and replace it; ground water protection responsibility should be vested in one agency. Ground water policy should focus on controlling activities to prevent ground water from contamination; long range comprehensive planning is needed.

Mr. Edward Norman Wilson, Geologist, presented information on the hydrogeology of Kentucky, the hydrological cycle, oil and gas operations, and the trihalomethane problem. Mr. Wilson concluded that: (1) the regulatory burden is properly divided between the NREPC and the Department of Mines and Minerals, but there should be more coordination between the two executive agencies; (2) both agencies probably need more funding and personnel to meet their workload.

The Division of Water also needs a great amount of technological input; (3) pollution by produced water is widespread but fairly localized. Reinjection of produced water is the generally preferred disposal method; but it should not preclude small volume disposal into streams under a permitting system.

Pamela Wood, Kentucky Rivers Coalition, urged the task force to be aware of the varying needs of urban areas and rural areas in water supply. She said a comprehensive program for flood prevention should be supported. The effects of development on Kentucky's water resource, such as oil shale operations, should be reviewed. She said the proposed Yatesville dam will have minimum flood prevention benefits downstream.

Additional comments on the oil brine problem were made by Sam Davidson, Shelby Kincaid, and Bill Benton, Jr.

On April 21, the task force toured the Wiser Oil operations in Lee County.

KENTUCKY WATER MANAGEMENT TASK FORCE

Minutes of the Eighth Meeting
of the 1982-83 Interim

May 26, 1983

The Kentucky Water Management Task Force held its eighth meeting on Thursday, May 26, 1983, convening at 1 p.m. in Room 103 of the Capitol Annex. Representative Henry List, Chairman, called the meeting to order, and the secretary called the roll.

Present were:

Members: Representative Henry List, Chairman; Dr. John Kiefer, Bruce Sauer, representing David Drake, Bob Hicks, Gary Larimore, and Hank Graddy.

Guests: Ms. Mary Mudryk, Vice President, Public Finance Division, Smith Barney, Harry Upham, and Company in New York; General Wilbur Buntin, Ronn Padgett, and Thomas Little, Disaster and Emergency Services; Jim Kennedy and Tom Craighead, Department of Local Government; Gertrude Nahinsky and Margaret Loeb, Save Our Streams; and Dennis Murphy, University of Kentucky Bureau of Policy Research.

LRC Staff: Peggy Hyland, Brooks Talley, Dan Risch, Don Stosberg, Barbara Rhoads, Mary Helen Miller, and Stephanie Kirtley.

Other Staff: Jim Fries and John Reed.

There being no quorum present, the minutes of the sixth and seventh meetings were not approved.

Mr. Jim Kennedy, Department of Local Government, discussed possible solutions to water problems in Kentucky. Mr. Kennedy said that the Department of Local Government will continue to be supportive of the efforts of the task force. He said the largest water program in the department is the Appalachian Regional Commission Program serving the 49 appalachian counties. Mr. Kennedy suggested that an effort be made to move into a master water management plan to solve the water problems of Kentucky. He said an overall management plan would better direct the department as to which projects would have priority over others. He said the Department of Local Government would like to help in efforts to move toward a plan.

General Wilbur Buntin, Disaster and Emergency Services, discussed long term response to water problems in Kentucky. General Buntin stated that under the present Reagan administration it has been hard to get a presidential declaration

of emergency and there will be fewer presidential declarations in the future. Response has to be beyond the state's capability of funding before an event is declared a disaster. General Buntin said that if a disaster happens in one county and affects some of the surrounding counties they will be included in the presidential declaration. Even when a state is declared a disaster, the federal government will assist in funding on a 75/25 cost sharing basis where the state and local government will have to come up with 25 percent of the total funding. This is policy and not in the present federal law now; however, OMB wants it written into the law. General Buntin stated that Kentucky needs to structure a funding program to address the 75/25 cost sharing in the future because there are no mechanisms at the present time for making the 25 percent match if a major disaster occurred.

Upon a question about the use of the National Guard, General Buntin replied that use of the National Guard services and equipment is more restrictive than it used to be. The Adjutant General must seek approval from Washington for the services of the National Guard.

Jim Fries, Office of the Secretary, Natural Resources and Environmental Protection Cabinet, explained the material that was passed out to the task force members on water investment financing. He said that it is important to have good water financing mechanisms because Kentucky has a water-based economy. He said federal monies for water-related facilities are declining and what is available will require more nonfederal cost sharing.

Mr. Fries said the last comprehensive assessment of statewide public water and sewage needs was done in 1972 and that no real effort has been made to keep the comprehensive assessment up to date. He added that the only comprehensive plan on flood damage abatement was done in 1976 and 1978. However, the state does have a good understanding and knowledge in the area of wastewater treatment.

Mr. Fries said there were three problems that affect Kentucky's public water supply facilities: (1) inadequate and deteriorated distribution systems; (2) a need for new sources to supply growth and replace sources that have been contaminated; and (3) inadequate treatment facilities for organic chemicals.

Mr. Fries stated there are two major fiscal problems that affect water supply facilities. They are inadequate rates to retire debts and a lack of access to capital. Mr. Fries said there were investment needs to be examined. Those are replacement and rehabilitation of existing facilities, serving new growth, and development of new water resources. He added that problems range from leaking lines to undersize sewage pipes, inoperative treatment facilities,

and facilities that cannot handle storm water. Mr. Fries said that the inadequate rate systems do not allow the cost of treatment to be paid, which results in deferred maintenance and use of the general revenue fund.

Mr. Fries said that the area of non-point source pollution has been ignored and that non-point source pollution causes between 60-65 percent of Kentucky's overall pollution loading problem. Flood damage (urban and rural) needs to be addressed, along with riverports and harbors and dam construction (new and repairs) for industrial water supply. An assessment of need for water supply and wastewater treatment facilities is needed. OPM and the task force are both currently compiling data in this area. A coordinated system for periodic assessments is needed. This must be followed by planning to direct project selection.

In conclusion, Mr. Fries stated that adequate capital development is a necessary component. He said in the past, agencies informally worked together on the water problems and that may not be adequate as more federal funds become scarce.

Ms. Mary P. Mudryk, Vice President, Public Finance Division, Smith Barney, Harry Upham, and Company in New York, talked to the committee on financing mechanisms for water and wastewater treatment facilities.

Ms. Mudryk said that one method for financing local shares of treatment plants or distribution facilities is revenue bonds. Surplus general fund monies can also be used. Other states have used grant-anticipation notes; however, this can be very complicated for small urban areas, and it is seldom used at the local level.

Another alternative would be financing through statewide authorities and districts. Mechanisms here include general obligation bonds, state appropriations, revenue bonds to be paid from service charges, and notes. In some cases, the state authority may act solely as a financing vehicle. It does not own the project, does not construct the project, but just lends funds to the local entity in support of its project. In other cases an authority may own the facility and charge rates to retire the debt.

One problem is always how to allocate cost and determine ability to pay.

Ms. Mudryk passed out material to the committee concerning various mechanisms currently used in other states and briefly discussed each one.

Connecticut Water Regional Authority. An investor-owned utility was serving an area when a decision was made that the state could better serve the population.

Bonds were issued to finance the buy out and are to be repaid by rates set to cover both the debt and operating expenses. The utility supplies 12 municipalities.

Ohio Water Authority. The Ohio Water Authority issued revenue bonds and used the proceeds as seed money to loan to various entities that needed money to fund sewage treatment and water plants. They give the borrowers the option to repay the money from 10 years to 25 years. The program has been successful and is well regarded in the financial market.

West Virginia Authority. The West Virginia Authority is set up to issue water development revenue bonds of the state for the purpose of financing the acquisition or construction of water development projects through loans to local entities.

The state of West Virginia appropriated about $3,000,000 to initially fund a Special Reserve Fund to be maintained at a level not less than maximum debt service on outstanding bonds. These are, however, only moral obligation bonds; the legislature is not required to appropriate the money needed to make up any deficiencies in the fund.

The Authority Loan Program provides loans to qualified governmental agencies through the purchase of their local bonds, i.e., a bond bank concept. Under this organization, local entities exchange their revenue bonds for money from the Authority.

Under the program additional security for bonds is obtained by the consolidation of many small projects under a single issue. The reserve fund can be used if one of the projects defaults. Surplus money in the special fund can also be used to subsidize borrowing on the local level at a time of high interest rates.

Ms. Mudryk said the best approach for Kentucky depends on what exactly the needs are and how involved state government wants to get in addressing those needs.

Representative List thanked Ms. Mudryk for coming to Kentucky and discussing information with the advantages and disadvantages of different financing mechanisms and for an informative testimony.

The committee discussed the tentative schedule for the western Kentucky tour on June 22 and 23, and Representative List told the members if they have any suggestions on the tour to let staff know.

The meeting was adjourned at 3:30 p.m.

KENTUCKY WATER MANAGEMENT TASK FORCE

Minutes of the Ninth Meeting
of the 1982-83 Interim

June 22-23, 1983

The ninth meeting of the Kentucky Water Management Task Force included a meeting and tour of the Cave City - Horse Cave area, Bowling Green and Nortonville.

On June 22, the Task Force traveled to Cave City. At Cave City, Dr. James Quinlan, National Park Service, Mammoth Cave, Kentucky briefed the Task Force on groundwater hydrology and demonstrated problems particular to karst areas. The tour included Little Sinking Creek, Echo River, Horse Cave Sewage Treatment Plant, and Hidden River Cave. Pollution of the groundwater by sewage was evident.

In the afternoon on June 22, the Task Force traveled on to Bowling Green where Dr. Nick Crawford, Western Kentucky University, briefed the Task Force on the problems of industrial waste management in a karst terrain. The members visited a farm pond that had recently been drained and recontoured by EPA because of pollution from benzene, toluene, and other chemicals. The members also visited Lost River Cave. The Lost River runs beneath Bowling Green. Any spillage of hazardous material can make its way quickly into the underground stream and volatile materials can build up in the basements of homes resulting in emergency evacuation. Sinkhole flooding is another serious problem in the area.

The Task Force met at the Barren River Area Development District (BRADD) Office in Bowling Green the evening of June 22. Representative Henry List, Chairman, called the meeting to order, and the secretary called the roll.

Present were:

Members: Representative Henry List, Chairman; Representative Pat Freibert; Senators Fred Bradley and Joe Lane Travis; Mayor Tim Bostic, Dr. John Kiefer, Bruce Sauer, representing David Drake, Bob Hicks, and Gary Larimore.

Guests on the Tour: Dr. James Quinlan, National Park Service; and Dr. Nick Crawford, Western Kentucky University.

Guests at the Meeting: Representative Jody Richards; Dr. James Quinlan; Dr. Nick Crawford; Dr. Bill Jenkins, Barren River Area Development District (BRADD); Mr. John Matheny, Planner, City of Bowling Green; Bob Adams, Division of Water; Donald Crownover, Magoffin County Water Commission; and Alex Zobkiw, FMC Corporation.

LRC Staff: Peggy Hyland, Brooks Talley, David Ritchie, Don Stosberg, and Stephanie Kirtley.

Other Staff: Jim Fries, Dr. Jim Dinger, and John Reed.

Press: Al Cross, The Courier-Journal; Jim McFadden, Dailey News, Bowling Green; Karen Freeman, WBGN Radio; Jim Taylor, WLBJ Radio; and Constance Banks, WKCT/WDNS Radio.

Guests at the Tour and Meeting on June 22: Senator Kenneth Gibson; Dave Rosenbaum, Natural Resources and Environmental Protection Cabinet; Mayor Rice, Nortonville.

Representative List said that the purpose of the tour and meeting was to gain insight on water quality and quantity issues in Kentucky because in order to grow Kentucky will need a good quality and quantity of water to serve our needs. Representative List then introduced Dr. Bill Jenkins of the BRADD.

Dr. Jenkins said that BRADD covers 10 counties and has four major water sources. All of the water districts rely on surface water except for Bonnieville which uses deep wells.

From 1973-1983 a trend for merger of smaller water districts resulted from financial problems. For example, Metcalfe County cannot get enough water supply. The Green River Water District has been authorized to move into Metcalfe County. The size of the water line from Glasgow may be increased. Hopefully, Metcalfe County will get some assistance to serve an additional 432 new residential connections. Allen County is the most underserved county in the district; 70 percent of the underground water is polluted. Logan County has six water districts.

Dr. Jenkins said that water testing is a problem statewide for people on well water. They cannot afford the testing and what testing is done is for bacteria not chemicals. Mayor Bostic asked how many different water districts are in the area. Dr. Jenkins replied there are 23 with merged management.

Mr. Larimore asked what is the largest problem facing small water districts. Dr. Jenkins responded that the Public Service Commission will not permit grants, gifts, or contributed property to be considered in the rate base. This results in failure to maintain the water equipment; there is no provision for repair or replacement.

Representative List asked if they have identified where the pollution of the underground water comes from in Allen County. Dr. Jenkins said, no, because tests have to be done consistently over a period of time, it is very costly, and they do not have the money and baseline knowledge to do the

tests that are needed. Representative List asked whether the major waste problem was industrial or residential waste. Dr. Jenkins replied it was industrial. Part of the problem is likely from illegal dumping because of the rural and isolated nature of the county. Representative List said that Kentucky is trying to address all the waste problems at the same time, and statutes are beginning to be put on the books to assist with enforcement.

Mr. John Matheny, Planner, City of Bowling Green, briefed the committee on the program for storm water management in Bowling Green. Mr. Matheny said that the karst terrain of Warren County has many hydrological problems that are associated with lack of surface water, location of adequate quantities of subsurface water, pollution of subsurface streams, and the unique problem of flooding.

Mr. Matheny gave a history of the development of the storm water management program in Bowling Green. Although it has some problems, the concept is sound and is transferable to other areas.

Mr. Matheny said the following points must be considered and/or used to have a good storm water management plan: (1) It must be a joint effort covering a sufficiently large area to be effective, i.e. drainage basin or county boundary; (2) a qualified staff is needed; (3) maintenance must be recognized as a key issue; (4) the agency responsible for the program must have well-defined responsibilities; and (5) the concept of the program itself should be a management system based upon performance standards along with the use of the natural system to the greatest extent possible.

Mr. Matheny made the following recommendations to the Task Force: (2) amend KRS 179.070(13) to include at least those counties containing cities of the second class; (2) add to the KRS enabling legislation which would allow drainage utility districts to be created similar to the legislation pertaining to the creation of water districts. He suggested reviewing similar statutory provisions from the states of Colorado and Washington; and (3) continue to support local water management programs, including financial incentives similar to the flood damage abatement program.

On Thursday, June 23, the committee departed for Nortonville.

After arriving in Nortonville, Senator Gibson and Mr. Rosenbaum met with the committee and discussed water problems associated with mining. Senator Gibson and Mr. Rosenbaum gave a history and slide presentation on the Pleasure Run reclamation project in which 2.2 miles of the Pond River at Nortonville were reclaimed to eliminate flooding problems resulting from runoff from abandoned mine lands and on the reclamation of mined lands to protect Lock Mary,

the lake serving as the sole water supply for the city of Earlington. After the presentations, a tour of the projects were made.

The tour was completed, and the meeting was adjourned at 1 p.m.

KENTUCKY WATER MANAGEMENT TASK FORCE

Minutes of the Tenth Meeting
of the 1982-83 Interim

July 25, 1983

The Kentucky Water Management Task Force held its tenth meeting on Monday, July 25, 1983, convening at 1:30 p.m. in Room 104 of the Capitol Annex. Representative Henry List, Chairman, called the meeting to order, and the secretary called the roll.

Present were:

Members: Representative Henry List, Chairman; Representative Pat Freibert, Senator Fred Bradley, John Smithers, Secretary Jackie Swigart, Terry Regan, Dr. John Kiefer, Bob Hicks, and Hank Graddy.

Guests: Bruce Lane and Charles Weiter, Louisville-Jefferson County Health Department; Art Williams and Rick Shogren, Natural Resources and Environmental Protection Cabinet (NREPC); Margaret Loeb, Save Our Streams; Patricia Nightingale, Kentucky League of Women Voters; Pamla Wood, Kentucky Rivers Coalition; Etta Ruth Kepp, Environmental Quality Commission; Ralph Madison, Kentucky Audubon Council; and Dennis Murphy, University of Kentucky.

LRC Staff: Peggy Hyland, Brooks Talley, Dan Risch, David Ritchie, Barbara Rhoads, and Stephanie Kirtley.

Other Staff: Jim Fries and John Reed.

Press: Larry Tye, The Courier-Journal.

Senator Bradley moved, and Representative Freibert seconded the motion, that the minutes of the last two meetings be approved without objection. The motion was adopted.

Mr. Bruce Lane, Director of the Division of Environmental Health, and Mr. Charles Weiter, both of the Louisville-Jefferson County Department of Health, gave a presentation on the problems associated with septic tank use in Jefferson County. Mr. Lane said that septic tanks are one of the most critical health problems in Jefferson County. He said that the board has the policy that septic tanks are to be used only as an interim solution until sanitary sewers become available. Mr. Lane said there are 30,000 to 40,000 septic tanks in Jefferson County; septic tanks contribute significantly to the groundwater pollution. The septic tanks are located in 80 specific problem areas and the failure rate of these septic tanks is from 20 to 50 percent. In 1973, septic tanks were banned for major sub-

division developments unless there were five acre lots. Package sewage treatment plants are being used in some areas as an interim solution to accommodate development.

Mr. Lane said that EPA is cutting back their funding for sewage systems from 75 percent to 55 percent. Mr. Lane said that sewage is a potential threat to those who use groundwater for personal and domestic purposes. Mr. Lane stated there are between 2,000 and 3,000 well users in Jefferson County.

Mr. Lane said that when package sewage treatment plants malfunction they discharge waste into the streams. There are between 115 and 125 package sewage plants serving subdivisions that get inspected once a month. Mr. Lane said if they do not get a comprehensive sewage system of some sort to eliminate the problems, the health department and other areas will have to require that major renovation and upgrading be done of the existing plants because the problems are going to continue to get worse. Financing is a major problem.

Representative List asked should the small water systems be removed from the Public Service Commission. Mr. Lane said being under PSC has done more to help the operators get the rates they need to operate the treatment plants. Mr. Weiter said the biggest problem with PSC is the time it takes to process all the work; even the short form can take nine months. If something is done to speed up the service, the PSC would be a big help. There is a rationale for exempting nonprofit systems from the PSC since municipally-owned utilities have this exemption.

In response to questions, Mr. Lane and Mr. Weiter indicated that the Health Department has some statutory problems since it cannot enforce some state statutes. There should be some delegation of authority to allow local departments to enforce state requirements without reenacting the entire package. There are education efforts ongoing in the county regarding proper use and maintenance of septic tank systems. Mr. Lane recommended that some mechanism of funding the local share of federal sewage projects was needed; that delegation of authority for local enforcement of the Kentucky Pollution Discharge Elimination System (KPDES) was needed; that the PSC process needed to be speeded up.

Secretary Jackie Swigart, NREPC, introduced her staff, Mr. Rick Shogren and Mr. Art Williams, to discuss the enforcement and budget priorities relating to water. Secretary Swigart said that her cabinet is run with less than one percent of the state's budget. She said enforcement is as good as it can be with the money and personnel available. Secretary Swigart stated she has 1,000 employees in the Natural Resources Cabinet; they are split between the Frankfort offices and the field offices.

Secretary Swigart said that the water problems in the Commonwealth are diverse. The cabinet is currently promulgating regulations to regulate brine disposal from oil and gas drilling operations. Kentucky is working to assume primacy under NPDES in the fall. The cabinet is seeking primacy for hazardous waste management. A groundwater program for the state is a concern.

Mr. Art Williams, Office of Legal Counsel, discussed the enforcement process. He said the priorities for enforcement are set at the division level in consultation with the Secretary. The enforcement system attempts to maximize the resources that are available and places the initial and primary responsibility for solving enforcement problems at the field level.

Mr. Williams stated there are three steps in the enforcement process: (1) the field level personnel (inspectors); (2) Frankfort level division personnel; and (3) referral to the Office of General Counsel. The inspections that occur in the field are made on all major facilities including 1,000 dams to be inspected once at least every five years; 4,000 sewage treatment plants; 1,000 drinking water facilities (treatment and distribution); 6,300 inspections of oil and gas facilities; and other inspections of industrial dischargers, floodplain violations, and water withdrawal activities.

In the field, inspections are made, violations are noted, and a written report is done. An attempt is made to consult with the owner/operator of the facility and to reach an agreement which will be enforced at the local level. If it is not resolved, the case is sent to the Frankfort office where an administrative conference occurs. In 1982, there were 52 Agreed Orders done in the Frankfort office. Agreed Orders contain a compliance schedule and a monetary penalty. If the case is not solved at that level it is referred to the Office of General Counsel, where they may seek injunctive actions or restraining orders. Mr. Williams said that the most difficult problems to resolve are those dealing with sewage treatment plants, drinking water facilities, and others that have public ownership components. Fifty percent of the cases in the Office of General Counsel relate to surface mining hydrologic violations. There are five attorneys assigned to handle waste and water violations.

Representative List asked if there is a better way to enforce the laws on polluting the water relating to coal waste piles. Secretary Swigart replied that part of that is abandoned mine land. She said there are over 100,000 acres of land that were mined before the 1977 law that they are trying to address with the present program. In response to questions, Mr. Williams explained that because of the lack of numerical standards in some cases, preparation of a case for court is time-consuming and expensive. Testing, analy-

ses, and bio-assays are needed.

Representative Freibert asked if oil and gas facilities were inspected when a person applies for a permit. Mr. Rick Shogren, Director, Division of Water, said they have four people in their field office for such inspections. However, they do not issue a permit for oil and gas facilities; that responsibility lies with the Department of Mines and Minerals. Representative Freibert asked if the cabinet attempts to inspect wildcatting sites. Mr. Shogren said they inspect for spills, and try to get the operator to adopt better performance techniques. Mr. Shogren said that 30 percent of the industry have registered their wells voluntarily; some information is available from the Department of Mines and Minerals on the operators that have permits. The field officers have mapped the location of working operations in order to maintain or keep track of those operations. Mr. Shogren said it is very difficult to put together an enforcement case against a single operator unless they can prove a single operator is the only one causing the problem and affecting the stream.

Mr. Graddy asked Secretary Swigart if Natural Resources should be regulating oil and gas facilities. Secretary Swigart replied it is always difficult when there is a dual role and it would be more efficient to have the authority in one place. Mr. Graddy asked if four inspectors were adequate enough to inspect wells. Mr. Shogren said four inspectors are not enough and they have proposed to add six additional inspectors before the next fiscal year.

Mr. Graddy asked Secretary Swigart would she support "citizen suit" legislation, since it is an indirect way of increasing enforcement. Mr. Williams said that specific cases can be brought to the cabinet where the law is not being enforced. If no action is taken, the citizen can file suit in Franklin Circuit Court.

Representative List thanked the Natural Resources Cabinet personnel for their presentations.

Mr. Jim Fries, NREPC, gave a presentation on water resources planning, planning in Kentucky, and the status of planning in adjacent states. Mr. Fries said state water planning priorities among the nine states which were surveyed are as follows: water supply, instream flow maintenance, water quality maintenance, flood damage abatement, legal and institutional issues, water-related outdoor recreation, land conservation and management, fish and wildlife, water borne transportation, power and energy, and natural, historic, and cultural resources. Mr. Fries made the following conclusions based on his discussions with surrounding states:

(a) The expressed purpose of planning in the states

that were contacted was to improve the quality of decision-making on program needs, economic development, and environmental quality. Accordingly, the states believe that planning results in tangible dollar savings that exceed the cost of the planning program.

(b) All states agree that it does absolutely no good to begin to plan when you have a crisis. However, many of the states indicated that a crisis has often been the reason to undertake planning.

(c) Planning is usually considered a low-priority, expendible activity. A significant gubernatorial or legislative commitment, in addition to an administrative priority on the part of involved executive agencies, is necessary if planning is to succeed.

(d) The time horizons selected as part of the planning process must be sufficient to influence in the future. Quite simply, the longer one waits to initiate action, the fewer the number of alternatives that are available to choose from.

(e) Water management consists of six basis components. The six are data collection, planning-related research, special studies, river basin planning, implementation studies, and implementation. The degree or level of activity for each is a function of legal requirements, institutional objectives, and resource availability.

(f) Planning is ineffective without corresponding implementing authority, and an effective implementation program necessarily involves the use of a deliberately selected, balanced mix of regulatory, education and assistance, and capital construction tools.

(g) The actual identification and selection of alternative program and structural and non-structural project solutions is largely controlled by the availability of funding; consideration of financing mechanisms must be a fundamental component of state water plan preparation.

(h) The state may not need to prepare a comprehensive water plan all at once. Priority issues can be selected and existing reports or plans revised or updated and included in an overall plan.

Responsibility for plan preparation can be assigned to different agencies through the use of a lead or coordinating agency or group. Further, plan content should be a function of organizational arrangement. Finally, the cost and personnel required to prepare a plan is a function of plan content and geographic scope.

(i) Data collection and supporting research must also

be recognized as a fundamental component in water planning. Informed decisions cannot be made without access to data.

(j) A water plan must be continuously updated to be of value. Furthermore, the plan must be flexible enough to respond to unforeseen events, needs, and problems, as well as to pursue its primary purpose of influencing future actions.

In summary, Mr. Fries said the states that were surveyed sincerely believe that already reduced federal support for water development will be further diminished. Given this prospect, the states generally believe that whatever needs to be done will have to be undertaken on an increasing basis by the states.

Kentucky water management officials concur with this conclusion and are currently responsible for developing a unified inter-state response that acknowledges the need for greater state and local self-sufficiency.

Representative List thanked Mr. Fries for his presentation.

Staff distributed copies of the preliminary list of recommendations made to them during the interim. These recommendations will be considered at the next meeting.

With no other business, the meeting was adjourned at 4:50 p.m.

KENTUCKY WATER MANAGEMENT TASK FORCE

Minutes of the Eleventh Meeting
of the 1982-83 Interim

August 29, 1983

The Kentucky Water Management Task Force held its eleventh meeting on Monday, August 29, 1983, convening at 1 p.m. in Room 104 in the Capitol Annex. Representative Henry List, Chairman, called the meeting to order, and the secretary called the roll.

Present were:

Members: Representative Henry List, Chairman; John Smither, Mayor Tim Bostic, Terry Regan, Dr. James Dinger (representing Dr. John Kiefer), Bruce Sauer (representing David Drake), Bob Hicks, and Gary Larimore.

Guests: Mr. Jay Lehr, National Water Well Association, Worthington, Ohio; Mr. Jim Howard, Howard Consultants, Inc., Owensboro, Kentucky; Mr. and Mrs. Howard Parsons, Parson Brothers Drilling Construction; Tom FitzGerald, Appalachian Research and Defense Fund; Jerry Hardt, Kentucky Fair Tax Coalition; Margaret Loeb, Save Our Streams; Andrew Cammack, Environmental Quality Commission; and Jackie Dunn, Louisville, Kentucky.

LRC Staff: Peggy Hyland, Brooks Talley, Linda Kubala, and Stephanie Kirtley.

Other Staff: Jim Fries and John Reed.

Press: Tim Scowden, WKYT-TV and Channel 36.

Mr. Jay Lehr, President of the National Water Well Association, addressed the task force.

The National Water Well Association is a nonprofit research institute, education foundation and the world's largest publisher of books on ground water. The Association also acts as a professional society for all hydrologists and as a trade association in the water well industry.

Mr. Lehr discussed the nation's water problems. In his opinion, there is no water crisis, but there are significant water problems that need to be dealt with. Mr. Lehr said that 15 percent of the country has severe water problems because their economy does not match the water availability. Water problems come primarily from poor resource management.

Mr. Lehr stated that ground water pollution is the number one environmental priority within the U.S. EPA juris-

diction, and he is very optimistic that the water resource and water management problems can be solved.

Mr. Lehr addressed the following points requested by the task force:

(1) A general assessment of the ground water resource in Kentucky or surrounding area with special attention to problems associated with the karst topography. Mr. Lehr said that the rapid movement of water underground in karst areas makes pollution problems and waste disposal problems more serious. When there is a karst terrain and pollution by industries, septic tanks, agricultural, pesticides, etc. there should be more pressure to get the polluters and pollution problems under control. We should regulate so that we prevent activities in the beginning that could result in problems later on.

(2) Artificial recharge of ground water aquifers. Artificial recharge is the practice of taking excess surface water supplies and placing them into ground water reservoirs in some type of artificial way. Rainfall can be absorbed by the soil in significant quantities and moved into the ground water. It can be done by using wells, or pits, over recharge areas. The utilization of excess surface water and use of ground water reservoirs and storage facilities is a way to balance the shortfalls of rainfall and floods. Artificial recharge increases the availability of water during periods of droughts and prevents draining water tables down. There is a need to assess water usage over a period of time. Mr. Lehr said that even with the current drought there have been no record low water levels which means that these levels throughout the state were predictable.

Mr. Lehr stated that planning for water resource development should always consider ground water and surface water and their conjunctive, coordinated use and should not separate the two.

(3) Reinjection and other technologies as a management tool for disposal of brine from oil and gas well operations. Mr. Lehr said that brine pits are illegal under the law in Ohio; the oil industry has to reinject the brine into its source. They have eliminated 90 percent of the problem in Ohio, and so have most of the other states. Brine reinjection is the best alternative to eliminate brine and causes the fewest pollution problems. Disposal pits in Kentucky must be eliminated because they will create problems; both salt and water move underground. The pits can be lined with clay to decrease the problem, but it is not a long term solution. Mr. Lehr said there are essentially no other technologies to dispose of brine.

(4) Programs for registration of water well drillers and their use in establishing a ground water data base. Mr.

Lehr said first it is important to assess the water supply. Kentucky has less hydrogeologic reports assessing water resources than other states. Kentucky needs proper maps of the state, assessments of available ground water regimes, and some type of data base. Mr. Lehr said that well drillers of the state should be a servant of the state in turn for being allowed to drill holes in the ground to bring water to communities. They should be required by law to submit accurate logs to the state. Certification of well drillers helps assure that they are competent and knowledgeable and increases the accuracy of the data they report. Mr. Lehr said that Ohio has a drilling log law and it works extremely well.

(5) Conservation of water as a means of regulating water supply. Mr. Lehr stated that water conservation is a vast source of water, a new supply and not a reduction in use. Mr. Lehr said that the amount of water used by an industry, agricultural operations, a home, or any place of commerce can be reduced by one-third without altering the quality, the cost of production, the crop yield, nor changing the lifestyle in the home. The amount of water wasted is a gigantic amount that a state can consider as a new source of water. Mr. Lehr stated that water conservation should be considered as the third significant source of water in the assessment, next to ground water and surface water. Statutory incentives for more efficient water use may be necessary. Mr. Lehr said that building codes should require the use of water-saving devices.

(6) Problems and actions in other states regarding pollution of private wells. Mr. Lehr stated there are poorly constructed private wells that contribute to pollution. When wells are polluted, it is almost always due to poor construction. Mr. Lehr said that the whole problem of pollution of private wells, in most cases, is due to the lack of regulation of the water well industry. Most states do not regulate domestic wells because there are too many, and they do not come under the Safe Drinking Water Act.

Representative List asked if, given the geology of Kentucky, this brine can be reinjected effectively. Mr. Lehr replied in the affirmative.

Mr. Dinger asked Mr. Lehr should wells be permitted before they are drilled or after they are drilled and what type of information should be required on these permits. Mr. Lehr responded that in areas where water quantity is a problem it is better to permit the well before the fact if it is intended to pump thousands or millions of gallons of water a day. However, all wells should be registered after the fact and should require such information as the location of the well, the depth, where the pump was set, and how much water will be pumped. Such registration can occur at the county seat; the state program could run about $250,000 a

year for recordkeeping and computerized data.

Mr. Smither asked Mr. Lehr if he felt that effluent standards to protect ground water may be more effective than ground water standards. Mr. Lehr replied yes.

Mayor Bostic asked what about consolidation between rural communities who are suffering from poor management of water. Mr. Lehr replied that consolidation of rural water districts for management purposes is advisable.

Mr. Hicks asked what he would recommend for septic tank systems. Mr. Lehr responded that most septic tank regulations are on a county-by-county health department basis. Good septic tank operation depends on the soil characteristics and the ability of the soil to absorb the waste.

Mr. Lehr also indicated that good land use planning will be necessary to protect the ground water resources of the U.S. in the future.

Mr. Jim Howard, Howard Consultants, Inc., gave a presentation on groundwater. Mr. Howard stated that Kentucky is one of the most difficult states to initiate a water program because there is no data base. Mr. Howard said that Kentucky is considered to be a surface-water oriented state.

Mr. Howard said that Kentucky is a highly diverse state which is an advantage and a potentially strong disadvantage in terms of setting up a statewide water resources program. The population density of the state is such that even though an aquifer may be able to provide only a relative small quantity of water, a large proportion of the population is still dependent on that small quantity of water. However, a water supply is equally as vital to the rural population as water supply to major users.

Mr. Howard discussed five major ground water provinces of the state.

(1) Coal province areas. The eastern and western fields are characterized by siltstone, sandstone and shales associated with the coal mining regions. There are a number of abandoned coal mines which would adequately supply water during a drought.

Mr. Howard said that at the present time the data base does not exist to give any specific information to allow development without an extensive testing program. The coal area also has a number of environmental problems that were created by human activities.

(2) Karst provinces. This area comprises the central part of Kentucky. The bad part about the limestone systems is their extremely high susceptibility to rapid migration of

contaminants. However, the contaminants can be cleaned up more effectively than sands and gravel. Karst areas with proper safeguards have extremely good potential for public water supply.

(3) Knob area. Northeast central Kentucky is underlain by siltstone and Devonian black shale. There is no high volume of water transmission in this area, and it is primarily restricted to residential-type wells with a high content of contaminants primarily chloride and hydrogen sulfide. It is a low permeability complex and could be looked at as a potential waste disposal region.

(4) Purchase area. There is an extensive supply of ground water in this area that has not been developed. The ground water that can be accessed in this system can sustain a high level of discharge.

Contaminants are restricted to surface materials in this area. The water in this area is at an early stage of development and could be safeguarded.

(5) Ohio River Valley and tributaries. This is the best developed complex in Kentucky. The supply available is extremely great because of the Ohio River.

Representative List asked how deep contamination usually goes in an aquifer. Mr. Howard replied it could go to the bottom of the aquifer.

Talking about artificial recharge, Mr. Howard said that this process is highly site specific. There would be a need to look at its cost effectiveness and the type of procedures that may be applicable to the state or certain parts of the state.

In considering reinjection and other technologies, Mr. Howard said that reinjection is probably the best mechanism for control of brine. However, there are potential areas where the requirements could be modified based upon local economic characteristics and geological settings.

Programs for registration of water well drillers, Mr. Howard stated that registration of water well drillers is the most useful and cost-effective way to establish a data base and to obtain information. Both registration and certification is desirable.

On the conservation of water to be used as a means of regulating water supply, Mr. Howard stated that it is a good idea if it can be done; however, the biggest factor is having the mechanism to establish incentives to industries as high volume users to cut water use and recycle water.

Discussing the problems and actions in other states

regarding pollution of private wells, Mr. Howard said the mechanism most suitable for controlling pollution of private wells would be the control and certification of the people who developed those wells. Wells that are properly constructed, cemented, and safeguarded will have a minimal chance of direct pollution.

Mr. Howard distributed information on existing data sources in Kentucky for ground water. He said that the data is not coordinated and is not accessible. He recommended that a coordinating agency or board be established to develop and monitor a centralized computer data bank.

Representative List thanked Mr. Lehr and Mr. Howard for their informative presentations.

The committee passed over the preliminary list of recommendations made to the task force until the next meeting.

The next meeting has been tentatively set for September 26, 1983.

The meeting was adjourned at 4:30 p.m.

KENTUCKY WATER MANAGEMENT TASK FORCE

Minutes of the Twelfth Meeting
of the 1982-83 Interim

September 26, 1983

The Kentucky Water Management Task Force held its twelfth meeting on Monday, September 26, 1983, convening at 1 p.m. in Room 104 of the Capitol Annex. Representative Henry List, Chairman, called the meeting to order and the secretary called the roll.

Present were:

Members: Representatives Henry List, Chairman and Pat Freibert; Secretary Jackie Swigart, John Smithers, Terry Regan, Dr. John D. Kiefer, Bruce Sauer, representing David Drake, Bob Hicks, and Gary Larimore.

Guests: Dr. David Kao, Kentucky Water Resources Research Institute, University of Kentucky; Tom FitzGerald, Appalachian Research and Defense Fund; Etta Ruth Kepp, Environmental Quality Commission; Margaret Loeb, Save Our Streams; and Lloyd Cress.

LRC Staff: Peggy Hyland, Brooks Talley, Dan Risch, Linda Kubala, Barbara Rhoads, and Stephanie Kirtley.

Other Staff: Jim Fries, John Reed, and Dr. James Dinger.

Press: Ferrell Wellman, Channel 3; Channel 18; Channel 27; and Al Cross and Larry Tye, The Courier-Journal.

The minutes of the August 29 meeting were approved.

Representative List introduced Dr. David Kao, Director of the Kentucky Water Resources Research Institute, who discussed the duties and responsibilities of the Institute.

Dr. Kao stated that the Research Institute was created to coordinate research activities ranging from studies of the basic hydrological sciences to the preservation, supply, use, treatment, and reuse of water. Emphases are placed on the economic, political, social, and environmental implications of plans to develop, utilize and manage this natural resource. Dr. Kao also said that the Research Institute operates under the direction of the University of Kentucky Graduate School, University Advisory Council, and State Advisory Council to promote training of scientists and technical personnel and gather and disseminate water resources research information.

Dr. Kao stated that some of the goals and objectives of the Research Institute are to have a better understanding of water because it is essential to the Commonwealth, develop methods for water resources preservation and development, and secure means for providing water in adequate quality and quantity to satisfy the present and future needs. Dr. Kao said that the Research Institute provides its service to the state by utilizing federal water research funds to support Kentucky's water research needs. The Research Institute works closely with state, federal, and local water resources agencies to assess the current status of Kentucky's water resources and future needs, and to perceive water resources problems and provide the research needed to solve those problems. Dr. Kao said the Institute is interested in and capable of carrying out additional services to fulfill the state's needs, such as serving as a clearinghouse for information, when and if additional resources become available to them.

Representative List asked with what agencies does the Institute work. Dr. Kao replied with state and federal agencies and the private sector. They also have a close working relationship with the Natural Resources and Environmental Protection Cabinet (NREPC), the soil and water agencies, the Energy Cabinet on water related issues, and receive guidance from the Kentucky Geological Survey. Representative List asked if anyone with a water problem can come directly to them for assistance. Dr. Kao replied that they are not equipped to handle all services; however, they can refer people to the resources to assist them.

Dr. Kiefer asked how many projects can be funded annually. Dr. Kao said that the funds for Fiscal Year 1983 were $115,000, of that $95,000 has to go for research projects. The University of Kentucky provides $23,000 to cover the salary for an assistant director and a part-time secretary. This year seven projects have been supported.

Representative List asked how the Task Force could assist the Research Institute in achieving some of its goals. Dr. Kao replied that the Task Force could ask Congress to support House Resolution 2911, which will give them continued funding. Dr. Kao said the Institute was organized under the federal law, not the state, and they receive no funding from the state. They would be receptive to a state mandate with state funding to better serve Kentucky.

Representative List thanked Dr. Kao for his presentation.

The Task Force then began discussing their final recommendations and directed staff to develop specific legislative proposals for the next meeting.

The Task Force discussed the following recommendations:

There is a need for a special task force in the 1984-85 interim to oversee the development of the state's water management plan and revise the basic water law. Representative List requested that a resolution be drafted to continue the efforts of the task force.

LRC staff briefed the committee on recommendations for changes to KRS Chapter 151, which deals with water planning and a water management policy. The recommendations included that KRS Chapter 151 should be revised to: (a) include specific language mandating that a comprehensive management plan for surface and groundwater be prepared; (b) include a schedule for complying with the legislative mandate; and (c) establish priorities which will guide plan preparation. A more detailed outline of a plan was submitted to the Task Force for their information. That plan would require that six cabinet employees be assigned to work on water plan preparation for two years, funded at $200,000 each year. Representative List asked staff to draft legislative changes for KRS Chapter 151 for the next meeting.

Mr. John Reed, Executive Director of the Flood Control Advisory Commission, discussed the Water Resources Authority (WRA). Mr. Reed said that the WRA has been in existence since 1966, basically to finance water supply projects; however, to his knowledge the WRA has not financed any projects. Mr. Reed stated it operates in a manner similar to the Pollution Abatement Authority (PAA), which provides funds for waste water treatment systems through revenue bonds. Mr. Reed said that he would like for the WRA to fund water related projects and develop regulations to begin operating and to assist communities with their water problems. Another alternative would be for the WRA to be placed under the Division of Investment and Debt Management in the Office for Policy and Management, like the PAA. Representative List stated that the WRA has not been effective in eliminating Kentucky's water problems, and it should be revamped or repealed. Secretary Swigart stated that she would assist in furnishing some specific options for the Task Force to consider at the next meeting.

Gary Larimore, Executive Director of the Kentucky Rural Water Association, Inc., discussed the water problems of small rural communities. The financial difficulties small businesses, including small water systems, are experiencing can be directly related to poor management and operation.

Mr. Larimore said that small water utilities play a major role in the economic and industrial development of the rural areas and that it is a real challenge for the small utilities to provide good quality water at rates that the average farmer and rural resident can afford to pay.

Mr. Larimore said that because the small water systems are started for the sole reason of supplying water to a

group of neighbors, commissioners and managers often are voluntary and inexperienced in the operation of a water system and the system cannot afford to pay a full-time manager/operator. However, with increasing laws and regulations water utility personnel will have a definite need for more training and technical assistance. Mr. Larimore stated that the KRWA has planned and designed a full-time training and technical assistance program for the benefit of rural community water system boards of directors, officers, commissioners, employees, and other personnel. Mr. Larimore passed out information relating to the program.

A brief discussion followed on the need to educate and train the operators of small water plants. With the agreement of the Task Force, Representative List asked staff to draft legislation requiring continuing education for water plant operators and addressing the need for them to obtain business management assistance.

The Task Force then discussed the preliminary list of recommendations for consideration for the 1984 General Assembly and for the water management plan and took the following actions:

(1) The concerns relating to the need for revision in Kentucky's law relating to permitting of water withdrawers and a priority allocation system should be considered by the Task Force being recommended for the 1984-85 interim. Concerns will be addressed generally in a legislative preamble.

(2) There is a need for clarification and coordination regarding the statutory authority of various agencies as they relate to water.

Representative List directed that legislation be drafted to transfer the authority over oil and gas drilling operations from the Department of Mines and Minerals to the NREPC.

The Task Force asked that the Public Service Commission be present at the next meeting to discuss the problems of small systems being regulated by the PSC.

Representative List directed that legislation be drafted for consideration relating to liability for damage to water supplies.

(3) There is a need for a long range water management plan relating to water availability and water quality for domestic use and for future economic development. The Task Force decided that this will be in the preamble for the water management plan in the statute and directed that language be drafted.

(4) There is a need for a better system of data

collection and analysis related to the quality and quantity of surface and groundwater in Kentucky. After discussion, Representative List directed that legislation be drafted requiring the certification of water well drillers and the registration of wells. Dr. Dinger also mentioned that there is a need to have some standards for construction of water wells.

(5) Small water districts and non-community water supplies need assistance in the area of business management, technical assistance, maintenance and repair, and rate structures. The Task Force agreed to invite the Public Service Commission to the next meeting to discuss a variety of items.

(6) Pollution of private wells and other drinking water supplies from improper disposal of sewage, brine, and other waste is a serious problem that needs attention. The Task Force agreed that this relates to enforcement and regulation.

(7) Financial assistance for communities is needed to address flooding, dam safety, etc. The Task Force determined that the options for the WRA will address these points.

(8) All agreed there is a need for better public education on water issues.

(9) Proper planning is needed to help address flooding problems. This will be part of a statewide plan.

The Task Force agreed that it will meet twice in November, with the first meeting tentatively set for November 7.

The meeting was adjourned at 3:40 p.m.

INTERIM JOINT COMMITTEE ON
AGRICULTURE AND NATURAL RESOURCES

Subcommittee on Waste Management

Minutes of the Thirteenth Meeting
of the 1982-83 Interim

August 30, 1983

The Subcommittee on Waste Management of the Interim Joint Committee on Agriculture and Natural Resources held its thirteenth meeting Tuesday, August 30, 1983 convening at 1 p.m. in Room 107 in the Capitol Annex. Senator Ed Ford, Chairperson, called the meeting to order, and the secretary called the roll.

Present were:

Members: Senator Ed Ford, Chairperson; Representatives Ron Cyrus, Henry List, and Pete Worthington.

Guests: Alex Barber, Art Williams, and Rose Marie Carr, all of the Natural Resources and Environmental Protection Cabinet (NREPC); Don Hughes and Dave Clark, Human Resources Cabinet; Mary Davis, Sierra Club; Terry Devine, Kentucky State University; Andrew Cammack, Environmental Quality Commission; Gregory Guess, Kentucky Petroleum Council; and Lloyd Cress.

LRC Staff: Peggy Hyland, Dan Risch, Mary Helen Miller, Barbara Rhoads, and Stephanie Kirtley.

Press: Herb Sparrow, AP.

The minutes of the June 13th meeting were approved.

Mr. Alex Barber, Director of the Division of Waste Management, NREPC, introduced Art Williams to discuss the legislative recommendations for solid and hazardous waste.

Mr. Williams discussed the following areas: (1) The use of the financial test for meeting financial responsibility requirements--Mr. Williams stated the Cabinet has not identified the need to make any statutory changes at this time; (2) Regulation of hazardous waste recyclers--Mr. Williams said that the Cabinet is anticipating the U.S. Environmental Protection Agency (EPA) submitting regulations on recycling in the future, therefore, the Cabinet will not recommend changes until EPA submits the regulations; (3) Solid waste management planning--The Cabinet has not identified any statutory changes; Mr. Williams said the Cabinet will most likely be supportive of legislation recommended by the current special study committee; (4) Hazardous waste

management fund--Mr. Williams stated the major area of concern is how the fund will be set up, the duration of the fund, the amount of the fund, and how the fund can be used. Presently, the Cabinet is developing the specifics on how the fund should be changed. Mr. Barber added that in 1984 the hazardous waste management fund shifts from monies coming from generators to monies from offsite disposal facilities. There are no offsite disposal facilities in Kentucky at this time. The fund contains under $300,000. Mr. Barber said there is difficulty in trying to collect these funds.

Senator Ford asked if the financial test is unfair to some generators because they cannot use their out-of-state assets to apply to the financial status of the corporation in Kentucky. Mr. Barber replied that Kentucky is the only state using the financial test that limits its application to instate assets. Other states require United States assets. Senator Ford asked what would be the impact of not allowing the financial test. Mr. Williams responded in his opinion it would be preferrable to have some type of fund available. Historically, the Cabinet has had difficulty in collecting monies from responsible parties.

On the issue of recycling, Senator Ford asked if there were any loopholes in the recycling regulations and how recyclers are being regulated. Mr. Barber said at the present time recyclers are not regulated. Mr. Barber said that EPA regulations will be promulgated in 1984 and the Cabinet will not take a position until that time.

Senator Ford asked what was the status of the solid waste county plans. Mr. Barber responded that the solid waste management planning regulations were not approved. However, the Cabinet has identified some money that will be used as matching funds to develop solid waste management plans for counties who wish to have a plan. Thus far, several counties have voluntarily sent in applications to be reviewed for a county solid waste management plan.

Ms. Rose Marie Carr, Department for Environmental Protection, NREPC, updated the committee on the decommissioning plan for Maxey Flats. Ms. Carr distributed information to the committee on the scope of services that will be used to develop a decommissioning plan and briefly explained each task.

Task 1. Establish performance standards for decommissioning of Maxey Flats facility.

Task 2. Identification of alternatives for site decommissioning.

Task 3. Evaluation of major alternatives for site decommissioning.

Task 4. Development of a site specific plan.

Task 5. Recommendation of technical demonstration.

Task 6. Recommendation of decommissioning plan.

Ms. Carr said the department has received a draft of Tasks 1 and 2. The draft reports on performance standards and identification of alternatives have been reviewed by the Nuclear Regulatory Commission (NRC), the federal Department of Energy (DOE), and the U.S. Geological Survey. Ms. Carr said the committee would receive copies of the report from Tasks 1 and 2 when they are available, which should be at the end of September.

Also, an advisory board was formed comprised of university experts and certain state agencies. The board held its first meeting in August and was given the history and briefing on the status of the Maxey Flats site. The group is being staffed by the University of Louisville Law Center under a memorandum of agreement with the Cabinet.

Ms. Carr stated that the department has received authorization from the federal DOE for the expenditure of an additional $100,000 under the multi-layer trench cover grant modification; now the department has $200,000 to spend on the preparation of a decommissioning plan. A contract amendment will be processed for this additional amount.

Senator Ford asked if $200,000 will cover the contract. Ms. Carr said $200,000 will cover the work through Task 4. The additional money they expect to receive from the DOE will cover the remaining cost of Tasks 5 and 6.

Representative Worthington asked Ms. Carr to provide the committee with background information on the advisory board members and to provide committee members with the minutes of the advisory board meeting.

Ms. Carr gave an update on the feasibility study of an engineered facility for managing Kentucky-generated low level nuclear waste. Ms. Carr passed out to the members a summary of the assumptions and requirements for licensing, management, and specifications that would apply to such a facility under the study.

One problem is that the U.S. NRC does not endorse storage as an interim measure and has no regulations regarding these facilities. What the Human Resources Cabinet will do is apply any appropriate provisions from the federal shallow land burial regulations to such storage facilities.

Ms. Carr's report stated the advantages and disadvantages of the facility. Some of the advantages are that an engineered structure would be more acceptable to the public

than burying the waste in the ground and it may provide a method for Kentucky to handle low level radioactive waste without paying a $50,000 entry fee and participating in the Midwest compact. Some of the disadvantages are that it does not address the problem of ultimate disposal; the uncertainty of legal rights to exclude out-of-state waste (NRC maintains that the exclusivity provision of compacts applies only to land burial facilites); and it may require a complex management system for relatively minute quantities of waste. Ms. Carr said the department is working on the specifications for this facility based on a ten-year volume production from 1984 to 1994. Ms. Carr said that use of low level radioactive materials is changing. Some regional universities are phasing out their use; companies are emerging that will process and reuse scintillation vials.

Representative Worthington suggested that some method could be used to give other generators of low level radioactive waste access to the incinerators at the University of Louisville and the University of Kentucky. There are legal concerns with this option.

Representative Cyrus asked if there is some discussion on whether or not an incinerator would be allowed at the universitites. Ms. Carr responded that the University of Louisville has had a public hearing on the incinerator.

A brief discussion followed on the status of compacts. The Midwest compact negotiations have reopened. Illinois has several amendments. Kentucky will propose an amendment that would exclude Kentucky as a host state until Maxey Flats is decommissioned. Senator Ford said discussions are planned with West Virginia. Puerto Rico has also been asked to join discussions since it generates a very small amount of waste.

Senator Ford passed out news articles to the committee members relating to Maxey Flats and compacts. A discussion on the articles followed.

A discussion of provisions for a compact with West Virginia will be discussed at the next meeting.

With no other business, the meeting was adjourned at 3:30 p.m.

KENTUCKY WATER MANAGEMENT TASK FORCE

Minutes of the Fourteenth Meeting
of the 1982-83 Interim

November 29, 1983

The Kentucky Water Management Task Force held its fourteenth meeting on Tuesday, November 29, 1983, convening at 1:00 p.m. in Room 110 of the Capitol Annex. Representative Henry List, Chairman, called the meeting to order and the secretary called the roll.

Present were:

Members: Representative Henry List, Chairman; Representatives Pat Freibert and Roy Joe Head; Senator Joe Lane Travis; John Smither, Secretary Jackie Swigart, Terry Regan, Dr. John Kiefer, Bruce Sauer, representing David Drake, Bob Hicks, and Hank Graddy.

Guests: Bill Caylor, Kentucky Coal Association; Tom FitzGerald, Appalachian Research and Defense Fund; Karen Armstrong-Cummings, Natural Resources and Environmental Protection Cabinet; Andrew Cammack, Environmental Quality Commission; Tony Sholar, Chamber of Commerce; Nick Carter, MAPCO; Margaret Loeb, and Winnie Hepler.

LRC Staff: Peggy Hyland, Dan Risch, Brooks Talley, Don Stosberg, and Stephanie Kirtley.

Other Staff: Jim Fries, John Reed, and Dr. James Dinger.

Press: Al Cross, The Courier-Journal.

The minutes of the November 7th meeting were approved as written.

The task force considered and took action on the following legislative proposals.

The first bill considered was 84 BR 527, A Joint Resolution continuing the Kentucky Water Management Task Force. Representative List suggested that the task force adopt the list as distributed to include a representative of the Kentucky Department of Agriculture, the Commerce Cabinet, and that a "citizen-at-large" be deleted because they are already represented by other associations on the task force. Mr. Regan moved, and Representative Freibert seconded the motion that 84 BR 527 be adopted and that the task force will be comprised of 11 members including the representatives of the agencies already mentioned. The motion was adopted by voice vote.

The task force discussed 84 BR 532, An Act relating to water well construction practices. Tom FitzGerald, representing the Appalachian Research and Defense Fund (ARDF), recommended some changes to the bill. He clarified that the cost would be two staff positions which are already in the budget request of 1984 for the Natural Resources and Environmental Protection Cabinet (NREPC). A brief discussion followed on how to determine where a well is located on a map when the well is far from a public road. Mr. Graddy moved, and Secretary Swigart seconded the motion, to add on page 11, line 10 and 11, "a site map with distances from any major road or intersection, septic tank drain fields, and permanent structures." The motion was adopted. Mrs. Swigart moved, and Mr. Regan seconded the motion that BR 532 pass as amended, including the changes described by Mr. FitzGerald. The motion was adopted with one no vote from Senator Travis.

Ms. Karen Armstrong-Cummings, NREPC, explained BR 530, An Act relating to oil and gas. Ms. Armstrong-Cummings stated that the main purposes of the bill were to have one effective permitting program for the oil and gas industry and to clarify the controlling of contamination of underground water. The bill also redefines the procedures to be consistent with NREPC procedures in enforcement authority and rules of the cabinet.

Mr. Bill Caylor of the Kentucky Coal Association, stated that from the safety standpoint drilling through the coal seams should be regulated by the Department of Mines and Minerals.

Representative Freibert moved, and Mr. Regan seconded the motion that the concept of transferring the permitting process to the NREPC from the Department of Mines and Minerals be approved. The motion was adopted by voice vote.

The task force then discussed 84 BR 531, An Act relating to water (liability for damage). Mr. FitzGerald explained the need for the bill. Mr. Caylor commented that this is already legal and that BR 531 is more complicated. A motion was made to adopt the bill, but the motion did not pass for a lack of a second.

BR 533 relating to the Water Resources Authority and the issuance of bonds was discussed. Mr. Jim Fries, of the NREPC and a staff member to the task force, explained some of the changes in the bill. Mr. Fries said that the bill provides for interim financing, expands the purposes of the authority, broadens the definition of projects and the functions of the authority, and sets out the specific responsibility of the executive director of the authority. Several motions were made but failed on the roll call vote relating to whether or not the executive director of the authority should be appointed from the Natural Resources Cabinet or

the Finance Cabinet. Mr. Graddy moved, and Secretary Swigart seconded the motion that BR 533 be approved as drafted. The motion was adopted by voice vote with one no vote from Senator Travis.

Jim Fries briefly explained BR 620, An Act relating to wastewater plant operators saying that one of the purposes of the bill was to move what was in the regulations that now exist into the statutes for consistency. A motion was made and seconded to include in the bill the cabinet requirements for continuing education for recertification. The motion was adopted by voice vote with one no vote from Senator Travis.

Mr. Regan moved, and Secretary Swigart seconded that BR 620 be approved with the amendments. The motion was adopted by voice vote with one no vote from Senator Travis.

Mr. Smither moved, and Representative Freibert seconded the motion to reconsider BR 528, An Act relating to water. Language was to be deleted on page 5, line 9 and replaced with language clarifying the content of the plan. The proposed changes also clarify the initial components of the statewide plan to be completed within two years from the effective date of this Act. Mr. Smither moved, and Mr. Graddy seconded the motion, that BR 528 be approved with the amendments. The motion was adopted by voice vote.

Representative List stated that the task force's report to the LRC will consist of the bills that were discussed.

Under other business, Mr. Graddy moved, and Mr. Regan seconded the motion, that the task force recommend that BR 410 relating to transferring the testing of water purification from the NREPC to the Human Resources Cabinet, not be enacted into law. The motion was adopted with one pass vote from Senator Travis.

Representative List thanked the members and staff of the task force for their work and attendance during this interim.

With no other business, the meeting was adjourned at 3:45 p.m.

APPENDIX 4: Recommended Legislation

A JOINT RESOLUTION continuing the Kentucky Water Management Task Force.

WHEREAS, the General Assembly realizes the extreme importance of the state's water resource to the health and welfare of all Kentuckians; and

WHEREAS, the 1982 General Assembly created the Kentucky Water Management Task Force to assist the Natural Resources and Environmental Protection Cabinet "... in the development of a plan for the total management of the state's water resource;" and

WHEREAS, the task force created by the 1982 General Assembly has worked hard to accomplish its mission and has recommended legislation for introduction in the 1984 session; and

WHEREAS, the General Assembly is aware that the proper planning for the wisest utilization of the state's water resource is complex and time consuming and requires additional fact-findings;

NOW, THEREFORE,

Be it resolved by the General Assembly of the Commonwealth of Kentucky:

Section 1. That the Legislative Research Commission, intending to obtain information and determine the facts about the management of Kentucky's water resource,

shall appoint members to serve on the reconstituted Kentucky Water Management Task Force. The task force shall consist of the following members: two members of the House of Representatives, one member of the Senate; and one each from the Natural Resources and Environmental Protection Cabinet, Kentucky Geological Survey, the Kentucky Department of Agriculture, the Commerce Cabinet, the Kentucky Association of Counties, the Kentucky Rural Water Association, Inc., the Kentucky Rivers Coalition, and the Society of Professional Engineers. The member from the Commerce Cabinet shall be experienced in economic development. The member from the Society of Professional Engineers shall be experienced in water-related projects. One of the three members of the General Assembly appointed to the task force shall be chairperson.

Section 2. The Kentucky Water Management Task Force shall obtain information from any source for the purpose of determining the facts in relation to the following:

(1) Development and implementation of state government's plan for the management of the Commonwealth's water as provided in KRS Chapters 146, 151 and 224.

(2) Revising the state law on the issuance of permits to withdraw water from surface and groundwater sources, the allocation of water, and the coordination of the state's water management plan with the issuance of

water withdrawal permits.

Section 3. That state agencies shall report information to the task force as requested.

Section 4. That each of the state agencies having a member on the task force shall assign a staff person to work with the task force to assure that the task force can accomplish its purpose. The role of the Legislative Research Commission staff shall be to coordinate the staff assigned by the state agencies.

Section 5. That the members of the task force shall be reimbursed their expenses in attending meetings. It is estimated that the operation of the task force will cost approximately $24,000, such monies to be provided from the regular budget of the Legislative Research Commission.

Section 6. That the task force shall report its findings, conclusions, recommendations, and legislative proposals to the Legislative Research Commission by September 1, 1985.

AN ACT relating to water resources.

Be it enacted by the General Assembly of the Commonwealth of Kentucky:

Section 1. KRS 151.110 is amended to read as follows:

The conservation, development and proper use of the water resources of the Commonwealth of Kentucky have become of vital importance as a result of population expansion and concentration, industrial growth, technological advances and an ever increasing demand for water for varied industrial, municipal and recreational uses. It is recognized by the general assembly that excessive rainfall during certain seasons of the year causes damage from overflowing streams. However, prolonged droughts at other seasons curtail industrial, municipal, agricultural and recreational uses of water and seriously threaten the continued growth and economic well-being of the Commonwealth. The advancement of the safety, happiness and welfare of the people and the protection of property require that the power inherent in the people be utilized to promote and to regulate the conservation, development and most beneficial use of the water resources. Ground and surface waters are interrelated and part of a single hydrologic resource. Uncoordinated development and use

of the resource, fosters conflicts between competing users, discourages investment and economic development and prevents the optimal utilization of valuable water resources. Multiple uses of the resource, for municipal, industrial, commercial, and rural water supply; navigation; agriculture; hydroelectric power and energy production; recreation; water quality maintenance; and conservation of fish and wildlife, are interdependent. It is hereby declared that the general welfare requires that the water resources of the Commonwealth be put to the beneficial use to the fullest extent of which they are capable, that the waste or nonbeneficial use of water be prevented, and that the conservation and beneficial use of water be exercised in the interest of the people. Therefore, it is declared the policy of the Commonwealth to actively encourage and to provide financial, technical or other support for projects that will control and store our water resources in order that the continued growth and development of the Commonwealth might be assured. To that end, it is declared to be the purpose of KRS chapters 146, 149, 151, 224, 262 and 350.029 and 433.750 to 433.757 for the Commonwealth to permit, regulate, and participate in the construction or financing of facilities to store surplus surface water for future use; to conserve and develop the ground water resources of the Commonwealth; to protect the rights of all persons equi-

tably and reasonably interested in the use and availability of water; to prohibit the pollution of water resources and to maintain the normal flow of all streams so that the proper quantity and quality of water will be available at all times to the people of the Commonwealth; to provide for the adequate disposition of water among the people of the Commonwealth entitled to its use during severe droughts or times of emergency; to prevent harmful overflows and flooding; to regulate the construction, maintenance and operation of all dams and other barriers of streams; to prevent the obstruction of streams and floodways by the dumping of substances therein; to keep accurate records on the amount of water withdrawal from streams and watercourses, its distribution by end use, and different levels of withdrawal and delivery and reasonably regulate the amount of withdrawal of public water; to develop a comprehensive, systematic plan for the management of the Commonwealth's water resources and to establish and operate a continuous planning process; and to engage in other activities as may be necessary to conserve and develop the water resources of the Commonwealth of Kentucky.

SECTION 2. A NEW SECTION OF KRS 151.110 - 151.330 IS CREATED TO READ AS FOLLOWS:

(1) The cabinet shall develop a comprehensive, systematic plan for the management of the Commonwealth's

surface and ground water resource and shall establish and operate a continuous planning process to assure that future public needs can be met and a balance achieved among different water uses and functions. The plan shall:

(a) Provide for the conjunctive management of ground and surface waters since they comprise an inter-related hydrologic system;

(b) Establish a management system to recognize and protect existing water rights;

(c) Protect, conserve, develop and utilize the water resource in a manner consistent with the Commonwealth's duties for management of natural resources and the public's right to unpolluted water and the preservation of the natural, scenic, cultural, historic and aesthetic values of the environment;

(d) Provide a coordinated framework for cooperation between federal, interstate, state and local government agencies in the planning and management of water resources; and

(e) Be designed so as to be both anticipatory of future needs and reactive to problems.

(2) The cabinet shall provide for public involvement in the establishment of state priorities, in plan development and implementation, and in the continuous planning process.

(3) The state water plan shall include all elements of ground and surface water quantity and quality management in order to assess and formulate that combination of policies, programs and projects which can address the total water quantity and quality needs and objectives of the Commonwealth in the most effective manner with due consideration of significant economic, social and environmental impacts. The state water plan shall include:

(a) A complete inventory of the water resources of the Commonwealth including an assessment of surface water availability and ground water yields for instream and withdrawal uses, especially during periods of drought;

(b) The identification of instream use needs and the establishment of instream flow levels, including flows required to support and sustain water supply, navigation, fisheries, wildlife, a balanced aquatic environment, recreational uses, hydroelectric generation, waste assimilative capacity and the values of streams included within the state or federal wild and scenic rivers systems;

(c) An assessment of existing and projections of future withdrawal use demands for domestic public water supply, agricultural, electrical generation and energy production, commercial, industrial and other uses;

(d) An analysis of the water quality of the water resources of the Commonwealth, including point and

nonpoint sources of pollution, waste treatment needs and the impact of water quality conditions on drinking water supply and other uses of such waters;

(e) An assessment of flood damage and storm water management problems;

(f) An assessment of water resources needed to serve environmental, recreational, and ecological purposes, including the protection of wetlands;

(g) An evaluation of both structural and nonstructural alternatives to address identified problems and needs in all functional water resources areas covered by the plan, including economic and environmental evaluations and the screening of existing and potential federal, state, regional and other projects to determine their effect on water resource problems and needs in the Commonwealth;

(h) A review and evaluation of laws, regulations, policies and institutional arrangements for the development, use, conservation, distribution, marketing and management of water resources;

(i) A data collection and research program necessary to support plan development and updating; and

(j) Recommendations in each functional area covered by the plan for policies, programs, projects and other mechanisms to be implemented in order to fully address the water resource needs, problems, and opportunities

identified through the plan.

(4) The cabinet shall complete initial components of the comprehensive statewide plan within two (2) years from the effective date of this Act. Initial plan components shall include the municipal, industrial, and rural water supply, including water conservation; water quality maintenance; ground water quality and quantity; legal, institutional, and financial aspects; and data collection and research elements set forth in subsection (3) of this section. The continuous planning process, which will address all remaining elements set forth in subsection (3) of this section and provide for updating of all plan components, shall be in operation within two (2) years from the effective date of this Act.

AN ACT relating to water plant operators.

WHEREAS, water treatment plants and water distribution systems must be properly operated and maintained if safe drinking water is to be provided to Kentucky's citizens; and

WHEREAS, planning for future demand, utilizing sound financial and business procedures, wisely conserving energy and water resources, employing accepted engineering practices, and performing necessary repairs and rehabilitation represent essential activities if water supply facilities are to be professionally managed and relied on to adequately meet current and future needs; and

WHEREAS, water supply system operators need to be aware of new advances and developments and be capable of carrying out essential activities.

NOW, THEREFORE,

Be it enacted by the General Assembly of the Commonwealth of Kentucky:

SECTION 1. A NEW SECTION OF KRS 223.160 TO 223.220 IS CREATED TO READ AS FOLLOWS:

Certified operators shall successfully complete a specified continuing education program as a condition of annual certificate renewal. The secretary, with the advice of the board of certification, shall establish

rules and regulations for the continuing education program. Training may include, but not be limited to, correspondence courses, short courses, trade association meetings, and on-the-job training, and shall cover necessary competency skills to include, at a minimum, financial and business management, water supply planning, water and energy conservation, repair and maintenance procedures, laboratory techniques, and engineering-related practices.

Section 2. KRS 223.220 is amended to read as follows:

The natural resources and environmental protection cabinet is authorized to fix a reasonable schedule of fees and charges by regulation to be paid by applicants for examinations, certificates, continuing education programs, and renewal certificates. All such fees and charges and other moneys collected by the natural resources and environmental protection cabinet under the provisions of KRS 223.160 to 223.220 and 223.991 or the rules and regulations of the department shall be paid into the state treasury and credited to a trust and agency fund to be used by the natural resources and environmental protection cabinet in carrying out the provisions of KRS 223.160 to 223.220 and 223.991.

Section 3. KRS 224.033 is amended to read as follows:

In addition to any other powers and duties vested in it by law, the cabinet shall have the authority, power, and duty to:

(1) Exercise general supervision of the administration and enforcement of Acts 1972 (1st Ex. Sess.), ch. 3, and all rules, regulations and orders promulgated thereunder;

(2) Prepare and develop a comprehensive plan or plans related to the environment of the Commonwealth;

(3) Encourage industrial, commercial, residential and community development which provides the best usage of land areas, maximizes environmental benefits and minimizes the effects of less desirable environmental conditions;

(4) Develop and conduct a comprehensive program for the management of water, land, and air resources to assure their protection and balance utilization consistent with the environmental policy of the Commonwealth;

(5) Provide for the prevention, abatement, and control of all water, land, and air pollution including but not limited to that related to particulates, pesticides, gases, dust, vapors, noise, radiation, odor, nutrients, heated liquid, or other contaminants;

(6) Provide for the control and regulation of surface coal mining and reclamation in a manner to accomplish the purposes of KRS chapter 350;

(7) Secure necessary scientific, technical, administrative, and operational services, including laboratory facilities, by contract or otherwise;

(8) Collect and disseminate information and conduct educational, [~~and~~] training, and technical assistance programs relating to the protection of the environment;

(9) Appear and participate in proceedings before any federal regulatory agency involving or affecting the purposes of the cabinet;

(10) Enter and inspect any property or premises for the purpose of investigating either actual or suspected sources of pollution or contamination or for the purpose of ascertaining compliance or noncompliance with Acts 1972 (1st Ex. Sess.), ch. 3, or any rule or regulation which may be promulgated thereunder;

(11) Conduct investigations and hold hearings and compel the attendance of witnesses and the production of accounts, books and records by the issuance of subpoenas;

(12) Accept, receive, and administer grants or other funds or gifts from public and private agencies including the federal government for the purpose of carrying out any of the functions of the cabinet. Such funds received by the cabinet shall be deposited in the state treasury to the account of the cabinet;

(13) Request and receive the assistance of any state or municipal educational institution, experiment

station, laboratory, or other agency when it is deemed necessary or beneficial by the cabinet in the performance of its duties;

(14) Advise, consult, and cooperate with other agencies of the Commonwealth, other states, the federal government, and interstate and interlocal agencies, and affected persons, groups and industries;

(15) Formulate guides for measuring presently unidentified environmental values and relationships so they can be given appropriate consideration along with social, economic, and technical considerations in decision making;

(16) Monitor the environment to afford more effective and efficient control practices, to identify changes and conditions in ecological systems and to warn of emergency conditions;

(17) Adopt, modify or repeal with the recommendation of the commission any standard, rule, regulation or plan specified in subsections (5) and (6) of KRS 224.045;

(18) Issue, after hearing, orders abating activities in violation of this chapter, or the provisions of Acts 1972 (1st Ex. Sess.), ch. 3, or the regulations promulgated pursuant thereto and requiring the adoption of such remedial measures as the cabinet may deem necessary;

(19) Issue, continue in effect, revoke, modify,

suspend or deny under such conditions as the cabinet may prescribe, permits to discharge into any waters of the Commonwealth, and for the installation, alteration, expansion, or operation of any sewage system; the installation, alteration, or use of any machine, equipment, device or other article that may cause or contribute to air pollution or is intended primarily to prevent or control the emission of air pollution; or the establishment or construction and the operation or maintenance of waste disposal sites and facilities; and require that applications for such permits be accompanied by plans, specifications, and such other information as the cabinet deems necessary;

(20) May establish, by regulation, a fee or schedule of fees for the cost of processing applications for permits authorized by this chapter, and for the cost of processing applications for exemptions or partial exemptions which may include but not be limited to the administrative costs of a hearing held as a result of such exemption application, except that applicants for existing or proposed publicly owned facilities shall be exempt from any such charge;

(21) May require for persons discharging into the waters or onto the land of the Commonwealth, by regulation, order or permit, technological levels of treatment and effluent limitations;

(22) Require, by regulation, that any person engaged in any operation regulated pursuant to this chapter install, maintain, and use at such locations and intervals as the cabinet may prescribe any equipment, device or test and the methodologies and procedures for the use of such equipment, device or test to monitor the nature and amount of any substance emitted or discharged into the ambient air or waters or land of the Commonwealth and to provide any information concerning such monitoring to the cabinet in accordance with the provisions of subsection (23) of this section;

(23) Require by regulation that any person engaged in any operation regulated pursuant to this chapter file with the cabinet reports containing information as to location, size, height, rate of emission or discharge, and composition of any substance discharged or emitted into the ambient air or into the waters or onto the land of the Commonwealth, and such other information as the cabinet may require;

(24) Promulgate rules, regulations, guidelines, and standards for waste planning and management activities, approve waste management facilities, develop and publish a comprehensive statewide plan for nonhazardous waste management which shall contain, but not be limited to, the provisions set forth in KRS 109.031, and develop and publish a comprehensive statewide plan for hazardous

waste management which shall contain, but not be limited to, the following:

(a) A description of current hazardous waste management practices and costs, including treatment and disposal, within the Commonwealth;

(b) An inventory and description of all existing facilities where hazardous waste is being generated, treated, recycled, stored, or disposed of, including an inventory of the deficiencies of present facilities in meeting current hazardous waste management needs and a statement of the ability of present hazardous waste management facilities to comply with state and federal laws relating to hazardous waste;

(c) A description of the sources of hazardous waste affecting the Commonwealth including the types and quantities of hazardous waste currently being generated and a projection of such activities as can be expected to continue for not less than twenty (20) years into the future;

(d) An identification and continuing evaluation of those locations within the Commonwealth which are naturally or may be engineered to be suitable for the establishment of hazardous waste management facilities, and an identification of those general characteristics, values, and attributes which would render a particular location unsuitable, consistent with the policy of minimizing land

disposal and encouraging the treatment and recycling of such wastes;

The statewide waste management plans shall be developed consistent with state and federal laws relating to waste;

(25) Perform such other and further acts as may be necessary to carry out the duties and responsibilities herein described; and

(26) Preserve existing clean air resources while ensuring economic growth by issuing regulations, which shall be no more stringent than federal requirements, setting maximum allowable increases from stationary sources over baseline concentrations of air contaminants to prevent significant deterioration in areas meeting the state and national ambient air quality standards.

AN ACT relating to water well construction practices.

Be it enacted by the General Assembly of the Commonwealth of Kentucky:

SECTION 1. A NEW SECTION OF KRS CHAPTER 223 IS CREATED TO READ AS FOLLOWS:

As used in this Act, unless the context requires otherwise:

(1) "Board" means the Kentucky water well and pump installation certification board;

(2) "Cabinet" means the natural resources and environmental protection cabinet;

(3) "Certificate" means a certificate of competency issued by the secretary stating that the pump installer or water well driller has met all the requirements for the appropriate classification set forth in this Act or by regulation;

(4) "Person" means an individual, corporation, partnership, association, municipality, state and federal government, or other public body or other legal entity, or any officer, employee or agent of any of the foregoing.

(5) "Pump installer" means a person who is qualified to engage in the installation, removal, alteration or repair of water well pumping equipment;

(6) "Secretary" means the secretary of the natural resources and environmental protection cabinet;

(7) "Water well" or "well" means any excavation or opening in the surface of the earth that is drilled cored, bored, washed, driven, dug, jetted or otherwise constructed when the actual or intended use in whole or part of such excavation is the removal of water for any purpose, including but not limited to culinary and household purposes, animal consumption, food manufacture, use of geothermal resources for domestic heating purposes and industrial, irrigation and dewatering purposes, but not including wells dug for watering stock or general farmstead use;

(8) "Water well driller" means a person who is qualified to engage in the drilling, alteration, or repair of a water well as defined in this chapter;

(9) "Water well pump installation" means the installation, removal, alteration, or repair of water well pumping equipment in connection with a water well, including any device or mechanical equipment used to remove water from a well.

SECTION 2. A NEW SECTION OF KRS CHAPTER 223 IS CREATED TO READ AS FOLLOWS:

It is unlawful for any person as defined in this Act, to construct, alter or repair a water well or install or repair a water pump or pump equipment in a

well without first having obtained a valid license as provided for in this Act.

SECTION 3. A NEW SECTION OF KRS CHAPTER 223 IS CREATED TO READ AS FOLLOWS:

The Kentucky water well and pump installation certification board is established. The board shall recommend to the secretary rules and regulations to govern examinations; hearings to suspend, revoke or deny a certificate; and any other duties prescribed by this Act. The subject matter of such examinations shall include, in addition to any standardized section, testing for knowledge of local laws and regulations.

SECTION 4. A NEW SECTION OF KRS CHAPTER 223 IS CREATED TO READ AS FOLLOWS:

(1) The board shall be appointed by the governor upon the advice of the secretary after soliciting recommendations of interested parties. All members of the board shall be residents of the Commonwealth. The board shall be composed of the following:

(a) A driller who is an active member of both the national water well association and the Kentucky water well association and whose business is actively involved in both drilling water wells and installing pumps and water systems to serve for an initial term of three (3) years;

(b) A member who is a representative of the cabinet

who shall serve as the executive secretary and treasurer of the board and shall be responsible for maintaining records, to serve for an initial term of three (3) years;

(c) A member who is a hydrogeologist or hydrologist from the Kentucky geological survey to serve for an initial term of two (2) years;

(d) Three (3) members who are water well drillers, each representing a different geographic region within the Commonwealth, to serve for an initial term of two (2) years; provided that of the drillers selected, one (1) must be certified to install wells using the cable tool drilling method, one (1) must be certified in the use of rotary method, and one (1) must be certified in pump and water system installations in addition to drilling water wells.

(e) A member from the public at large, who shall not be in any way connected with a water well or pump installation business, to serve for an initial term of two (2) years.

(2) Upon the expiration of the respective terms, each successor shall be appointed in the same manner as the predecessor for a term of three (3) years.

(3) At the first meeting of the board held in each calendar year, the board shall elect a chairperson who shall serve for one (1) year. A majority of members shall decide upon rules of procedure.

(4) The board shall hold as many meetings a year as are necessary to effectuate the purpose of this Act, but the board must hold at least quarterly meetings. Notice of a meeting shall be sent to each member at least ten (10) days prior to the meeting. Five (5) members shall constitute a quorum. Rules of procedure adopted by the board may provide for such additional meetings as are necessary.

(5) The members of the board shall serve without compensation but may be reimbursed for all actual and necessary expenses incurred while discharging their official duties.

SECTION 5. A NEW SECTION OF KRS CHAPTER 223 IS CREATED TO READ AS FOLLOWS:

(1) The cabinet shall:

(a) Fix and announce dates for the examinations;

(b) Prepare and make available forms for application for a water well driller or pump installer certificate;

(c) See that all examinations for certificates are graded;

(d) Prepare and issue certificates to those entitled thereto;

(e) Upon recommendation of the board, promulgate rules and regulations as are necessary to carry out the purposes of this Act, including the conducting of exami-

nations and the suspension and revocation of certificates;

(f) Inspect and investigate water wells and water pumps to ensure compliance with the provisions of this Act;

(g) Maintain and publish annually a register showing the names and addresses of certified water well drillers and pump installers and distribute a copy of same to each certified individual free of charge;

(h) Maintain under the control of the executive secretary and treasurer a record showing:

1. The names and addresses of all certified individuals under this Act;

2. The dates of issuance and renewal of all certificates;

3. The date and substance of the charges set forth in any complaint for suspension or revocation of any certificate;

4. The date and substance of all petitions for reinstatement of certificates; and

5. The final order on such complaints and petitions.

(2) Upon written request the cabinet shall make the information set forth in paragraph (h) of subsection (1) of this section available to any person so requesting.

(3) The cabinet may conduct training to further the

provisions of this Act.

SECTION 6. A NEW SECTION OF KRS CHAPTER 223 IS CREATED TO READ AS FOLLOWS:

(1) Application for a certificate, or for renewal thereof, shall be made to the cabinet in writing under oath or affirmation, upon forms prescribed and furnished by the cabinet. Such applications shall include:

(a) The name and address of the applicant;

(b) Prior experience, if any, in the field for which the applicant is applying;

(c) Any other information that the cabinet deems necessary in order to carry out the provisions of this Act;

(d) A list of any criminal convictions of any type; and

(e) All past and current licenses held in this or any other state relating to the provisions of this Act.

(2) The cabinet may issue a water well driller certificate to any applicant who meets all of the provisions of this Act and:

(a) Is at least eighteen (18) years of age; and

(b) Is a citizen of the United States or has declared an intention to become a citizen of the United States; and

(c) Has worked continuously for two (2) years under the supervision of a certified water well driller; for

those in business on the effective date of this Act, the two (2) year experience requirement shall be deemed satisfied if the driller has engaged in water well drilling, over the two (2) previous years on a continuous basis and has done so to the satisfaction of the cabinet; and

(d) Has a passing grade on the examination as determined by the cabinet.

(3) Those persons continuously in business for two (2) years on the effective date of this Act shall apply for and obtain a certificate by July 1, 1985.

(4) The cabinet may issue a pump installer certificate to any applicant who meets all of the provisions of this Act and:

(a) Is at least eighteen (18) years of age; and

(b) Is a citizen of the United States or has declared an intention to become a citizen of the United States; and

(c) Has worked continuously for two (2) years under the supervision of a certified pump installer; for those in business on the effective date of this Act, the two (2) year experience requirement shall be deemed satisfied if the pump installer has engaged in water well pump installation the two (2) previous years on a continuous basis and has done so to the satisfaction of the cabinet; and

(d) Has a passing grade on the examination as determined by the cabinet.

(4) Those persons continuously in business for two (2) years on the effective date of this Act shall apply for and obtain a certificate by July 1, 1985.

(5) The term of each certificate shall be one (1) year. Each certificate shall carry with it the right to successive renewal upon application and payment of fee, unless the board finds that the certified individual has failed to comply satisfactorily with this Act or the regulations promulgated pursuant to this Act.

SECTION 7. A NEW SECTION OF KRS CHAPTER 223 IS CREATED TO READ AS FOLLOWS:

(1) Each application for issuance or renewal of a certificate shall be accompanied by a proof of liability coverage for bodily injury of at least one hundred thousand dollars ($100,000) per person with an aggregate of at least three hundred thousand dollars ($300,000) and for property damage of at least fifty thousand dollars ($50,000) per accident with an aggregate of at least one hundred thousand dollars ($100,000). Notice shall be given by certified mail to the executive secretary and treasurer of the board by the insurer upon lapse of coverage by the insurance company for any reason, including nonpayment of premiums.

(2) Prior to the issuance of a driller or pump

installer certificate, proof of a surety bond must be filed along with the application for a certificate. The penal sum of this bond shall be five thousand dollars ($5,000), with the applicant designated as the principal obligor and the Commonwealth designated as the obligee. The surety may be called on by the secretary if the certified individual violates any rule, regulation or provision of this Act. Notice of lapse of coverage for any reason by the surety shall be given by certified mail to the executive secretary and treasurer of the board by the surety.

SECTION 8. A NEW SECTION OF KRS CHAPTER 223 IS CREATED TO READ AS FOLLOWS:

The secretary, upon recommendation of the board, shall promulgate rules and regulations establishing standards of practice for water well construction and pump installation. The secretary shall utilize the manual of water well construction practices as the guidance document in the development of standards and regulations. These standards and regulations shall be proposed within one (1) year of the effective date of this Act and shall be included as a component of the certification program.

SECTION 9. A NEW SECTION OF KRS CHAPTER 223 IS CREATED TO READ AS FOLLOWS:

(1) Any person certified under this Act, shall keep a record of each well constructed, altered or sealed

after the effective date of this Act, and shall furnish a signed copy of such record to the cabinet within thirty (30) days after the completion of the construction or alteration. A copy of the record shall be furnished to the property owner by the driller within thirty (30) days of completion of the well. Each record required under this section shall be in a form prescribed by the cabinet and shall show:

(a) The name and address of the owner of the well and the persons constructing or altering the well;

(b) A site map with distances from any major roads, intersections, septic tank drain fields and permanent structures;

(c) The dates of commencement and completion of the construction or alteration of the well;

(d) The depth, diameter, and type of casing;

(e) The kind of joint couplings;

(f) Information on screens and type of completion;

(g) The discharge in gallons per minute and the shut-in pressure in pounds per square inch of a flowing well;

(h) The static water level with reference to the land surface and estimation of well yield, and the drawdown with respect to the amount of water pumped per minute;

(i) The kind, nature, thickness and water-bearing

capacity of the material in each stratum penetrated, with at least one (1) entry for each change in lithology;

(j) The type and amount of disinfectant used and the date of disinfection;

(k) The type, capacity and depth of the permanently installed pump; and

(l) Any other information requested by the cabinet.

(2) In the event that pump installation is not made by a certified driller who is also a certified pump installer, the certified pump installer must report the required pump information within thirty (30) days of installation of the permanent pump.

(3) Where the well is for potable use the well driller shall be responsible for having the well tested for pathogenic bacteria and turbidity and the initial disinfection of the well. The driller shall provide the well owner, the local health department, and the cabinet with the written results of any and all testing and a written assurance that the well has been properly disinfected, within thirty (30) days of well completion.

(4) A copy of the record shall be furnished by the cabinet to the Kentucky geological survey and to the local health department.

SECTION 10. A NEW SECTION OF KRS CHAPTER 223 IS CREATED TO READ AS FOLLOWS:

The secretary, upon recommendation of the board,

shall establish by regulation a system of fees, provided that the fees shall not exceed reasonable costs of administering the certification, certificate renewal, testing, inspection, certificate suspension and revocation activities provided for in this Act. All fees obtained under this program shall be deposited in a trust and agency account for the sole use of the board and the cabinet in administering the certification program, and shall not become part of the general fund.

SECTION 11. A NEW SECTION OF KRS CHAPTER 223 IS CREATED TO READ AS FOLLOWS:

All water well drillers and pump installers, before doing any water well or pump installation related work in Kentucky, must comply with this Act notwithstanding comparable state provisions in states other than Kentucky.

SECTION 12. A NEW SECTION OF KRS CHAPTER 223 IS CREATED TO READ AS FOLLOWS:

The cabinet may make such unannounced inspections as it deems necessary to determine compliance of certified individuals with the provisions of this Act. The cabinet shall also have the right to enter upon any and all property for the purpose of obtaining information about water well construction, whether idle, in use or abandoned.

SECTION 13. A NEW SECTION OF KRS CHAPTER 223 IS CREATED TO READ AS FOLLOWS:

(1) Except as provided in subsection (2) of this section, any person having an interest which is or may be adversely affected may commence a civil action on his own behalf to compel compliance with this Act against any other person who is alleged to be in violation of any rule, regulation, order or certificate issued pursuant to this Act.

(2) No action may be commenced prior to sixty (60) days after the plaintiff has given notice in writing of the violation to the cabinet or if the state has commenced and is diligently prosecuting a civil action to require compliance with the provisions of this Act. However, in any such action, any person may intervene as a matter of right.

(3) Any action respecting a violation of this Act or the regulations thereunder may be brought only in the circuit court of the county in which the water well drilling or pump installing operation complained of is located.

(4) In any action under this section, the cabinet, if not a party, may intervene as a matter of right.

(5) The court, in issuing any final order in any action brought pursuant to subsection (1) of this section, may award costs of litigation, including attorney and expert witness fees, to any party, whenever the court determines such award is appropriate.

(6) Nothing in this section shall restrict any right which any person may have under any statute or common law to seek enforcement of any of the provisions of this Act and the regulations thereunder, or to seek any other relief.

(7) Any person who is injured in his person or property through the violation of any rule, regulation, order, or determination issued pursuant to this Act may bring an action for damages, including reasonable attorney and expert witness fees, in the circuit court of the county in which the water well or water pump-related activity complained of is located.

Section 14. KRS 223.991 is amended to read as follows:

(1) Any person, firm or corporation (municipal or private) who violates any provisions of KRS 223.160 to 223.220 or the rules and regulations adopted thereunder shall be liable to a civil penalty not to exceed the sum of one thousand dollars ($1,000) for said violation and an additional civil penalty not to exceed one thousand dollars ($1,000) for each day of operation in violation of KRS 223.160 to 223.220 or of the rules and regulations adopted thereunder. In addition, the person, firm or corporation may be enjoined in the manner set forth in KRS Chapter 224 from continuing such violations.

(2) Any person who fails to comply with the

certification provisions of this Act in violation of Section 2 of this Act shall be liable for a civil penalty not to exceed the sum of one thousand dollars ($1,000) for each day during which such violation continues, and in addition may be concurrently enjoined from any such violations as hereinafter provided.

(3) Any person certified under the provisions of this Act, who violates this Act or fails to perform any duties imposed by these sections, or who violates any determination, rule, regulation or order or determination of the secretary promulgated pursuant thereto may be subject to proceedings for certificate suspension or revocation, or non-renewal of a certificate.

(4) It shall be the duty of the cabinet to institute an action for the recovery of the penalties herein provided for, and to bring an action for an injunction against any person violating or threatening to violate the certification provisions of this Act or violating or threatening to violate any order or determination of the cabinet promulgated pursuant thereto. In any such action any findings of the cabinet shall be prima facie evidence of the fact or facts found therein.

(5) Any person found guilty of violating the certification provisions of this Act or the rules and regulations adopted thereunder shall be guilty of a misdemeanor and may be fined not less than one hundred

dollars ($100) nor more than five hundred dollars ($500) for each violation or imprisoned not more than thirty (30) days or both. Each day the violation continues shall be considered a separate violation.

(6) Civil and criminal penalties shall not be deemed mutually exclusive.

(7) All enforcement proceedings shall be conducted pursuant to KRS Chapter 224, and all certificate revocation and enforcement actions shall be subject to the administrative and judicial procedures contained in KRS Chapter 224.

AN ACT relating to water resources.

Be it enacted by the General Assembly of the Commonwealth of Kentucky:

SECTION 1. A NEW SECTION OF KRS CHAPTER 151 IS CREATED TO READ AS FOLLOWS:

At the discretion of the authority, any project to be financed under the provisions of KRS 151.100 to 151.460 and 151.990 may, in anticipation of permanent financing with revenue bonds, be provided interim financing in like manner and under such alternative provisions as set forth for interim financing by the state property and buildings commission under KRS 56.513.

Section 2. KRS 151.100 is amended to read as follows:

As used in KRS 151.100 to 151.460 and 151.990, the words listed herein shall have the following respective meanings, unless another or different meaning or intent shall be clearly indicated by the context:

(1) The word "authority" shall mean the water resources authority of Kentucky;

(2) The word "cabinet" [~~"department"~~] shall mean the [~~department for~~] natural resources and environmental protection cabinet;

(3) The word "stream" or "watercourse" shall mean

any river, creek or channel, having well defined banks, in which water flows for substantial periods of the year to drain a given area, or any lake or other body of water in the Commonwealth;

(4) The word "diffused surface water" shall mean that water which comes from falling rain or melting snow or ice, and which is diffused over the surface of the ground, or which temporarily flows vagrantly upon or over the surface of the ground as the natural elevations and depressions of the surface of the earth may guide it, until such water reaches a stream or watercourse;

(5) The word "ground water" or "subterranean water" shall mean all water which fills the natural openings under the earth's surface including all underground watercourses, artesian basins, reservoirs, lakes, and other bodies of water below the earth's surface;

(6) The word "floodway" shall mean that area of a stream or watercourse necessary to carry off flood water as determined by the commissioner;

(7) The word "floodplain" shall mean the area in a watershed that is subject to inundation;

(8) The word "watershed" shall mean all of the area from which all drainage passes a given point downstream;

(9) The word "domestic use" shall mean the use of water for ordinary household purposes, and drinking water for poultry, livestock, and domestic animals;

(10) The word "water resources [~~resource~~] project" or "project" shall mean any structural or nonstructural study, plan, design, construction, development, improvement or any other activity including programs for management, intended to conserve and develop the water resources of the Commonwealth and shall include all aspects of water supply, flood damage abatement, navigation, water-related recreation, and land conservation facilities and measures;

(11) The word "withdraw" or "withdrawal of water" shall mean the actual removal or taking of water from any stream, watercourse or other body of public water;

(12) The word "dam" shall mean any artificial barrier, including appurtenant works, which does or can impound or divert water, and which either (1) is or will be twenty-five (25) feet or more in height from the natural-bed of the stream or watercourse at the downstream toe of the barrier, as determined by the department, or (2) has or will have an impounding capacity at maximum water storage elevation of fifty (50) acre-feet or more;

(13) The word "person" shall mean any individual, public or private corporation, political subdivision, government agency, municipality, co-partnership, association, firm, trust, estate, or other entity whatsoever;

(14) "Secretary" shall mean the secretary of the

[~~department for~~] natural resources and environmental protection cabinet;

(15) "Authorized representative" shall mean an individual specifically authorized by the commissioner to act in his behalf;

(16) The word "reservoir" shall mean any basin which contains or will contain the water impounded by a dam;

(17) "Owner" shall mean any person who owns an interest in, controls, or operates a dam.

Section 3. KRS 151.330 is amended to read as follows:

(1) The governor, the secretary for natural resources and environmental protection, the secretary of the finance and administration cabinet, the secretary for human resources or his designee, the commissioner of economic development, the commissioner of agriculture, the secretary of the commerce cabinet, the attorney general, the secretary of the transportation cabinet, the commissioner of fish and wildlife resources, the commissioner of parks, and their respective successors in office, and two (2) members of the flood control advisory commission shall be a body corporate and politic, constituting a public corporation and a governmental agency and instrumentality of the Commonwealth by the name of "the water resources authority of Kentucky" with perpetual succes-

sion and with power in that name to contract and be contracted with, sue and be sued, have and use a corporate seal, and exercise, in addition to the powers and functions specifically stated in this chapter, all the usual powers of private corporations to the extent that the same are not inconsistent with specifically enumerated powers.

(2) The members of the authority shall receive no compensation for their service in that capacity, but shall be entitled to reimbursement for all reasonable expenses necessarily incurred in connection with the performance of their duties and functions as such members.

(3) Seven (7) members of the authority shall constitute a quorum for the transaction of business. The governor shall, by virtue of his office, be the chairman of the authority. The secretary for natural resources and environmental protection shall, by virtue of his office, be the vice-chairman of the authority. The secretary of the finance and administration cabinet shall, by virtue of his office, be the treasurer of the authority.

(4) The authority shall meet semi-annually [~~quarterly~~] or more often if necessary.

(5) An executive board consisting of five (5) members of the authority or their designees, selected by the governor with the consent of the authority, shall meet as needed but not less than quarterly and at least one (1)

month in advance of authority meetings. The board shall consider and discuss matters to be placed before the authority and shall set an agenda for authority meetings.

Section 4. KRS 151.340 is amended to read as follows:

(1) Administrative details and other activities of the authority shall be administered by the executive director of the authority and he shall maintain correct, complete records of all the authority's transactions and proceedings which shall constitute public records open to inspection at reasonable times. The executive director of the authority shall be appointed by the authority for a term established at the authority's discretion [~~the director of the division in the department responsible for administering the provisions of this chapter~~].

(2) The executive director shall:

(a) Prepare and distribute agendas and previous meeting minutes in advance of scheduled meetings of both the executive board and the authority;

(b) Provide minutes and other agenda items requiring official action to all members at least two (2) weeks prior to scheduled meetings;

(c) Prepare and distribute in advance of executive board and authority meetings a financial report on the status of the water resources fund; and

(d) Prepare and provide to the authority an annual

report including, but not limited to, a status report reviewing water activities from the previous year that fall within the authority's responsibilities or powers, areas of possible authority action or involvement, recommendations on future year activities, and an annual financial report.

Section 5. KRS 151.360 is amended to read as follows:

(1) In order to provide for the development of Kentucky's water resources to meet future demands for usable water, and to provide for the construction of water resource projects including but not limited to the construction of dams with [~~surplus~~] water storage capacity, reservoirs for municipal and industrial water supply, and other projects and water supply facilities to assure the adequate supply of water which is essential to the continued municipal, industrial, recreational and agricultural growth of the Commonwealth, the authority is hereby authorized and empowered[~~,~~] to:

(a) Contract with the federal government for the inclusion of [~~additional~~] water supply storage space behind existing or proposed flood control or other projects;[~~, to~~]

(b) Construct, maintain, repair and operate water supply [~~resources~~] projects; [~~to~~]

(c) Participate with the federal government or any

of its agencies, the state government or any of its agencies or political subdivisions, or any other person in the construction, maintenance, repair or operation of any water supply [~~resource~~] project; [~~to~~]

(d) Lease water supply [~~resource~~] projects to the cabinet [~~department~~] or other governmental agencies and political subdivisions of the Commonwealth; and [~~to~~]

(e) Provide financial assistance through loans or otherwise for the development of water supply [~~resource~~] projects.

(2) The authority is hereby authorized and empowered to:

(a) Contract with the federal government to conduct water resources project studies;

(b) Contract with the federal government for the construction, maintenance, repair and operation of flood control, navigation, and water-related recreation projects;

(c) Construct, maintain, repair and operate structural and nonstructural projects and facilities for flood damage abatement and non-point source pollution control or associated with publicly-owned water supply dams;

(d) Participate with any state government agency, political subdivision, or any other person in the construction, maintenance, repair and operation of any water resources project;

(e) Lease any water resources project to the cabinet or any other governmental agency and political subdivision of the Commonwealth;

(f) Provide financial assistance through loans or otherwise for the development of any water resources project;

(g) Coordinate the programs of all state agencies in the conservation, development and wise use of public water; and [.]

(h) [~~(3)--The authority is authorized and empowered to~~] Promote the beneficial and proper distribution of water throughout the Commonwealth.

Section 6. KRS 151.370 is amended to read as follows:

The authority is further authorized and empowered:

(1) To construct, reconstruct, maintain, repair, operate and regulate water resource projects at such locations within the Commonwealth as may be determined by the authority;

(2) To acquire by purchase, exercise of the rights of eminent domain, grant, gift, devise or otherwise, the fee simple title to or any acceptable lesser interest in any lands, and by lease or other conveyance, contract for the right to use and occupy any lands selected in the discretion of the authority as constituting necessary, desirable or acceptable sites for water resources

projects of the authority;

(3) To issue revenue bonds of the authority payable solely from the revenues, rentals, rates, charges and other funds, pledged for their payment, for the purpose of paying all or any part of the cost of any one (1) or more projects, and to refund any of its bonds;

(4) To fix by contract, or to establish and revise from time to time and charge and collect revenues, rentals, rates and charges for the use of the services and facilities of projects;

(5) To combine for financing purposes any two (2) or more projects;

(6) To establish and enforce rules and regulations for the use of any project;

(7) Without reference to KRS Chapter 56, to acquire and hold in the name of the authority real and personal property in the exercise of its powers and the performance of its functions and duties under this chapter, and to dispose of the same;

(8) To make and enter into such agreements with the federal government, the Commonwealth or any of its agencies or political subdivisions and any other parties as may be necessary or incidental to the performance of its duties and the execution of its powers under this chapter;

(9) To employ such employes and agents as may be

necessary in the judgment of the authority and to fix their compensation subject to KRS Chapter 18A [18];

(10) To receive and accept from the Commonwealth and any federal or other government agency or private concern, grants for or in the aid of planning for water resources management, water resources program establishment, or construction or development of any water resources project, and to receive and accept aid or contributions from any source of either money, property, labor or any other things of value, to be held, used and applied only for the purposes for which such grants and contributions may be made;

(11) To expend reasonable funds of the authority in the form of grants for research, scientific study or planning of the development of water resources throughout the Commonwealth;

(12) To adopt any rules or regulations necessary to accomplish the purposes of the authority;

(13) To do all acts and things necessary or convenient to carry out the powers expressly granted to the authority.

Section 7. KRS 151.390 is amended to read as follows:

When it has been determined by the authority that the planning, development and construction of a water resources project will accomplish the public purposes of

this chapter, the authority may contract to loan any county, city, water district or association, flood control district, watershed conservancy district or other governmental subdivision or agency of the Commonwealth, such amount of money as in the discretion of the authority is needed in the development and completion of the water resources project.

Section 8. KRS 151.410 is amended to read as follows:

(1) Any governmental subdivision or agency of the Commonwealth may apply to the authority for assistance in the planning, development, construction and operation of a water resources project. Applications shall be made in a manner prescribed by regulations of the authority.

(2) The authority shall hold such hearings and examinations as to each application as shall be necessary to determine whether the public purposes of this chapter will be accomplished by granting financial assistance to such applicants.

Section 9. KRS 151.460 is amended to read as follows:

(1) It shall be the duty of the cabinet's [~~department's~~] office of general counsel, or upon the secretary's request, of the attorney general to bring an action for the recovery of the penalties herein provided for and to bring an action for a restraining order,

temporary or permanent injunction, for the prevention or correction of a condition constituting or threatening to constitute a violation of this chapter, except as provided for in KRS 151.299.

(2) All actions for penalties and injunctive relief for violations of this chapter shall be brought in the name of the Commonwealth of Kentucky by the cabinet's [~~department's~~] office of general counsel, or upon the secretary's request, by the attorney general in the circuit court of the county in which the applicant resides, or in the circuit court having jurisdiction of the defendant.

AN ACT relating to wastewater plant operators.

Be it enacted by the General Assembly of the Commonwealth of Kentucky:

Section 1. KRS 224.135 is amended to read as follows:

(1) The Kentucky board of certification of wastewater system operators is established. The board shall recommend qualified applicants to the cabinet for certification and perform such other acts as may be necessary to carry out the purposes of this section. Members of the board shall be appointed by the governor. The board shall consist of eight (8) members as follows: one (1) employe of a municipality who holds the position of either city manager, city engineer, director of public works, or the equivalent thereof; one (1) member who is a faculty member of a college, university, or professional school whose major field is related to wastewater treatment; one (1) non-voting ex officio member representing the cabinet; and five (5) members currently employed as operators holding valid certificates where one (1) of these five (5) shall be an operator of an industrial wastewater system. Board members shall serve for a four (4) year term, except for the first board to which two (2) of the operators will be appointed for four (4) years

and three (3) for two (2) years. The first college faculty member will be appointed for two (2) years and the remaining board members will be appointed for four (4) years. The cabinet's representative shall serve as executive secretary and treasurer and be responsible for maintaining records. The members of the board shall serve without compensation but may be reimbursed for all actual and necessary expenses incurred while discharging their official duties. At least four (4) existing members of the board shall constitute a quorum.

(2) No person shall have primary responsibility for the operation of any sewage system or portion thereof whether publicly or privately owned unless he has passed an examination prescribed by the natural resources and environmental protection cabinet which shall determine his skill and competency for such operation and has been issued a certificate to that effect by the cabinet.

(3)[~~(2)~~] No person shall authorize or allow any person who does not hold a certificate issued pursuant to subsection (2) [~~(1)~~] of this section to have primary responsibility for the operation of any sewage system or portion thereof.

(4)[~~(3)~~] The cabinet may classify all sewage systems and portions thereof in the manner provided by the rules and regulations of the cabinet with regard to size, type, physical conditions affecting such systems or por-

tions thereof, and the skill, knowledge and experience required for the operation of the system or portion thereof and restrict the application of any certificate issued pursuant to subsection (2) [~~(1)~~] of this section to the operation of a sewage system or portion thereof of a specific class.

(5)[~~(4)~~] All applicants for the examination and certification for the operation of any sewage system or portion thereof, whether publicly or privately owned, shall pay a fee of ten dollars ($10.00). The annual certification renewal fee shall be four dollars ($4.00). The fees required under this section shall be payable to the cabinet.

(6) Operators shall have accumulated twelve (12) hours of appropriate board approved training for annual certificate renewal. Such training shall include, but may not be limited to, correspondence courses, short courses, trade association meetings, and on-the-job training. Training hours accumulated in any given year in excess of the minimum requirement necessary for renewal may be carried forward for a period not to exceed two (2) years.

(7) The board may waive any or all of the requirements of subsection (6) of this section for all or portions of an established class of operators.