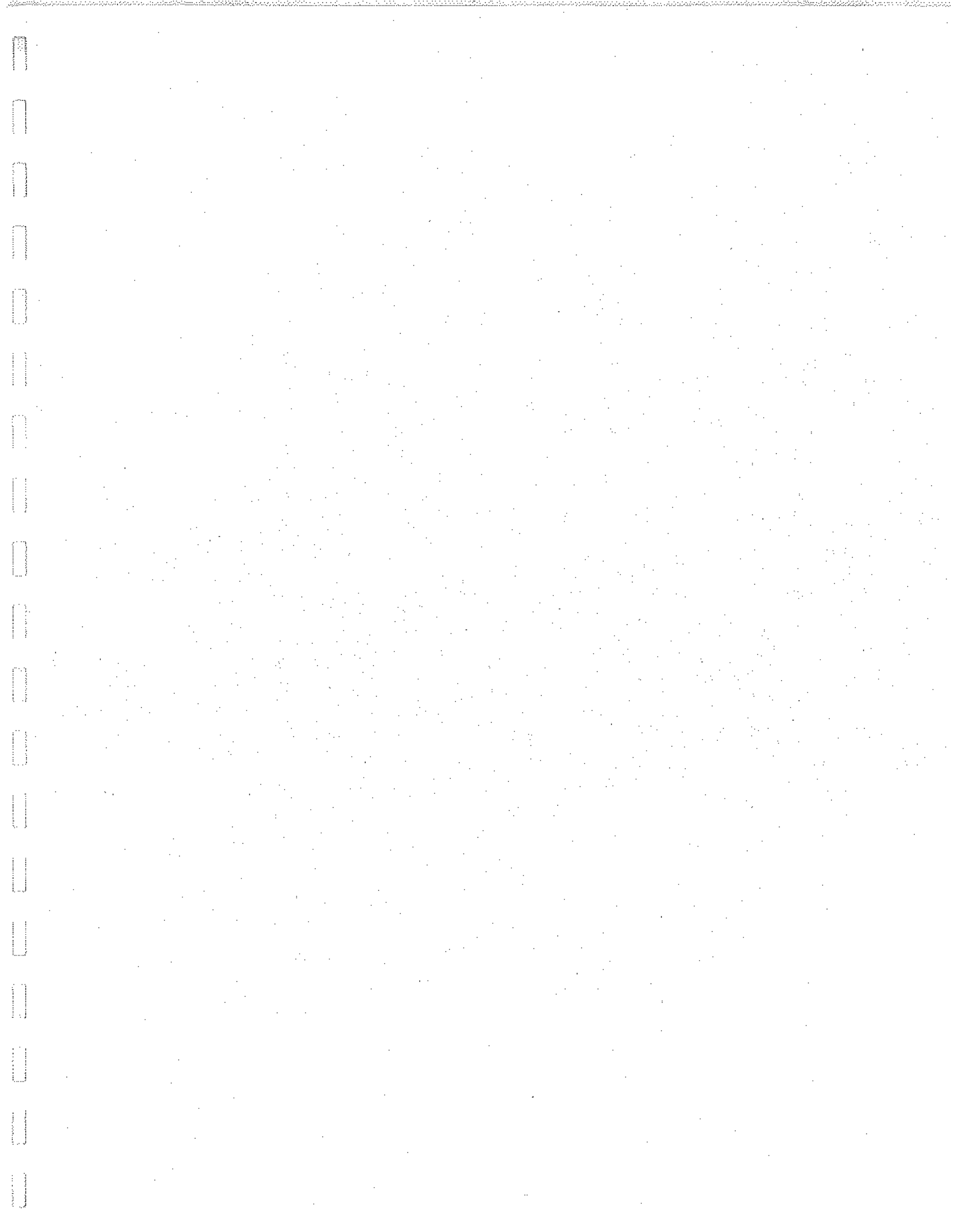


**THE ROANOKE RIVER CORRIDOR**  
*MANAGING A STRATEGIC RESOURCE*

prepared by  
Roanoke River Corridor Study Policy, Technical,  
and Citizens Advisory Committees  
with partial funding from  
The Virginia Environmental Endowment

June, 1993



## PREFACE

Preparing the Roanoke River Corridor, Managing a Strategic Resource has been a strategic planning process involving a cross-section of our communities and guidance from local experts in stream management. This effort began several years ago with a joint meeting of the Roanoke city and county planning commissions, and has grown to include seven jurisdictions and citizens from more than a 800 square mile area. The Project Team appreciates the support provided by each of the participating localities, particularly the insight and guidance of local planning staffs. Special acknowledgement is due the following persons who participated in preparing this report.

<u>Policy</u> <i>Advisory Committee</i>	<u>Technical</u> <i>Advisory Committee</i>	<u>Citizen</u> <i>Advisory Committee</i>	<u>Ex-Officio</u> <i>Assistance</i>
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- |   |   |   |  |
|---|---|---|--|
| Ms. Carolyn Furrow<br>Mr. Ed Hastings<br>Mr. Charles Mattox<br>Mr. Ron Miller<br>Mr. Charles Price, Jr.<br>Mr. Ed Riley<br>Mr. Malvin Wells<br>Mr. Don Witt | Mr. Jeff Burdett<br>Mr. Bob Dowd<br>Ms. Carolyn Furrow<br>Mr. Terry Harrington<br>Mr. John Marlies<br>Mr. Bob Oblinsky<br>Mrs. Liz Parcel<br>Mr. Joe Powers<br>Mr. Dave Rundgren<br>Ms. Helen Smythers<br>Mr. Philip Vanoorbeek<br>Mr. Joe Yates, Jr. | Mr. D. Wayne Agee<br>Mr. Paul Angermeyer<br>Mr. Foster S. Arrington<br>Mr. Daniel Bayer<br>Mr. Craig Bell<br>Mr. Bob Blankenship<br>Ms. Juanita Callis<br>Mr. David L. Foster<br>Ms. Dawn French<br>Mr. John Garrand<br>Mr. Alan Heath<br>Mr. Ben L. Henderson<br>Mr. Joe Hunnings<br>Mr. Dick Lang | Mr. Wade Biddix<br>Ms. Sue Bruenderman<br>Mr. Dan Brugh<br>Mr. J. T. Eaton<br>Mr. Will Estes<br>Mr. Dennis Jones<br>Mr. Bud LaRouche<br>Mr. Shep Moon<br>Mr. Will Shepherd<br>Ms. Shawn E. Smith<br>Mr. Robert Trickle |
|---|---|---|--|

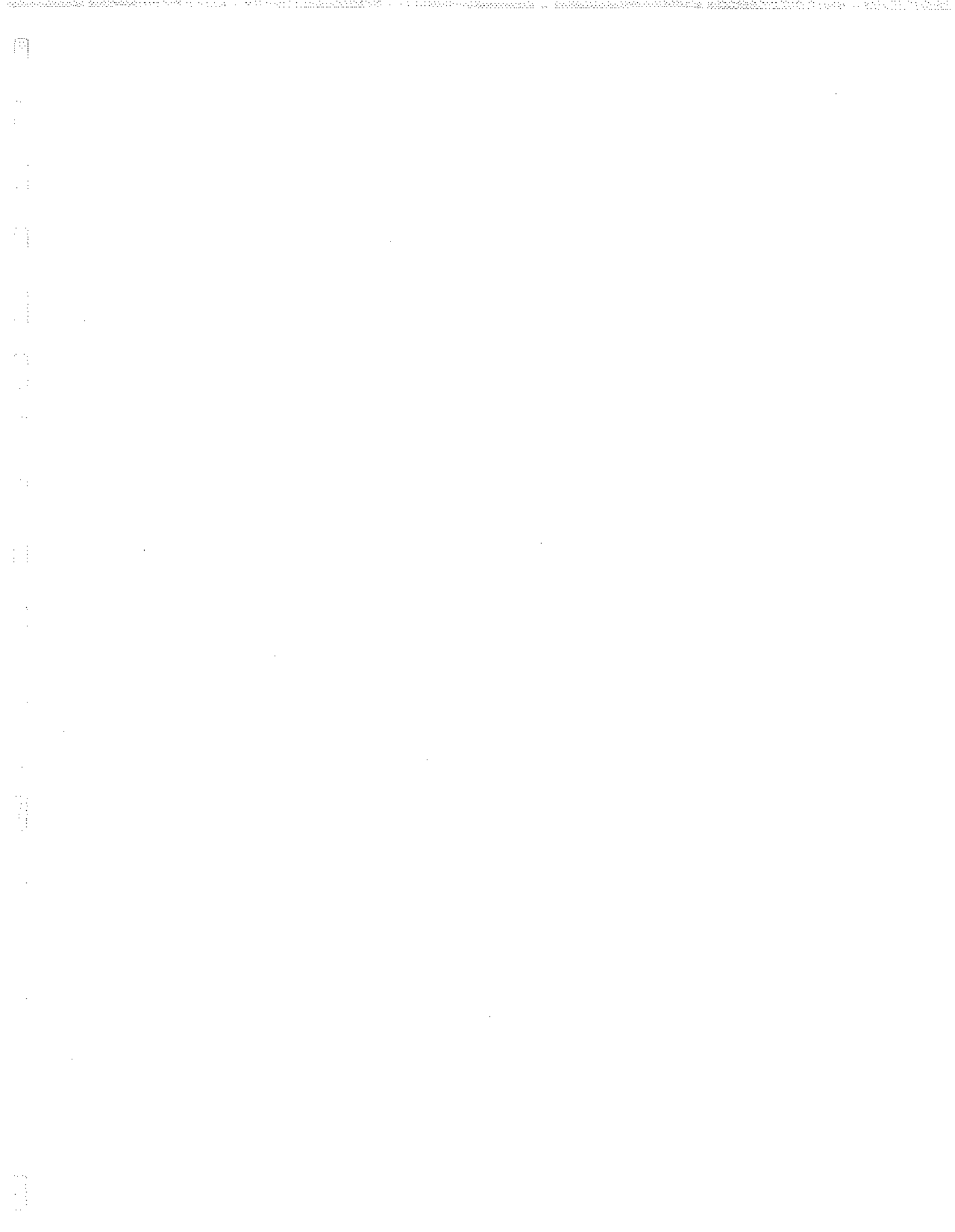
- Ex-officio
- Mr. Bob Dowd  
 Mr. Dennis Gragg  
 Mr. Dave Rundgren  
 Mr. Wayne Strickland

Special thanks is also owed to the Virginia Environmental Endowment, which provided funding assistance making preparation of the report possible.



# CONTENTS

HISTORY .....	3
CORRIDOR AREA .....	5
MODEL CONSERVATION OVERLAY ZONE .....	7
ROANOKE RIVER ADVISORY BOARD .....	11
PROPOSED 1994 WORK PROGRAM .....	13
ELEMENT 1: ROANOKE RIVER CORRIDOR MODEL CONSERVATION OVERLAY ZONE .....	14
ELEMENT 2: ROANOKE RIVER ADVISORY BOARD DRAFT ORGANIZATIONAL COOPERATIVE AGREEMENT & DRAFT BY-LAWS .....	14



# ROANOKE RIVER CORRIDOR STUDY

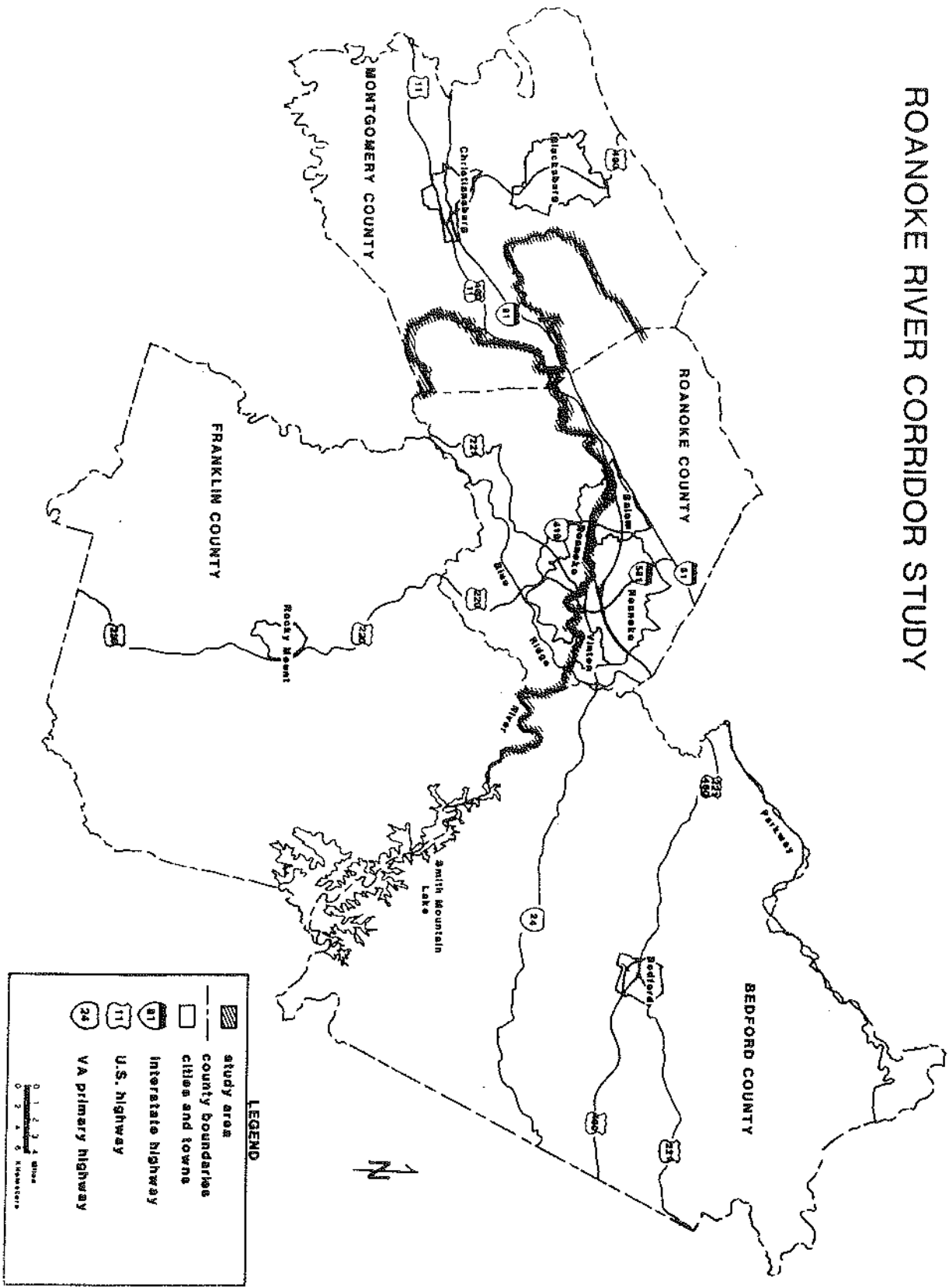


Figure 1. Roanoke River Corridor Study Area





## HISTORY

In 1989 a joint meeting of the Roanoke City and County Planning Commissions identified the Roanoke River as a critical natural resource. These two planning commissions targeted the Roanoke River for a joint planning initiative. To assist this joint planning effort, the Virginia Environmental Endowment (VEE) agreed to assist in funding the initiative in 1990. VEE funding and the participation of the Central Virginia, Fifth, New River Valley and West Piedmont planning district commissions facilitated a basinwide approach encompassing the Roanoke River basin from its headwaters to Smith Mountain Lake.

Initiating this study expanded the list of jurisdictions involved to also include: the City of Salem, counties of Bedford, Franklin and Montgomery and the Town of Vinton. In 1990 citizen task forces, planning commission staffs, and local government staffs inventoried the resources associated with the Roanoke River, its floodplain, and a buffer area adjacent to the floodplain. This planning effort also outlined a set of recommendations for management of the Corridor including:

1. Amendment of local comprehensive plans by member localities within the Roanoke River Corridor Study Area to include specific goals and policies targeting management of the Roanoke River.

2. Development of a Roanoke River Conservation Overlay Zone Ordinance.

3. Formation of a joint advisory body for the Corridor Area.

In 1991 and 1992 member city, county and town planning commissions and governing bodies considered the study recommendations and modified their respective comprehensive plans on a jurisdiction specific basis. During this period, financial assistance was requested of VEE to develop:

1. A model conservation overlay zone.

2. An advising committee structure.

This document is a summary of the model conservation overlay zone and draft advising committee structure, developed with the assistance of these funds and the efforts of area planning staffs and citizenry.



## CORRIDOR AREA

The Study Area includes the length of the Roanoke River from its headwater tributaries in Montgomery and Roanoke counties to the Hardy Ford Bridge, at the upper reaches of Smith Mountain Lake. Along the length of the River the Study Area consists of the river channel, the 100 year floodplain and a buffer area outside the 100 year floodplain. The floodplains were those defined by the Federal Emergency Management Agency (FEMA).

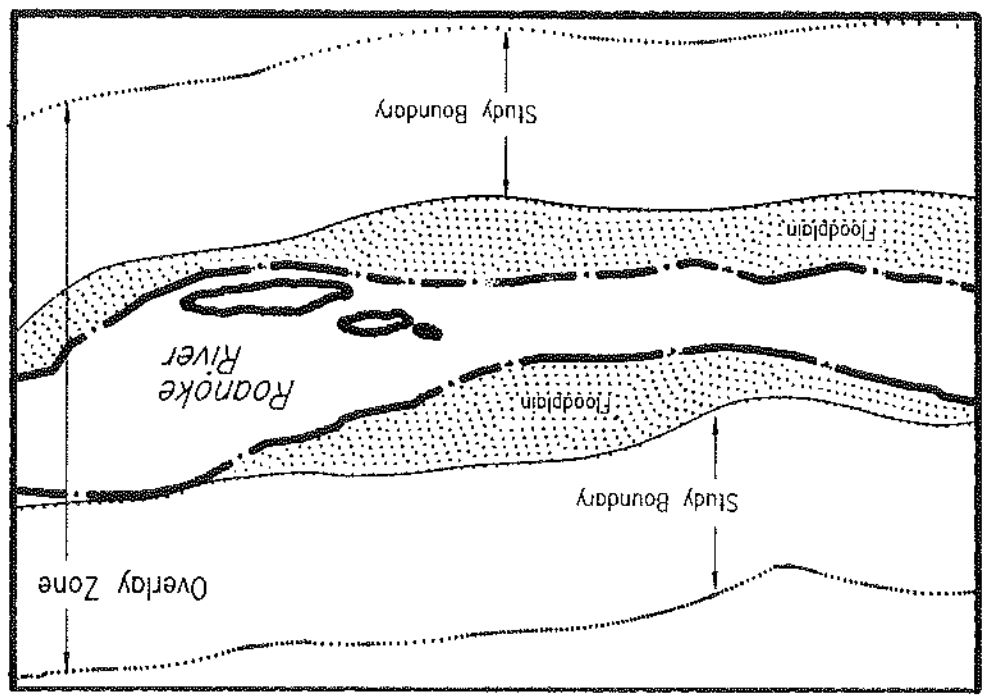


Figure 2. Study Area Design

The study area reflects the planning effort's focus on the Roanoke River, recognizing the River as a cultural resource, critical floodway, water source and an important natural habitat. This multiplicity of attributes is a clear indicator that the River is a strategic resource - a resource that requires proper management to assure its long term vitality. This effort is one of several projects underway with the objective of protecting water quality in the region. Certainly, current initiatives to improve storm water management, identify highly erodible soils, and minimize infiltration/inflow into wastewater collectors will tremendously benefit water quality in the River. This effort targets the Roanoke River as a highly visible indicator of water quality throughout the region and an example of regional cooperation to meet local needs. The actual area to which member localities elect to apply the study recommendations will be determined by each jurisdiction independently as it considers the recommendations. Each locality, as it considers implementing the Study's recommendations, should reflect on two central themes:

1. There is a direct link between land use and the Roanoke River (i.e., storm water runoff, erosion, obstruction of the floodplain, fertilizer and herbicide application, etc.).
  2. The characteristics of lands adjacent to the Roanoke River, the uses, and scale of activity differ from jurisdiction to jurisdiction (i.e., degree of urbanization, extent of floodplain, etc.).
- These two themes will be central to local planning commissions and governing bodies efforts to determine (1) which aspects of the model conservation overlay zone to utilize and (2) how extensive an area should be managed within the conservation overlay zone in their respective jurisdictions.

## MODEL CONSERVATION OVERLAY ZONE

Local consideration and adoption of the model conservation overlay zone is the critical next step in improving management of the Roanoke River as a strategic resource.

The model ordinance provides a framework for local government action. A regional initiative, tapping the expertise of local planning staffs, planning district commission staffs, state agency personnel, university researchers, local environmental organizations, and area citizens drafted this model conservation overlay zone. The study participants identified limitations in existing ordinance structures and investigated how these types of issues were addressed in other localities in Virginia and the nation. Areas of concern included:

1. Development of inappropriate uses in the floodplain,
2. Stream bank destabilization,
3. Absence of best management practice implementation, and
4. Loss of riparian habitat.

The model conservation overlay zone is not a stand alone tool, rather a program of modifications to existing local ordinances. Two ordinances most directly impacted by the model overlay zone are:

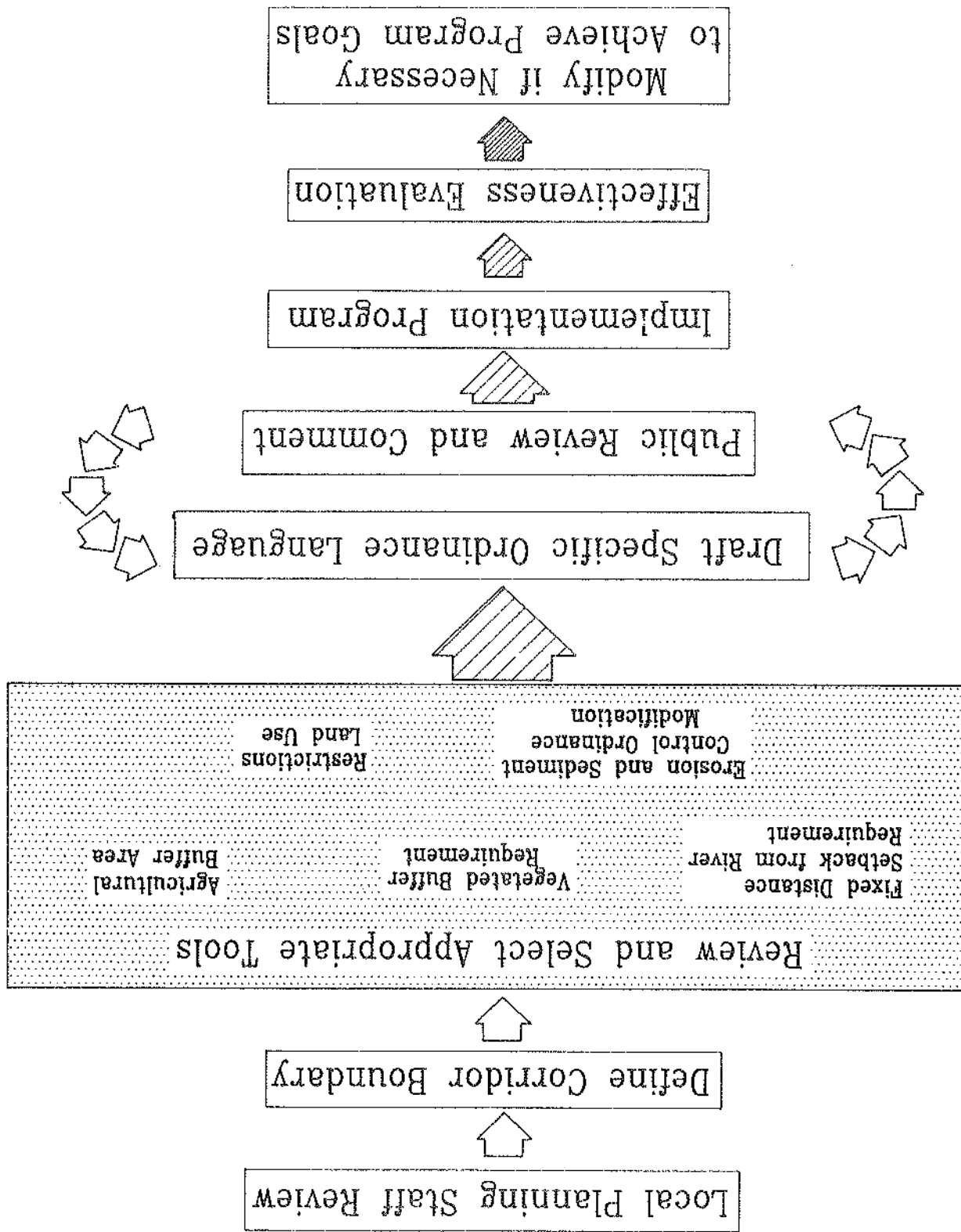
1. Zoning Ordinance, affected components include buffer-setback requirements, allowable uses, site plan requirements, and administrative review criteria.
2. Erosion and Sedimentation Control Ordinance, affected provisions include application of the ordinance to smaller disturbed areas and additional types of development activities.

The most important aspect of the model conservation overlay zone is that it encompasses a menu of actions from which local planning commissions and governing bodies can select those most appropriate to their locality. Utilizing this menu is illustrated by the decision tree outlined in Figure 3.

Element I is a detailed description of the model conservation overlay zone. The rationale underlying the tools, draft ordinance language and references to source materials are outlined.



Figure 3. Roanoke River Conservation Overlay District Decision Tree







## ROANOKE RIVER ADVISORY BOARD

The second objective of the study effort was providing an advisory board to assist the local governments within the Corridor to manage the Roanoke River as a regional resource. The responsibilities of the Board would be to:

1. Promote and coordinate implementation of the Roanoke River Corridor Conservation Overlay Zone.
2. Advise the local governing bodies and planning commissions on issues affecting the Roanoke River Corridor.
3. Assist member jurisdictions in the review of proposed public and private development activities.

First and foremost the Roanoke River Advisory Board is an advocate for the Roanoke River. The focus of that advocacy will be the implementation of the Roanoke River Corridor Conservation Overlay Zone. The Board will facilitate consideration of the model ordinance by providing presentation materials and technical support for local planning commission discussions. Moreover, the Board will provide a forum for member jurisdictions to keep each other informed of their respective progress in implementation.

In keeping with its intended responsibilities the Advisory Board would be formed under a portion of the Code of Virginia especially designed for targeted regional planning efforts. A particular structure has been developed that complements the Study's immediate objectives. Element II contains draft by-laws and draft cooperative agreement documents, providing the details of this structure.

The Board's composition should draw from the member jurisdiction planning commissions, establishing a direct line of communication among the member commissions. This direct communication among the planning commissions was a central theme in the original Roanoke City - County effort to initiate a management strategy for the Roanoke River. Returning to this concept will be beneficial to the Roanoke River and the member planning commissions.

The proposed committee structure includes citizen members from voting districts adjacent to the river. Including these individuals will provide the citizens most directly affected by the land use tools recommended a direct voice in oversight of the management of the River.

No addition funding is requested to support this effort. There is the hope that as the model conservation overlay zone is adopted, additional grant funds or gifts might be available to develop supporting programs. Grant opportunities with potential to support anticipated activities exceeding \$100,000 have already been identified. There is the expectation that local staff time will be expended adapting the model ordinance to their respective jurisdictions. Staffing of the Board itself will be rotated among the member jurisdictions in a fashion similar to the way participation in professional

municipal organizations like VACO, VML, VACP, VAMLIS, and others are shared.

With successful implementation of the model conservation overlay zone, the Board will be able to undertake additional tasks delegated it by the member jurisdictions. These efforts could involve:

1. Developing educational programs for homeowners on best management practices in cooperation with the Cooperative Extension and the Soil and Water Conservation Districts.
2. Assisting the departments of Game and Inland Fisheries and Forestry to inform large landowners of cost sharing programs available to them to minimize stream bank deterioration and restore stream habitat.
3. Increase public awareness of the River as a recreational resource.
4. Assist in the integration of River Access Points and River Greenway development into local and regional bikeway/walkway plans.
5. Increasing public awareness of conservation easements as a tax incentive and conservation measure, perhaps acting as a facilitator for such transfers.
6. Working with the member jurisdictions and Department of Environmental Quality to identify and develop mitigation strategies for discharges and tributaries significantly impacting water quality in the Roanoke River.

## PROPOSED FISCAL 1994 WORK PROGRAM

In Fiscal 1994 the Roanoke River Corridor Study will be evaluated by: Bedford, Franklin, Montgomery and Roanoke counties; the cities of Roanoke and Salem, and the Town of Vinton. Each participating locality will be ask to:

1. Determine which components of the draft Roanoke River Corridor Model Conservation Overlay District are appropriate to their jurisdiction.
2. Delineate the area to be placed within the localities Conservation Overlay District.
3. Decide if joining the Roanoke River Advisory Board is appropriate, and consider the draft organizational papers for signature.
4. Appoint representatives to the Roanoke River Advisory Board.

Figure 4 illustrates an anticipated schedule for local government action. Generally, these actions can be achieved within six to nine months. The first meeting of the Roanoke River Advisory Board should take place within 12 months.

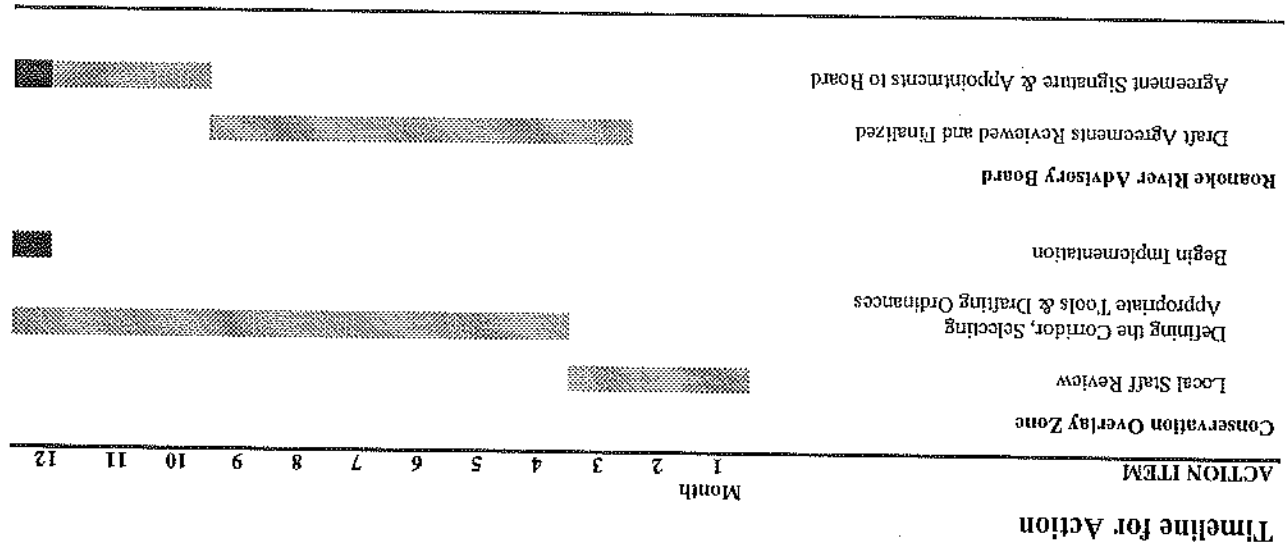


Figure 4. Timeline for Action on Roanoke River Corridor Recommendations

The current staffing effort by the member jurisdictions and planning commissions will facilitate the schedule illustrated. The single objective of the work program is to inform the member jurisdiction, planning commissions, governing bodies, and

Interested citizen groups about the Roanoke River Corridor Model Conservation Overlay Zone and assist in the development of local implementing regulations.

During this period:

1. Oversight will be provided by the current technical and policy committee appointees, until such time as each jurisdiction has completed its implementation process.

2. Summary presentation graphics and materials will be prepared to assist local boards and the public to understand the study recommendations.
3. Planning District Commission staff, in cooperation with technical committee members, will present the study concepts to governing bodies and planning commissions as requested.

The Technical Advisory Committee will work with local planning staff to coordinate implementation strategies among the localities and assess the effectiveness of the measures introduced. A program of activity will be developed for Fiscal 1995 which reflects the degree to which the model ordinance is adopted by the member localities.

**ELEMENT I  
ROANOKE RIVER CORRIDOR  
MODEL CONSERVATION OVERLAY ZONE  
Prepared by the Technical Advisory Committee  
to the Roanoke River Corridor Study**

(The Technical Advisory Committee consists of representatives from Montgomery, Roanoke, Franklin, and Bedford Counties; Salem and Roanoke Cities; the Town of Vinton; the New River Valley, Fifth, Central Virginia, and West Piedmont Planning District Commissions; and the Smith Mountain Lake Policy Advisory Board.)

The Roanoke River Corridor Conservation Overlay Zone Model is a local compilation and adaptation of several models and ordinances used elsewhere in Virginia and the United States. It has been prepared by the Technical Advisory Committee to the Roanoke River Corridor Study, with review by a Policy Advisory Committee, a Citizens Advisory Committee, and a group of Ex-Officio Reviewers from other agencies. Localities along the Roanoke River (from Montgomery County, through the Roanoke Valley, to the beginning of Smith Mountain Lake, at Franklin and Bedford Counties) are urged to review the model for potential local usage, adopting it as a whole or in part after local public hearings and other local input.

The Technical Advisory Committee prepared this model with both base and optional elements (i.e., it includes sections that can be adopted, amended, or deleted). The model is annotated to assist the reader in understanding the text. Phrases included in brackets [ ] denote areas where local options/needs should be considered. All sections should be reviewed by localities and their counsel for consistency with and effect on other zoning or land use/development regulations.

Prepared with funding assistance provided by  
the Virginia Environmental Endowment



# TABLE OF CONTENTS

Page	Table of Contents
I - 1	The Concept of a Roanoke River Corridor Conservation Overlay Zone Model
I - 1	I. Using the Roanoke River Corridor Conservation Overlay Zone Model
I - 1	A. Purpose and Boundary of the Roanoke River Corridor Conservation Overlay Zone Model
I - 2	B. Making this Model Fit Into the Existing Zoning Ordinance
I - 2	C. Selecting from the "Menu" of Potential Amendments
I - 3	II. Existing Programs Referenced in the Model
I - 3	A. Best Management Practices
I - 4	B. Erosion and Sediment Controls
I - 4	III. Basic Principles Behind Model Overlays
I - 4	A. Findings of Fact
I - 6	B. Objectives
I - 7	IV. Local Considerations
I - 7	A. The Issues of Water Quality and Quantity in Stormwater Runoff
I - 9	B. Rationale Behind Vegetative Buffers
I - 11	C. Types of Vegetation in Buffers
I - 13	D. Agricultural Vegetative Buffers
I - 14	E. Amending Local Erosion and Sediment Controls in the Conservation Overlay Zone
I - 15	V. The Relationship of Land Use & Non-Point Source Pollution

TABLE OF CONTENTS (Cont'd)

Page

APPENDIX A

Roanoke River Corridor Conservation Overlay Zone Model . . . . . I - 17

I. Purpose and Intent . . . . . I - 17

II. Applicability, Exemptions & Waivers . . . . . I - 17

A. Applicability . . . . . I - 17

B. Exemptions . . . . . I - 17

C. Waivers . . . . . I - 18

III. Development Standards and Restrictions . . . . . I - 18

A. Setbacks . . . . . I - 19

B. Vegetative Buffers . . . . . I - 19

C. Agricultural Buffer Area Requirements . . . . . I - 20

D. Erosion and Sediment Control . . . . . I - 21

E. Use Restrictions . . . . . I - 21

APPENDIX B

Surveys of Overlay Zones . . . . . I - 23

APPENDIX C

Resources Available to Support Implementation of a  
Roanoke River Overlay Ordinance . . . . . I - 26



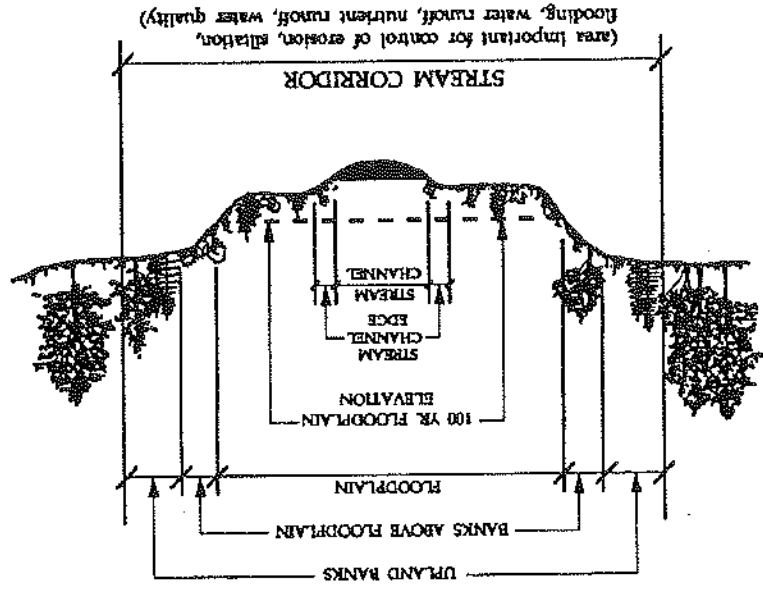
# THE CONCEPT OF A MODEL ROANOKE RIVER CORRIDOR CONSERVATION OVERLAY ZONE

## I. Using the Roanoke River Corridor Conservation Overlay Zone Model

### A. Purpose and Boundary of the Roanoke River Corridor Conservation Overlay Zone Model

The 1990 Roanoke River Corridor Study inventoried the Roanoke River's needs and opportunities, and made long term recommendations for the river. The adoption of a river conservation overlay zone was the top priority recommendation of that study. The Purpose & Intent Section of the Model Ordinance explains that such a zone, as proposed herein, will establish a Roanoke River Corridor Conservation Overlay Zone along the Roanoke River. The purpose is to designate the corridor as an area of special environmental concern worthy of coordinated conservation efforts and to take those measures necessary to protect this resource.

The overlay district shall be in addition to and shall overlay all other zoning districts where they are applied so that any parcel of land lying in the Conservation Overlay Zone shall also lie in one or more of the other zoning districts provided by the Zoning Ordinance. The geographic boundary of each conservation overlay zone will be determined later by the governing body. It could be delineated on a map or noted as a set number of feet from the river. The original Roanoke River Corridor Study defined the corridor as 750 feet from the river's 100-year floodplain.



The "Menu" of optional elements is found in Section III, beginning on page I-18. The Technical Advisory Committee (TAC) recognizes that some sections will be more easily received in some parts of the study area than others. Some localities may even want to

Because the Roanoke River Corridor Project committee members represent seven localities, from both rural and urban stretches of the river, they felt that some of the sections of the model should be optional. Of course, the whole model itself is optional. If a locality is not ready to address the Roanoke River's issues through the Zoning Ordinance, it need not adopt the model. However, for localities that do want to consider special zoning along the river corridor, this model can be adopted in full, or in part.

C. Selecting From the "Menu" of Potential Amendments

Just as localities "grandfather" existing uses, this model would do so also. However, owners of land that is exempted from these regulations should be encouraged to voluntarily utilize the ideas presented herein.

- ◆ Definitions
- ◆ Variances
- ◆ Procedures
- ◆ Fees
- ◆ Enforcement
- ◆ Conflict with other regulations
- ◆ Severability
- ◆ Effective Date
- ◆ Nonconforming Uses

Local Zoning Ordinances contain sections that pertain to all zoning districts, such as sections on Definitions, Variances, Severability, etc. Since this document recommends additions to the local Zoning Ordinance, instead of adoption of an additional stand-alone ordinance, these common sections are not shown in the model. At a minimum, the following sections of each existing Zoning Ordinance should be checked by each locality for compatibility with the proposed additions:

The Model that follows this Background Section only notes the additions that should be made to local Zoning Ordinances in order to add a Conservation Overlay Zone. The model is not intended to be adopted as a stand-alone ordinance. For that reason, localities should be careful to ensure that the additions fit well into the local ordinance. While local representatives did serve on the Advisory Committees, each locality should still take the extra step of reviewing these recommendations for compatibility with existing ordinances before adoption. Ordinances other than zoning, such as landscaping or subdivision regulations, may need to be reviewed also, as will related staff procedures. Extensive use of cross-references in the amended ordinances will help the reader follow any changes.

B. Making This Model Fit Into the Existing Zoning Ordinance

Section V on page 15 explains how land use and non-point source pollution are related. That section gives information from the Roanoke River Corridor Study that could apply to any watershed. While it is true that non-point source pollution originates throughout the watershed, it is beyond the scope of this project to address the entire watershed. Addressing the river corridor first is a way to introduce the concept to the community. Localities may choose to address the river's tributaries in a similar way at a later date.

adopt some sections now and reconsider other sections later. The TAC is recommending that localities consider the following optional elements:

- A. Setbacks
- B. Vegetative Buffers
- C. Agricultural Buffer Area Requirements
- D. Erosion and Sediment Control
- E. Use Restrictions

When these five optional elements were chosen by the TAC, they were based on examples used elsewhere. The TAC reviewed, but did not include, several other potential elements, such as Tree Preservation, Design Guidelines, ImperVIOUS Surface Limits, etc. Overlays can also be used with other resources such as steep slopes and highly erodible soils, etc. A matrix of these other elements is found in Appendix B of this report. Appendix C lists the many reports consulted during this project. Localities with other sensitive resources, such as karst terrain, may choose to utilize similar overlays for those resources in the future.

Within the model found in Appendix A, phrases in bold type and brackets [ ] indicate places, where the locality will need to insert its name or other local reference. In some cases, the bold type and brackets [ ] indicate a section where the locality must make a policy decision. For example, in Section I of the model on page I-17, the locality has to decide if (a) it will set the Roanoke River Corridor Conservation Overlay Zone as a specific distance from the river, or (b) it will designate the zone on a map.

As cautioned earlier, each locality should review the model for legality and compatibility with existing ordinances. If only some sections of the model are adopted, a check for consistency should be conducted also. For example, if the Agricultural Buffer Area Requirements are deleted by a locality, it may want to add wording in Section II-B on page I-17 to clarify that agricultural activities are exempted from the Ordinance.

## II. Existing Programs Referenced in the Model

In order to better understand the Model Ordinance, the reader should become familiar with the two following state programs.

### A. Best Management Practices

The Virginia Water Control Board (WVCB), with assistance from numerous other agencies, developed Best Management Practices Handbooks in the late 1970s. This was part of the State 208 water quality planning effort that grew out of the Federal Water Pollution Control Act Amendments of 1972. The Best Management Practices (BMPs) are aimed at controlling the non-point source part of the pollution problem. Non-point source pollution is defined as any pollution whose specific point of generation and whose exact point of entry into a water course cannot be determined. The WVCB defined a BMP as:

"a practice, or combination of practices, that is determined by a State (or designated area-wide planning agency) to be the most effective practicable means of preventing or reducing the amount of pollution generated by non-point sources to a level compatible with water quality goals." (VWCB, *Urban Best Management Practices Handbook*, 1979, p 1)

BMP Handbooks were prepared for Agriculture, Forestry, Mining, Urban, Hydrologic Modifications, and Sources Affecting Groundwater. BMPs are voluntary measures that can be undertaken on individual sites or through a locality. The Virginia Division of Soil and Water Conservation takes a major role in the BMP implementation process.

The Virginia Agricultural BMP Cost-Share Program provides partial funds to farmers for implementation of BMPs that reduce the amount of sedimentation and nutrients that reach State waters. Participants also receive technical assistance from the local Soil and Water Conservation District in preparation of a site-specific conservation plan. In some cases, USDA Agricultural Conservation and Stabilization also provides a part of the cost-share funds. Examples of eligible BMPs under the cost-share program include grass filter strips, stream protection, loafing lot management systems, legume cover crops, etc.

#### B. Erosion & Sediment Controls

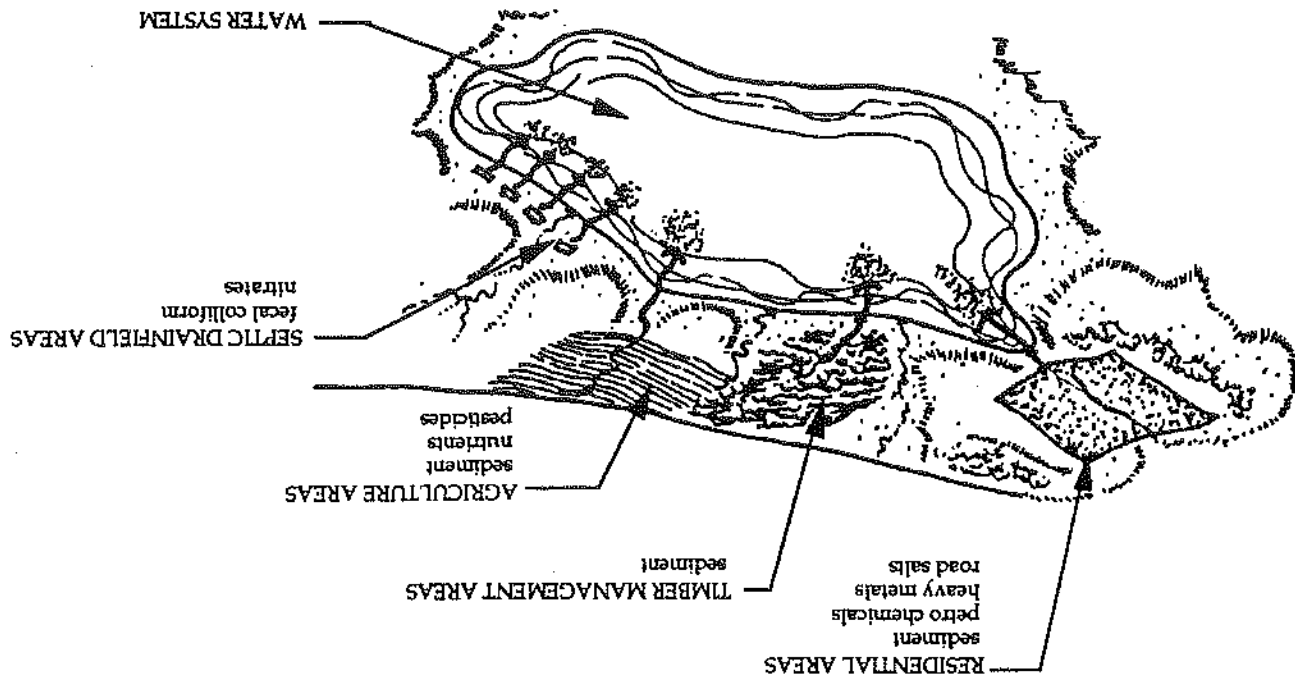
The Urban BMP Handbook also references the erosion and sediment controls in the Virginia Erosion and Sediment (E&S) Control Handbook. The E&S controls from the 1992 Virginia E&S Control Handbook (Virginia Department of Conservation & Recreation, Division of Soil and Water Conservation) are suggested measures for controlling erosion and sedimentation from construction sites. Title 10, Chapter 5, Article 4 of the Code of Virginia requires that appropriate measures be taken to control erosion and sedimentation that occurs with specific land disturbing activities. Most construction projects which disturb greater than 10,000 square feet of land are now subject to these regulations.

### III. Basic Principles Behind Model Overlays (Source: VPI&SU, College of Architecture and Urban Studies, Primer for Developing Local Water Resources Plans and Programs, 1992)

#### A. Findings of Fact

Several other models were consulted in the preparation of this document. Findings from a Model Water Resources Protection Ordinance, prepared by VPI&SU, are partially quoted below. They are based on the principle that "uncontrolled growth and development of land along with its accompanying alteration of drainage areas and patterns, water resources and natural systems has a significant impact upon the health, safety and welfare of the community;" More specifically, VPI&SU found that:

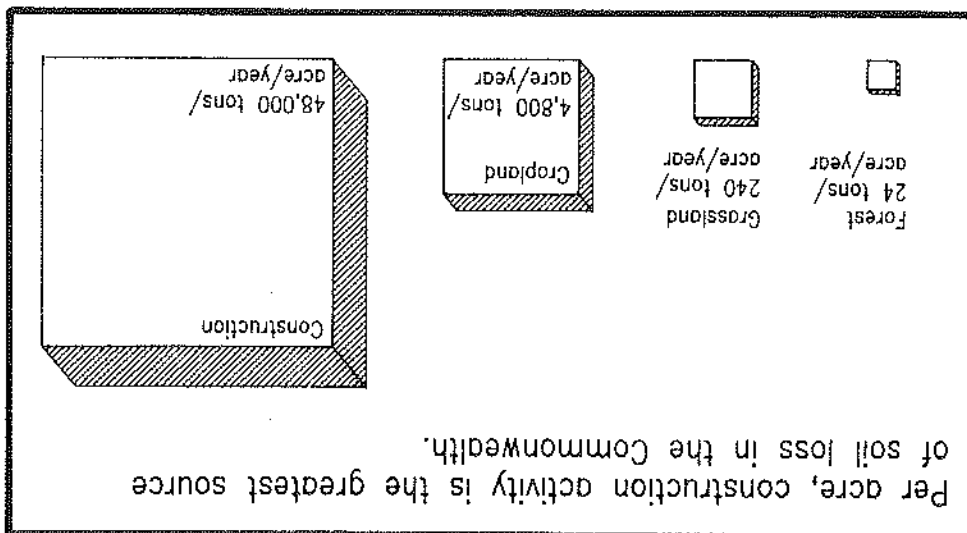
1. Stormwater runoff can carry pollutants into receiving water bodies resulting in the degradation of water quality, and negatively impacting wetlands and critical plant and animal habitats.



2. Runoff-transported nutrients, such as phosphorus and nitrogen, can accelerate eutrophication of receiving water bodies, such as reservoirs, lakes, and wetlands, and adversely affect critical plant and animal habitats and other natural systems that contribute to water quality maintenance.
3. Land use practices and development activities that require the alteration of natural topography and the removal of indigenous vegetation can increase the velocity of runoff, thereby increasing the potential for erosion and sedimentation that can ultimately degrade the quality of receiving water bodies and adversely affect critical plant and animal habitats and other natural systems that contribute to water quality maintenance.
4. Siltation of water bodies resulting from increased erosion can decrease their capacity to hold and transport water, interfere with navigation, reduce water-based recreational opportunities, and harm critical plant and animal habitats.
5. Surface water and groundwater are a vulnerable resource whose quality is largely determined through human activities upon the land.
6. Substantial economic losses can result from adverse impacts on community surface waters and groundwater; future problems can be avoided if land is used and developed in accordance with sound water management practices.

- In light of these findings, the VPI&SU report recommends that any proposed development or activity within the conservation overlay zone should be planned, designed, constructed, and maintained to meet each of the following objectives:
1. Plan the development to fit the physical characteristics of the site with a minimum of clearing and grading activities or similar activities that disturb or destroy site vegetation.
  2. As long as a fire hazard is not created, all development proposals shall strive for maximum retention of the natural features and qualities of the site, and shall seek to enhance the natural features and qualities of the site.
  3. Implement erosion and sediment control practices to prevent excessive soil loss during construction activities.
  4. Maintain buffer strips of natural vegetation along the river to reduce runoff rates and trap pollutants carried by runoff in order to reduce the potential of such pollutants entering surface water and groundwater systems.
  5. Limit the use of land for activities that may present a danger to water resources.
  6. The burden of demonstrating that there are no feasible and prudent alternatives to the development proposal in an application being considered under this Ordinance and that denial of any requested application will prevent an owner of property in [name of jurisdiction] from securing a reasonable or fair economic return from his/her property shall be on the applicant.

B. Objectives



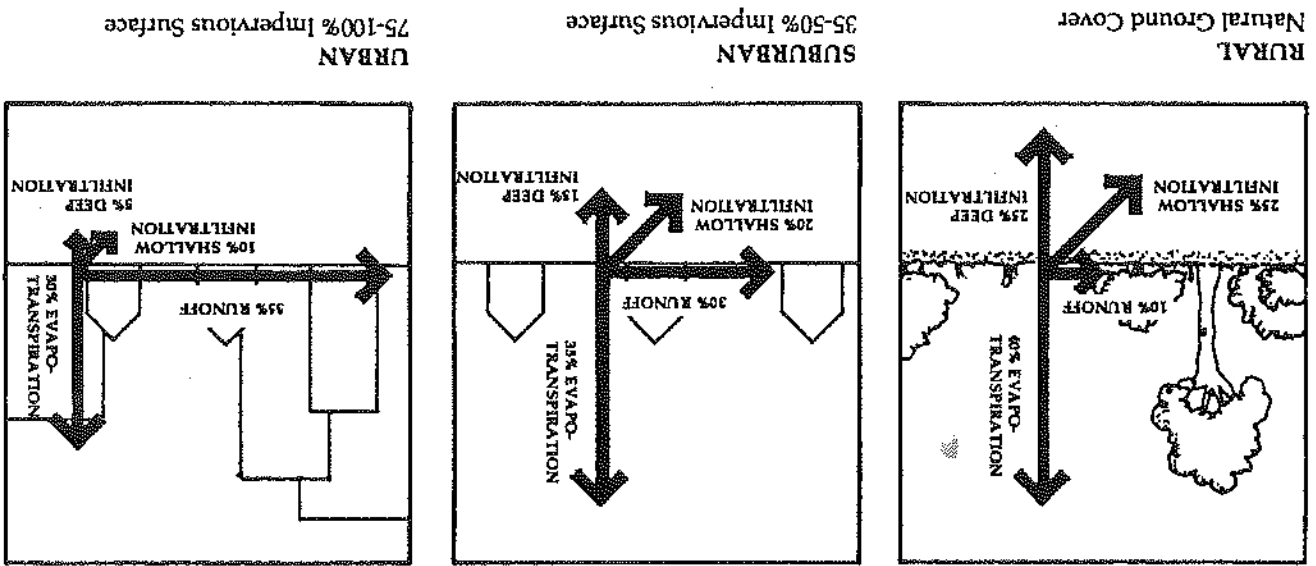
IV. Local Considerations

A. The Issues of Water Quality and Quantity in Stormwater Runoff

The authors of this model ordinance face the basic question of how the quantity and quality of runoff should be regulated. Of the many examples that were studied, some regulated the quantity of stormwater runoff, some regulated the quality, and some regulated both. As the authors evaluated the options, these basic questions arose:

1. Cost -

It is easier to regulate quantity because it is easier to see and to measure. When you regulate quality, you get into complex formulas, showing things like the percent of phosphorus that will be removed by a vegetative buffer of a certain size and certain type on a specific slope. The complexity of measuring changes in water quality will increase the developer's cost. The question that should be asked by readers of this document, such as its committee reviewers or local governments, is this? Is this locality willing to require that property owners hire the engineers needed to do the calculations to prove that any new land development does not result in a net increase in runoff pollutant loads from the site?



2. Existing State Regulations -

Quantity : At present, Minimum Standard 19 of the State Erosion and Sediment Control (E&S) Law governs the quantity of stormwater runoff for new developments. It states that "properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity, and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with ..standards and criteria." Localities are given the responsibility of enforcing this regulation, and property owners are charged with documenting those water quantity calculations with site-specific engineering reports. Some localities choose to enact even stricter quantity standards than those stated in the E&S law.

Quality : The State of Virginia has already recognized the need for increased control over the quality of stormwater runoff. The Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation, has prepared a Model Stormwater Management Ordinance for Localities that addresses the quality issue. However, this is a voluntary program for localities, not a mandatory one. Few localities have adopted it as yet, but many anticipate that it will become mandatory in the future. This raises the next basic question for readers of this report - Should localities establish stormwater quality standards for the Roanoke River Corridor Conservation Overlay Zone, or will and adopt the jurisdiction-wide model regulations of the State?

3. Relationship to on-going local stormwater management planning efforts -

Some local governments have already recognized the need to plan for stormwater quality considerations along with stormwater quantity considerations. For example, the Roanoke Valley (not including Montgomery, Bedford and Franklin Counties) will consider quality issues in the proposed Regional Comprehensive Stormwater Management Program (which is still pending while localities evaluate funding for the management plan). That future plan may provide some specific answers as to how Roanoke Valley localities will address the quality issue. Therefore, it is difficult for the Roanoke River Corridor Project committees to make a definitive statement on the issue of water quality before that study is completed. That leads to the next question the authors faced - Should we cite definitive standards now when far more detailed, region-specific, research lies ahead?

4. Summary of issues

Quantity : The question of water quantity is easiest to answer. The local Erosion and Sediment Control Regulations (E&S) already govern quantity for many sites. The Roanoke River Corridor Project committees can take this one step further by decreasing the size of sites that fall under the E&S law, therefore requiring that more developers meet those standards. Section III-D on page I-21 shows how this has been written into the model ordinance by the Roanoke River Corridor Project Committees.

Quality : This still leaves the question of water quality. In the face of costs to property-owners, future state regulations on stormwater runoff, and the short-term absence of the

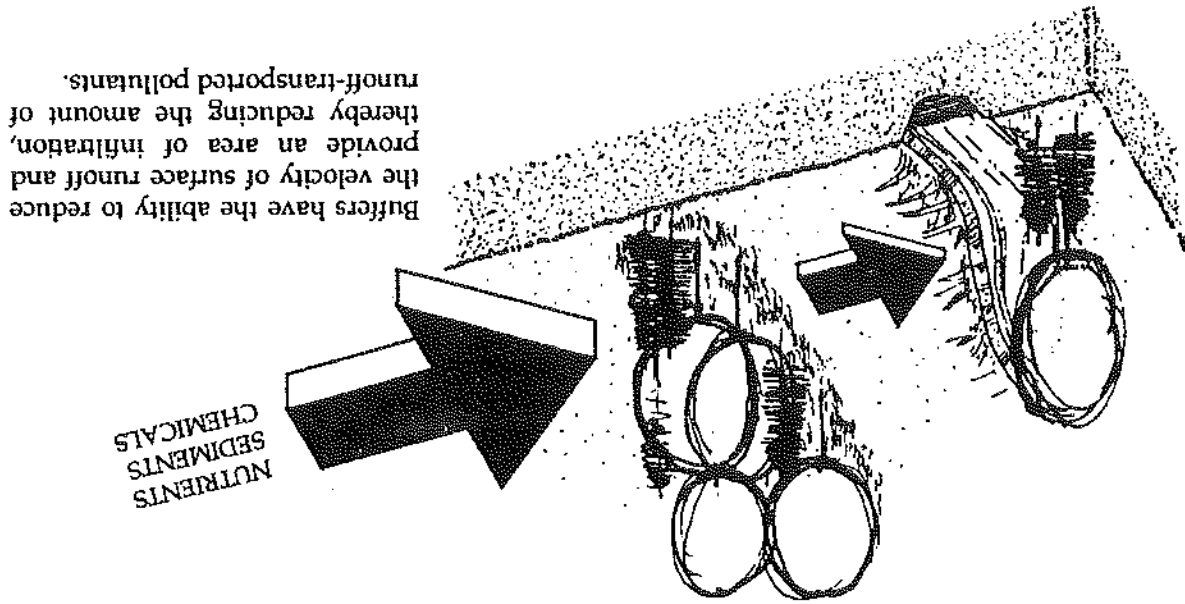


proposed Regional Comprehensive Stormwater Management Program, the Roanoke River Corridor Project Committee summarize these questions into this one - If we cannot recommend quantifiable standards at this time, should we enact a basic requirement now, in order to accomplish some reduction in pollution, and knowing that we can update it later if we need to?

The Response : The authors of this model have responded affirmatively to this last question, recommending Section III, beginning on page I-18. This section recommends Setbacks, Vegetative Buffers, Erosion & Sediment Controls, and Use Restrictions for the purpose of decreasing nutrients and sediment loads into the river. While most structural BMPs, such as retention ponds, have quantifiable results (such as 40% reduction in phosphorus loads), anticipated results of the nonstructural recommendations in Section III are difficult to quantify. For example, as described below, slope and soil factors can change the ability of a vegetative buffer to filter pollutants. Section III should be seen as a starting point, as simple controls that can achieve some reduction in non-point source pollution.

B. Rationale Behind Vegetative Buffers

After a review of the local considerations noted above, the Technical Advisory Committee (TAC) is recommending a 100-foot vegetative buffer in order to protect water quality by reducing non-point source pollution that enters the river. A vegetative buffer is a nonstructural Best Management Practice (BMP) based on the premise that most of the runoff flows across the parcel in a "sheet" (as opposed to crossing at only a few points of concentrated flow, as in gullies). BMPs, discussed earlier on page I-3, are typically a voluntary program. The Model Ordinance would make the Vegetative Buffer BMP mandatory along the river. If exceptions are needed (see next paragraph), other BMPs (either structural or nonstructural), can be added until the effect of the 100-foot buffer is achieved. The basic premise of the BMP is the trapping or slowing of stormwater runoff until sediment, nutrients, and other unwanted particles can settle out before reaching the river.



Buffers have the ability to reduce the velocity of surface runoff and provide an area of infiltration, thereby reducing the amount of runoff-transported pollutants.

Since the appropriate size of the vegetative buffer can vary greatly, the locality is faced with choosing between setting a standard on the basis of the average situation or setting a variable standard that will depend on the characteristics of each site. Although the former is a generalization, the latter is complicated and difficult to administer. In light of this variability, the drafters of the Roanoke River Corridor Model Conservation Overlay Zone

Note: \*Double these distances for disturbed areas in municipal water supply watersheds.

Erosion Potential	Percent Slope					
	0°	10°	20°	30°	40°	50°
Slight	30	55	80	105	130	155
Moderate	40	75	100	140	170	200
Severe	50	90	130	170	210	250

Table 1. Filter Strip Width in Feet\*

The Forestry Best Management Practices Handbook (page III-38) uses these factors to derive the following table. It demonstrates how the steepness of slope and erodibility of the soil can be used to determine the appropriate size of a vegetative buffer. (Contact the local planning staff or SCS office for information on soil types.)

- a. slope of the land in the strip
- b. type of vegetation in strip
- c. degree of maintenance the strip will receive"

Physical properties of the filter strip itself are determined by:

- a. land use and treatment above strip
- b. slope of land above strip
- c. length of slope above strip
- d. erodibility of soil above strip

Numerous factors, such as slope and soil type, effect the ability of a vegetative buffer to achieve its goal. The Forestry Best Management Practices Handbook (page III-38) states that "the amount and rate of runoff that will pass through the strip are determined by:

Where unusual lot sizes or other physical factors will limit the property owner's ability to install a 100-foot buffer, the locality has two options for allowing a reduced buffer. The first option allows a minimum 50-foot buffer with the use of Best Management Practices (BMPs), while the second allows a minimum buffer equal to 50% of the lot depth with the use of BMPs. The developer must show that the reduced buffer, with BMPs, will achieve at least the equivalent water quality protection, pollutant removal, and water resource conservation effect of a 100-foot buffer. This justification should be included in the applicant's Erosion and Sediment Control Plan. (If the applicant desires further relief from the regulations, he would fall under the locality's regular Variance and Board of Zoning Appeals procedure.)

have chosen 100 feet as the suggested vegetative buffer. By the above table, this size buffer would be most appropriate on a 20% slope with moderately erodible soil.

When a locality evaluates this model before adopting it, the locality may feel that the use of a 100 foot buffer requirement is not the appropriate generalization for its portion of the river. In that case, it may choose a different size buffer requirement. If the local staff is able to easily evaluate the slope and soil erodibility of all sites along the river, that locality may choose to adopt a vegetative buffer requirement that is very site-specific.

Most of the examples studied by the Roanoke River Corridor Project Technical Advisory Committee used one set buffer size, such as 100 feet. However, Fairfax County deals with the slope question by using "Buffer width = 50 + (4 x percent slope) in feet" as the vegetative buffer formula. When the Middle Peninsula Planning District Commission proposed the Dragon Run Conservation District, it required additional buffer areas in order to compensate for steep slopes. That formula states "when there is a rise in elevation of 10 feet or greater, within 50 feet measured horizontally, from the edge of the targeted soil types, then the 100 foot buffer strip should be measured from the highest point of elevation within said 50 feet."

In choosing the 100-foot vegetative buffer as the standard, the authors of this model are making a trade-off. This standard will be easier to understand, adopt, and administer. However, the ability of the vegetative buffer to remove pollutants from the runoff will vary with each specific site's soil and slope, as well as with the type of vegetation, degree of maintenance, etc. Localities may choose 100 feet as a simple starting point or adopt the more complicated slope/soil related standards.

### C. Types of Vegetation in Buffers

Where the ordinance requires vegetative buffers, the preservation of the natural vegetation would be the most cost-effective first step in that process. When the property owner needs to plant additional vegetation, the Virginia Erosion and Sediment Control Handbook provides guidance on appropriate plantings. For example, section 3.22 of that document gives the design criteria, planting guidelines and vegetation zones for vegetative streambank stabilization.

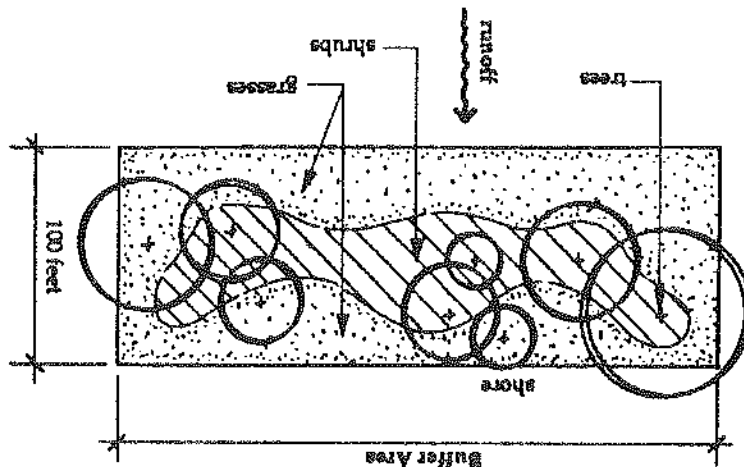
Section 3.22 of the Virginia Erosion and Sediment Control Handbook begins its recommendations with the "reed-bank zone," which is submerged for only half the year. Rushes, reed grasses, cattails, and other plants are often found here. The shrub zone and tree zone are found above the reed-bank zone. On the landward side of the buffer, property owners should give adequate consideration to fire control between any structures and the more dense vegetation.

The Local Assistance Manual (pages IV-57 and IV-58) further notes that the vegetation should be planted in three overlapping types. Beginning at the landward edge of the buffer area, deep-rooted grasses, generally up to three feet in height, will "intercept and filter the first rush of stormwater." The next type consists of deciduous and evergreen shrubs (between three and twenty feet in height). As the manual explains, "the relatively shallow, lateral roots of shrubs act to anchor the soil beneath the canopy and aid in the formation of the humus layer which is composed of dead and decaying vegetation. It is this humus layer, [with its] ability to retard runoff, that acts as the 'second zone of defense' against runoff that flows through the initial grass zone." Understory and overstory trees (generally over twenty feet high) comprise the third type of vegetation. The deep roots of these trees allow "the development of soil pores or air spaces that facilitate the aeration of the soil, resulting in increased permeability and greater absorption of runoff." When the three types of vegetation are planted, they should overlap somewhat. This intermingling will imitate nature's diversity and complexity.

- ◊ suitability for providing specific control of runoff and pollution
- ◊ adaptability to site conditions and climate
- ◊ compatibility with surrounding landscape
- ◊ level of maintenance
- ◊ hardness and durability
- ◊ lifespan

The Local Assistance Manual (page IV-57) of the Chesapeake Bay Local Assistance Department lists the following criteria for selection of vegetation in buffer areas:

Before a locality adopts the model ordinance, it needs to decide if the property owner will be referred to the Virginia Erosion and Sediment Control Handbook for planting guidelines or if the jurisdiction will develop its own specific guidelines on planting. The Virginia Erosion and Sediment Control Handbook includes both structural and nonstructural practices, but it is the latter that the property owner is likely to find most useful in meeting the objectives of this model ordinance (except in cases of unusual topography).

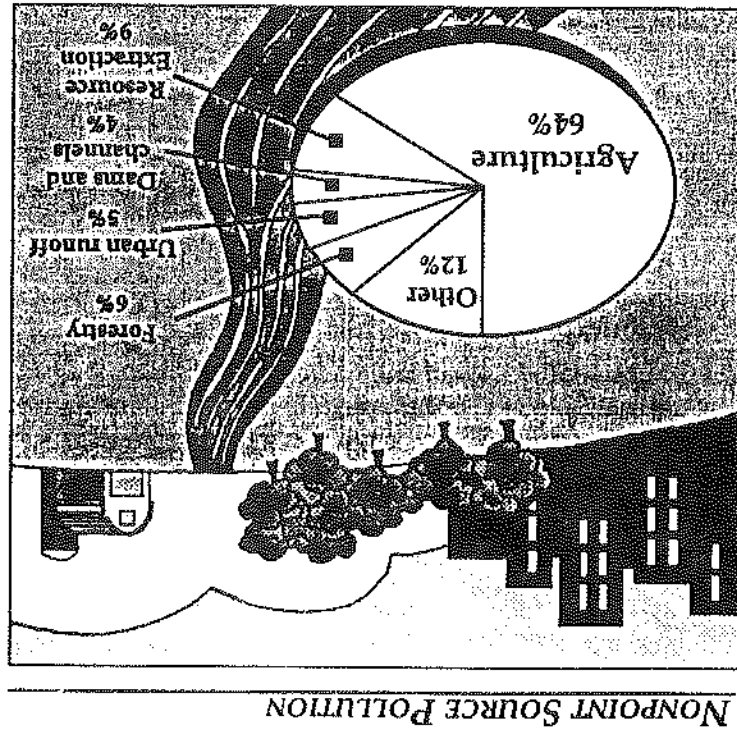


D. Agricultural Vegetative Buffers

The use of Best Management Practices (BMPs) on agricultural land is voluntary at present. This ordinance would make vegetative buffers (and/or other BMPs in their place) mandatory. Many farmers are already familiar with BMPs through the Virginia Agricultural BMP Cost-Share Program, which provides partial funds for implementation of BMPs. Other farmers do not receive technical or financial assistance from the government, or merely choose other options for managing their land.

Since most agriculture existed before zoning, the concept of having farmers regulated by zoning is unfamiliar and/or undesired by some segments of the community. Before a locality adopts the agricultural buffer section of this model, it needs to consider its overall policies regarding agriculture. This action should be part of a more comprehensive examination of how each locality approaches agricultural uses and how such uses are otherwise exempted from zoning and other ordinances. The use of agricultural buffers may be only one of a variety of tools chosen by the locality to achieve its goals in regard to farming.

The planners charged with enforcing the agricultural buffer section of this ordinance will encounter some difficulties. For example, the locality will need to decide when farms are "grandfathered" and when they lose this classification (e.g., when property changes hands, after a specified number of years, etc.). Since farms are not typically involved with the local zoning permit process, localities will not have that automatic reminder to check on whether or not an individual farm uses the buffers. Localities may need to ask SCS, ASCS, or the Extension Service to notify them of farms that are not in compliance. Perhaps coordination with the land use taxation process is feasible.



E. Amending Local Erosion and Sediment Controls in the Conservation Overlay Zone

1. Authority to Enact More Stringent E&S Regulations

Section 10.1-570 of the Virginia Erosion and Sediment Control Law states that localities may adopt more stringent regulations as follows:

*"A district or locality is authorized to adopt more stringent soil erosion and sediment control regulations than those necessary to ensure compliance with the Board's regulations....."*

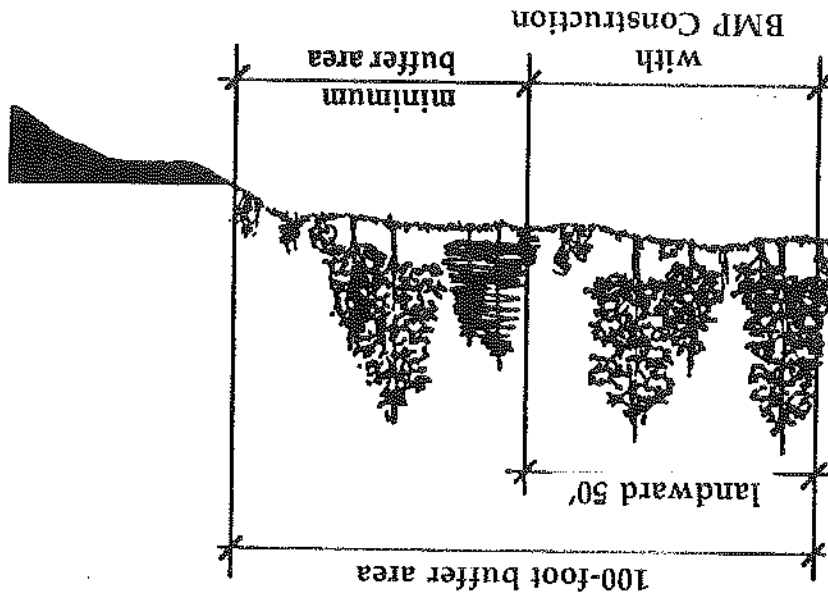
The following changes are also consistent with House Bill 1574, which was passed in 1993 and which deletes the single family home exemption and specifically states that a governing body may bring smaller parcels under its E&S law.

2. Proposed Change in Local E&S Regulations

It is proposed that local E&S regulations be amended so that any land disturbing activity within the designated Roanoke River Corridor Conservation Overlay Zone that exceeds 2,500 square feet shall comply with the requirements of the local E&S ordinance. This would require both an amendment to the language of the local E&S regulations (typically where the exemptions are listed) and a notation of such in the proposed Conservation Overlay Zone section of the local Zoning Ordinance. See Section III-D on page I-21 for the proposed language for this section of the Conservation Overlay Zone addition to the Zoning Ordinance.

3. Relation to Decreased Buffer Areas

In order to allow deviations from the 100 foot buffer area, it was necessary that some guidance be given on calculating the effect of a buffer area change without imposing excessive engineering costs on the developer. This is done by adding proof of the justification for decreased buffers to the E&S Plan (see Section B-1-c on page I-19).



The use of land influences the types of pollutants that will comprise the non-point source pollution coming from that parcel. The sources of NPS pollutants and their effect on water quality are summarized in the following table:

The Roanoke River Corridor Study explained in detail the relationship between land use and non-point source pollution. Some of that information is repeated below and further information may be obtained from the four-volume Roanoke River Corridor Study. The Virginia Water Control Board defines non-point source (NPS) pollution as "any pollution whose specific point of generation and whose exact point of entry into a water course cannot be determined." (Urban BMP Handbook, 1979, p. 1.) This pollution can enter surface water by means of runoff after rainfall, or it can seep or percolate into the ground. As runoff moves over the land to the water channel, it takes with it numerous contaminants. The majority of pollutants in runoff will enter the receiving waters during the "first flush"; The first flush is the first portion of a storm, often the first 3/10 inch to 1 inch of rainfall during a storm.

#### V. The Relationship of Land Use and Non-Point Source Pollution

While the public often thinks of the E&S Plan as a tool to govern erosion from construction only, the E&S law's Minimum Standard 19 (on stormwater management) also makes it a tool for long-term runoff control. The application of this regulation to smaller land disturbances within the Roanoke River Corridor further emphasizes the use of E&S law for long-term management. Therefore, this proposal has the benefit of utilizing existing regulations and existing procedures with which local developers are already familiar. However, this may require an increased local commitment by local governments to the administration and enforcement of E&S laws. Localities should consider local staffing levels when evaluating this commitment.

By combining this section with existing regulations (E&S), the developer is referred to a familiar document and procedure. Chapter 6 of the E&S Handbook tells the applicant how to evaluate drainage on the parcel. It already asks for a narrative and map on the parcel's topography, drainage patterns, soils, ground cover, and adjacent features. It explains how these factors should be analyzed to determine the effect of construction activities. The chapter then tells how a site plan can be devised to minimize runoff. Existing regulations state that the Erosion and Sediment Control Plan should discuss vegetative controls, structural controls, management measures, and any necessary stormwater management plan.

Table 2. Pollutant Sources and Effects

Pollutant	Sources	Effect on Water Quality
Sediment	Excessive soil erosion Construction	Decreases flow capacity in drainageways Takes up storage volume in reservoirs Covers the bottom of waterways, which kills oxygen-producing plants and ruins spawning grounds Carries along other damaging pollutants
Nutrients (such as phosphorus & nitrogen)	Fertilizer washoff Decomposed leaves or other organic materials	Causes excessive algae growth (which depletes dissolved oxygen needed by fish)
Pathogenic Micro-organisms (such as coliforms)	Animal droppings	Causes health hazards until purification can be accomplished
Toxic Substances (such as heavy metals, pesticides, other chemicals)	Motor vehicles Pesticide use	Causes fish kills in concentrations Enters the food chain (to cause long-term problems higher up the food chain)
Oxygen-demanding Substances	Organic materials that consume oxygen as they decompose (i.e. fallen leaves, grass clippings, septic tank overflows, and animal droppings)	Causes oxygen depletion (odor, discoloration) Causes imbalance in aquatic life.
Petroleum Substances (such as gas, oil, & grease)	Motor vehicles	Coats aquatic life and habitats (cuts off their oxygen supply) Exerts an oxygen demand
Chlorides	Roadway de-icing chemicals	Causes intolerable living conditions for aquatic life

Source: Roanoke River Corridor Study, Phase II, 1990, pages 7-8.



# APPENDIX A OVERLAY ZONE MODEL TEXT

These are sections to be added to local Zoning Ordinances; they are not intended to be a stand-alone ordinance. Notes to the reader are found in the accompanying side column; optional ordinance language is shown in bold type in brackets [ ].

## Section I - Purpose and Intent

The intent of this Ordinance is to establish a Roanoke River Corridor Conservation Overlay Zone along the Roanoke River. The purpose is to designate the corridor as an area of special environmental concern worthy of coordinated conservation efforts and to take those measures necessary to protect this resource.

It is the premise of this Ordinance that, through careful planning and design that minimizes or avoids adverse environmental impacts, land development can be accommodated without irreparable damage to local water resources and the biological community.

This overlay district shall be in addition to and shall overlay all other zoning districts where they are applied so that any parcel of land lying in the Conservation Overlay Zone shall also lie in one or more of the other zoning districts provided by the [local jurisdiction] Zoning Ordinance. The overlay zone regulations shall apply to usage of those parcels of land [located within X feet of the Roanoke River shoreline (or other locally designated geographic boundary), or shown on map X].

This article is enacted under the authority of Section 10.1-2100 et seq. and Section 15.1-489 of the Code of Virginia.

## Section II - Applicability, Exemptions & Waivers

### A. Applicability -

Except as herein exempted or waived, these requirements shall apply to any grading, clearing, building, drainage activities, or other development or use of any parcel within the conservation overlay zone.

### B. Exemptions -

The following development activities are exempt from the requirements of the Conservation Overlay Zone:

1. any land disturbance under [2,500 square feet] in area; or

2. any maintenance, alteration, use or improvement to an existing structure not changing or affecting quality, rate, volume or location of surface water discharge, or involving the destruction of sensitive natural resources as determined by the

Roanoke River Corridor, Managing a Strategic Resource--Element I

*Localities may choose to add or delete from the list of uses that are exempt.*

[Administrative Authority]; or

3. emergency removal of debris resulting from floods or other natural disasters, as deemed appropriate by the [Administrative Authority]; or

4. silvicultural operations that adhere to water quality protection procedures prescribed by the Department of Forestry in its "Best Management Practices Handbook for Forestry Operations";

C. Waivers -

A waiver of the requirements of the Ordinance for installation of remedial lot stabilization, public roads, water dependent structures, utilities, rail lines, water wells, passive recreation, historic preservation, archaeological activities and other public activities as approved by the [Administrative Authority] may be obtained by submitting an application on forms supplied by the [Administrative Authority] and shall contain the following information:

1. the name, address and telephone number of the developer and owner;

2. a description and a drawing of the proposed development;

3. the location of the development; and

4. any other information required by the [Administrative Authority] that is reasonably necessary to evaluate the proposed development.

The [Administrative Authority] may grant a waiver if the application demonstrates that:

1. Any required permits, except those to which this waiver specifically applies, shall have been issued;

2. Sufficient and reasonable proof is submitted that the intended use will not deteriorate water quality;

3. The intended use does not conflict with nearby planned or approved uses; and

4. Any land disturbance exceeding an area of 2,500 square feet shall comply with all [jurisdiction name] erosion and sediment control requirements.

Section III - Development Standards and Restrictions

The application shall not be approved unless it demonstrates that the following development standards will be met by the proposed development.

Localities may choose to include any or all of the following elements, A, B, C, D, or E, from Section III. Since options for different

Localities may choose to add or delete from the list of uses that may receive waivers. Localities may also vary when setting the level of proof they will require in showing that the intended use "will not deteriorate water quality." For utility waivers, the burden of proof may be harder for overhead transmission lines since such utilities sometimes use herbicides. For passive recreation, localities may choose to define "passive".

size requirements are available, localities should consider the cumulative effect when choosing alternatives; e.g., evaluate how a specific setback of less than 100 feet will be affected by a vegetative buffer of 100 feet. Also, if vegetative buffers are not included in the ordinance as locally adopted, the setback may need to be changed.

See pages 10-11 of the Introduction for a description of how slope and other factors affect the ability of a vegetative buffer to filter pollutants. While 100 feet is used as a standard in this model, more complex formulas are available to compensate for the effect of slope. Pages 4 and 10 of the Introduction give further information on the Erosion and Sediment Control (E&S) Plan, which is mentioned below.

c) If approved by the [Administrative Authority], an alternative buffer area may be employed in lieu of the 100-foot buffer area. The reduced buffer areas may either: (1) consist of a combination of buffer area not less than 50 feet in width, and appropriate Best Management Practices located landward of the buffer area, or (2) if the lot was existing at the time of adoption of this Ordinance and does not contain sufficient depth to provide the required buffer strip, the buffer strip may be reduced to 50% of the available lot depth if Best Management Practices are utilized. Whenever the applicant proposes to reduce the 100 foot vegetative buffer area, the Erosion and Sediment Control Plan shall show how the proposed reduction, in combination with Best Management Practices, achieves at least the equivalent water quality protection, pollutant removal, and water resource conservation effect of a 100-foot buffer area.

b) To minimize the adverse effects of land use activities on state waters and aquatic life, a 100-foot buffer area of vegetation that is effective in retarding runoff, preventing erosion, and filtering nonpoint source pollution from runoff shall be retained and maintained if present or established and maintained where it does not exist. A buffer area not less than one hundred (100) feet in width shall be located adjacent to and landward of the Roanoke River [shoreline or other locally designated boundary].

a) Within the required buffer area, no vegetation may be cleared or otherwise significantly disturbed, no grading or excavation work may be performed, and no structures, fill, paving, or other materials may be placed.

1. General Provisions:

B. Vegetative Buffers -

whichever is the shorter distance.

1. in the [100-year floodplain, 500-year floodplain, or other boundary as adopted by the locality], or
2. within [100 or x] feet of the edge of the Roanoke River [shoreline or other locally designated geographic boundary],

Except as herein otherwise expressly provided, no buildings or structures other than necessary [the locality should either define "necessary" in the ordinance or allow the Zoning Administrator to make that decision on a case-by-case basis] accessory fences and/or walls shall be constructed:

A. Setbacks -

2. Performance Criteria:

a) In order to maintain the functional value of the buffer area, indigenous vegetation shall be preserved to the maximum extent possible.

b) Removal of vegetation within the required buffer area shall be allowed only in accordance with the following provisions: trees may be pruned or removed as necessary to provide limited sight lines and vistas, provided that where removed, they shall be replaced with other vegetation that is equally effective in retarding runoff, preventing erosion and filtering nonpoint source pollution from runoff. Dead, diseased, or dying trees may be removed and silvicultural thinning may be conducted based upon the best available technical advice of a professional forester.

c) All exposed areas within the required buffer area shall be revegetated with appropriate riparian, erosion controlling plant material. Riparian vegetation is plant material which naturally occurs along the river and is suited to the micro-climate within the community. With the approval of the [Administrative Authority], riprap or other manmade materials may be used in conjunction with vegetation to stabilize riverbanks only where it is shown that vegetation alone will not stabilize the bank.

d) Access paths shall be constructed and surfaced so as to effectively control erosion.

C. Agricultural Buffer Area Requirements -

1. On agricultural lands, the agricultural buffer area shall be managed to prevent concentrated flows of surface water from breaching the buffer area. Agricultural lands in hayland or pasture land uses shall be deemed to comply with buffer area requirements as long as that portion of the hayland or pasture land within the 100-foot buffer is managed in accordance with the Best Management Practices Handbook for Agriculture. This handbook is intended to provide a list of options for meeting buffer area requirements. Without preference to a given practice, a selected Best Management Practice or combination of practices may be used to achieve the equivalent of the 100-foot buffer. The agricultural buffer area may be reduced as follows:

a) to a minimum width of fifty (50) feet when Best Management Practices which meet specifications of the Best Management Practices Handbook for Agriculture are applied on the adjacent land, provided that the combination of the reduced buffer area and Best

Localities should consider how these clauses will be administered by local staff, i.e., what level of detail is expected in the Water Quality Section addition to the E&S Plan, how "maximum extent possible" would be defined, etc. Buffer measurement begins at the shoreline (or other locally-designated point). In many cases, a parcel will not adjoin the river but will fall within 100 feet of the river. For example, rail lines or other property may be located between the applicant's property and the river. Therefore that part of the required buffer area, since it is on another parcel, "grandfathered" parcel, cannot be enforced as part of the initial application.

The adoption of this Subsection may prompt localities to reconsider how agricultural activities are zoning ordinances. Since farms do not apply for zoning permits, localities may need to ask SCS, ASCS, or the Extension Service to notify them of farms that are not in compliance. Perhaps coordination with the land use taxation process is feasible.

- f. Animal confinement operations (feedlots).
- e. Land application of sewage sludge and associated activities, land application of effluent and associated activities, and/or reclamation of sewage and industrial wastes (this subsection does not pertain to approved Waste Water Treatment Plants); and
- d. Underground storage of any chemical or petroleum products for commercial or industrial purposes;
- c. Sanitary land filling, application, depositing, spreading or spraying of any hazardous or toxic chemical and/or biological materials or substances, except applications of such pesticides and/or herbicides as may be required by the [Administrative Authority] upon an affirmative recommendation by the Virginia Cooperative Extension Service;
- b. Drilling, other than for potable water;
- a. Mining and extraction of natural resources;

1. The following uses shall be prohibited within the Roanoke River Conservation Overlay Zone:

E. Use Restrictions -

1. Notwithstanding any other provisions of this ordinance or exceptions or exemptions thereto, within the conservation overlay zone any land disturbing activity exceeding 2,500 square feet shall comply with the requirements of the [local jurisdiction Erosion and Sediment Control Ordinance].

D. Erosion and Sediment Control -

b) to a minimum of twenty-five (25) feet when a soil and water quality conservation plan, as approved by the Soil and Water Conservation District, has been implemented on the adjacent land, provided that the combined buffer area and Best Management Practices achieve water quality protection at least the equivalent of that provided by the 100-foot buffer in the opinion of the Soil and Water Conservation District Board. Such plan shall be based on the Best Management Practices Handbook for Agriculture and accomplish water quality protection consistent with this Ordinance.

Management Practices achieve water quality protection, pollutant removal, and water resource conservation at least the equivalent of the 100-foot buffer area; and

See page 14 of the Introduction for further explanation of this section. If adopted, each separate local ERS Ordinance must be amended also.

Localities may choose to add or delete uses from this list.



## APPENDIX B

### SURVEY OF OVERLAY ZONES PART I. GEOGRAPHIC BOUNDARY/RESOURCE INCLUDED IN REGULATION

	Rivers (within x ft.)	Streams (within x ft.)	Wetlands	Highly Erodible Soils	Steep Slopes	Highly Permeable Soils	Reservoirs	Lakes	Sensitive Watershed Boundary
Bedford Co., VA (1000)	X								
Durham, NC							X		X
Pioneer Valley (Connecticut River) Model	X (200)								
Grants Pass, OR	X								
Iowa City, IA	X								
Gainsville, FL		X							
Albemarle Co., VA	X	X	X				X		
Kent, WA (1000)		X							
Anchorage, AK (25)		X							
Sacramento, CA	X	X							
N.C. State Model	X	X					X		
VPI Model	X	X	X	X	X	X	X	X	X
Chesapeake Bay Model	X	X	X	X	X	X	X	X	X





SURVEY OF OVERLAY ZONES  
PART II. TYPE OF REGULATION (Cont'd)

	<u>Kent, WA</u>	<u>Anchorage, AK</u>	<u>Sacramento, CA</u>	<u>NC State Model</u>	<u>VPI Model</u>	<u>Chesapeake Bay Model</u>
Construction Footprint Max				X	X	X
Tree Preservation						X
Cleaning Limits						X
Impervious Surface Limits					X	X
Increased E&S Regs					X	X
Sewage/Septic Standards			X		X	X
Architectural Design Regs			X			
Increased Runoff Regs	X			X	X	X
Vegetative Buffers (ft.)	X	X (15)		X	X (200)	X (100)
BMPs				X		X
Use Restrictions	X	X	X	X	X	
Cluster Housing Regs				X		
Herbicide/Insecticide Limits					X	
Development Setback From Water (ft.)			X			

**SURVEY OF OVERLAY ZONES  
PART II. TYPE OF REGULATION (Cont'd)**

	<u>Kent, WA</u>	<u>Anchorage, AK</u>	<u>Sacramento, CA</u>	<u>NC State Model</u>	<u>VPI Model</u>	<u>Chesapeake Bay Model</u>
Construction Footprint Max				X	X	X
Tree Preservation						X
Clearing Limits						X
Impervious Surface Limits					X	X
Increased E&S Regs					X	X
Sewage/Septic Standards			X		X	X
Architectural Design Regs			X			
Increased Runoff Regs	X			X	X	X
Vegetative Buffers (ft.)	X	X (15)		X	X (200)	X (100)
BMPs				X		X
Use Restrictions	X	X	X	X	X	
Cluster Housing Regs				X		
Herbicide/Insecticide Limits					X	
Development Setback From Water (ft.)			X			

# APPENDIX C RESOURCES AVAILABLE TO SUPPORT IMPLEMENTATION OF A ROANOKE RIVER OVERLAY ORDINANCE

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**DRAFT ORGANIZATIONAL COOPERATIVE AGREEMENT**

**AND**

**DRAFT BY-LAWS**

**FOR THE**

**ROANOKE RIVER ADVISORY BOARD**

**BETWEEN THE POLITICAL SUBDIVISIONS OF**

**COUNTY OF BEDFORD, COUNTY OF FRANKLIN, COUNTY OF  
MONTGOMERY, COUNTY OF ROANOKE, CITY OF ROANOKE,  
CITY OF SALEM, AND TOWN OF VINTON**

**Prepared by the Technical Advisory Committee  
to the Roanoke River Corridor Study**

**(The Technical Advisory Committee consists of representatives from Montgomery,  
Roanoke, Franklin, and Bedford Counties; Salem and Roanoke Cities; the Town of  
Vinton; the New River Valley, Fifth, Central Virginia, and West Piedmont Planning  
District Commissions; and the Smith Mountain Lake Policy Advisory Board.)**

**The Policy Advisory Committee prepared these draft documents to provide a basis for  
discussion among the member jurisdictions. Particular sections can be amended or  
deleted. All sections should be reviewed by localities and their counsel .**

**Prepared with funding assistance provided by  
the Virginia Environmental Endowment**

**Roanoke River Corridor, Managing a Strategic Resource, Element II**



**DRAFT ORGANIZATIONAL COOPERATIVE AGREEMENT**

**FOR THE  
ROANOKE RIVER ADVISORY BOARD  
BETWEEN THE POLITICAL SUBDIVISIONS OF  
COUNTY OF BEDFORD, COUNTY OF FRANKLIN, COUNTY OF  
MONTGOMERY, COUNTY OF ROANOKE, CITY OF ROANOKE, CITY OF  
SALEM, AND TOWN OF VINTON**

Creation of the Advisory Board

This Cooperative Agreement is between the participating political subdivisions of the County of Bedford, the County of Franklin, the County of Montgomery, the County of Roanoke, the City of Roanoke, the City of Salem, and the Town of Vinton for a joint administrative organization under the provisions of Section 15.1-21 of the Code of Virginia, and is:

- a. To be known as the Roanoke River Advisory Board;
- b. To generally be responsible for advising the joint local governing bodies and their several planning commissions and others on matters involving the Roanoke River generally and specifically matters involving planning, development, and the natural and human environment;
- c. To perform such duties and to exercise such appropriate powers and authority as may be delegated by the governing bodies of the participating political subdivisions to the Roanoke River Advisory Board and not exceeding the limits of delegation as prescribed under the Code of Virginia.

Duration of Cooperative Agreement

This Cooperative Agreement shall become effective immediately on approval and adoption of resolutions by the participating political subdivisions of the County of Bedford, the County of Franklin, the County of Montgomery, the County of Roanoke, the City of Roanoke, the City of Salem, and the Town of Vinton and shall run for two year terms beginning \_\_\_\_\_ or as the Cooperative Agreement may be amended or extended by action of parties to the Cooperative Agreement. This provision is to assure that the Roanoke River Advisory Board's effectiveness is regularly reviewed by participating political subdivisions and recognizes that participating political subdivisions may choose to supplant the Board with a modified organization or terminate the Board in favor of a new organization or entity.

Organization of the Roanoke River Advisory Board

The Roanoke River Advisory Board shall be composed of fourteen (14) members from the participating political subdivisions of the County of Bedford, the County of Franklin, the County of Montgomery, the County of Roanoke, the City of Roanoke, the City of Salem, and the Town of Vinton. Each participating political subdivision shall have two (2) members, one (1) member being a member of the Planning Commission of said jurisdiction and one (1) member being a citizen-at-large who shall reside in a voting precinct whose area shall include the shoreline of the Roanoke River. The chief planning official of each of the participating political subdivisions shall be ex-officio members.

Termination of Roanoke River Advisory Board membership by a Cooperative Agreement jurisdiction removes membership on the Roanoke River Advisory Board of all Roanoke River Advisory Board members residing in that political subdivision.

- a. **Voting Rights:** All appointed members shall have equal votes on the Roanoke River Advisory Board. Chief planning officials shall be non-voting members of the Roanoke River Advisory Board.

b. Appointments to Roanoke River Advisory Board: Members of the Roanoke River Advisory Board will be appointed by the governing body of the participating political subdivision which they represent.

c. Duration of Membership: All members of the Roanoke River Advisory Board shall serve at the pleasure of the respective governing body of the participating political subdivision. Appointments should be made at annual governing body organizational meetings.

d. Compensation of Roanoke River Advisory Board members: The respective member political subdivision governing bodies may determine compensation to be received by their respective appointed Roanoke River Advisory Board members.

e. Calendar Year: Following annual appointment of Roanoke River Advisory Board membership by the various governing bodies, at the first regular Roanoke River Advisory Board meeting following the end of the Calendar Year, which shall end on December 31, members of the Roanoke River Advisory Board shall appoint a member as Roanoke River Advisory Board Chair, and a member as Vice-chair, and a member as Secretary, and a member as Treasurer.

f. Duties of the Chair: The duties of the Chair, or in her/his absence, the Vice-Chair, shall be: 1) to call meetings and to preside at meetings; 2) after approval of the Roanoke River Advisory Board, and in conformity with a Roanoke River Advisory Board approved budget or Roanoke River Advisory Board approved amended budget, to authorize the disbursement of appropriated funds.

g. Duties of the Secretary: The duty of the Secretary shall be to record or certify summary minutes of Roanoke River Advisory Board meetings.

h. Duties of the Treasurer: The duty of the Treasurer shall be to receive and safeguard funds donated or due to the Roanoke River Advisory Board.

i. Bylaws to be established: A set of Bylaws shall be drawn to generally govern the operation of the Roanoke River Advisory Board and administrative agents of the Roanoke River Advisory Board.

The Bylaws shall create and detail the duties of officers, duties and responsibilities of the Roanoke River Advisory Board, including delineating authorities, membership, voting rights, financial matters, establishment of sub-committees, and provisions for amendments to the Bylaws.

#### Covering Provisions of the Code of Virginia

The Roanoke River Advisory Board shall be subject to those same provisions of Virginia and United States law to which its member political subdivisions are liable.

#### Purpose of the Roanoke River Advisory Board

The Roanoke River Advisory Board shall be organized to follow certain purposes herein or added by later amendments to this Cooperative Agreement.

a. The Roanoke River Advisory Board as a special entity of political subdivisions bordering the Roanoke River which will be responsible for developing recommendations for new or revised ordinance/legislation specifically addressing the needs, issues, and/or problems involving the Roanoke River, its shoreline, the area encompassed by the Roanoke River Corridor Overlay District within the member jurisdictions - as adopted by the member jurisdictions. Recommendations shall be to governing bodies, planning commissions or other bodies as requested by the member jurisdictions.



b. The Roanoke River Advisory Board shall promote and coordinate implementation of elements, and any amendments, of the Roanoke River Corridor Overlay District, as approved by the governing bodies.

c. Planning and management for land, other natural resources, including water and environmental quality maintenance within the designated Roanoke River Corridor shall all be normal areas for policy advice by the Roanoke River Advisory Board.

d. The Roanoke River Advisory Board shall assist member jurisdictions in the review of proposed public and private development activities in the Roanoke River Corridor Overlay District.

A central assumption in this agreement is that areas throughout the Roanoke River Corridor shall be considered for policy guidance jointly, not independently; participation by the County of Bedford, the County of Franklin, the County of Montgomery, the County of Roanoke, the City of Roanoke, the City of Salem, and the Town of Vinton is the goal of this agreement.

Roanoke River Advisory Board to Operate with a Plan and with clear Objectives/management Elements of a Plan and Deal with Immediate and Long-term Concerns.

The Roanoke River Advisory Board shall at a minimum operate with an agenda of objectives or program elements or management tools which the Roanoke River Advisory Board shall adopt annually and present to the participating political subdivisions for review.

Withdrawals from this Cooperative Agreement

Any party to this Cooperative agreement shall have the right to withdraw from this Cooperative Agreement at any time after written notification to the Roanoke River Advisory Board of the party's intentions to withdraw from the Roanoke River Advisory Board. Written notification of intent to withdraw shall be tendered to the Roanoke River Advisory Board at least 90 days before the date of official withdrawal. This is restricted in that notice must be given at least 90 days before the end of the; Roanoke River Advisory Board's fiscal year. In so far as there remain in two parties to the Cooperative Agreement, the Cooperative Agreement, the Cooperative Agreement shall remain in force.

Complete Termination of the Cooperative Agreement

This Cooperative Agreement shall be terminated upon withdrawal of sufficient parties to the Cooperative Agreement such that only one party remains after notice of withdrawal has been given as specified in this agreement.

Disposition of Properties and Funds of the Roanoke River Advisory Board Under Termination of the Cooperative Agreement

In the event of termination, funds, records and tangible property, real and personal, that are held by the Roanoke River Advisory Board or are in custody of its agent or assignees, shall be returned to the participating political subdivisions pro rata to their annual rates of contributions. Participating political subdivision shall be defined as those that are members to the Cooperative Agreement on the day before termination shall become effective. Annual rate shall be that which is in use for the fiscal year, in which the termination of this Cooperative Agreement shall occur.

Ex-Partes to Cooperative Agreement on Termination

Political subdivisions that were former parties to this Cooperative agreement, but that have withdrawn prior to the 91st day before termination shall become effective, shall not receive funds, records and tangible property, real and personal, that remain upon termination.

Authorization to Accept Gifts

The Roanoke River Advisory Board may accept gifts of services, funds, real property or personal property when such gifts are consistent with the Roanoke River Advisory Board Goals and Objectives.

Authorization to Apply for and Employ Grant Funds

The Roanoke River Advisory Board may apply for grant funding for its activities and purposes and use these funds for carrying out these activities and purposes. Sources may be federal, state or private foundations. The Roanoke River Advisory Board shall adhere to all Virginia and United States laws concerning the use and fiscal management of such funds.

Authorization to Enter Contracts and Acquire and Dispose of Property

The Roanoke River Advisory Board may enter contract, acquire, operate, maintain and dispose of real or personal property to achieve the objectives established in its annual work program.

Subcommittees.

The Roanoke River Advisory Board shall from time to time establish such special committees as deemed necessary for aiding in the effective implementation of the Roanoke River Advisory Board's responsibilities, duties, and authorities.

Responsibility for Communication

The Roanoke River Advisory Board itself or its agent, is authorized pursuant to its duties and responsibilities to consult with, receive and file comments from and to, any persons, profit or non-profit organization, corporate entity, agency or representative of a political subdivisions, agency or representative of the Commonwealth or the United States government.

Duty to Perform

The Roanoke River Advisory Board is expected to be delegated certain and appropriate duties and responsibilities and authorities from the governing bodies of the member political subdivisions under which the Roanoke River Advisory Board shall be expected to perform and exercise. It may utilize its agent in carrying out Roanoke River Advisory Board responsibilities.

Creation or Designation of an Administrative agent of the Roanoke River Advisory Board

This Cooperative Agreement also provides that an administrative agent can be designated by the Roanoke River Advisory Board to provide administrative support and to carry out Roanoke River Advisory Board programs.

Coordinator and Staffing: An Agency Coordinator who shall be responsible for directing day to day activities on the Roanoke River Advisory Board's behalf may be designated by the Roanoke River Advisory Board and who shall be considered the agent of the Roanoke River Advisory Board. The role of agent will be provided by participating jurisdiction planning staffs on a rotating basis. The staffing function may be contracted to an outside party with expertise in the Roanoke River Advisory Board work program project areas.

Coverage of Bylaws: The administrative agent shall be covered under the Bylaws of the Roanoke River Advisory Board.

Amendments to the Cooperative Agreement

The parties to this Cooperative Agreement may amend only by concurring resolutions of two-thirds (2/3) of the participating members to the agreement.

Effective Date of this Cooperative Agreement

This Cooperative Agreement between the County of Bedford, the County of Franklin, the County of Montgomery, the County of Roanoke, the City of Roanoke, the City of Salem, and the Town of Vinton shall be effective beginning on the \_\_\_\_\_ day of the month of \_\_\_\_\_ in the year \_\_\_\_\_

BEDFORD COUNTY BOARD OF SUPERVISORS

BY: \_\_\_\_\_  
Chairman of the Board

ATTEST: \_\_\_\_\_  
Clerk

APPROVED AS TO FORM: \_\_\_\_\_

\_\_\_\_\_  
County Attorney

FRANKLIN COUNTY BOARD OF SUPERVISORS

BY: \_\_\_\_\_  
Chairman of the Board

ATTEST: \_\_\_\_\_  
Clerk

APPROVED AS TO FORM: \_\_\_\_\_

\_\_\_\_\_  
County Attorney

MONTGOMERY COUNTY BOARD OF SUPERVISORS

BY: \_\_\_\_\_  
Chairman of the Board

ATTEST: \_\_\_\_\_  
Clerk

APPROVED AS TO FORM: \_\_\_\_\_

\_\_\_\_\_  
County Attorney

ROANOKE COUNTY BOARD OF SUPERVISORS

BY: \_\_\_\_\_  
Chairman of the Board

ATTEST: \_\_\_\_\_  
Clerk

APPROVED AS TO FORM: \_\_\_\_\_

\_\_\_\_\_  
County Attorney

ATTEST: \_\_\_\_\_  
 Clerk

APPROVED AS TO FORM: \_\_\_\_\_  
 Town Attorney

BY: \_\_\_\_\_  
 Mayor

VINTON TOWN COUNCIL

ATTEST: \_\_\_\_\_  
 Clerk

APPROVED AS TO FORM: \_\_\_\_\_  
 City Attorney

BY: \_\_\_\_\_  
 Mayor

SALEM CITY COUNCIL

ATTEST: \_\_\_\_\_  
 Clerk

APPROVED AS TO FORM: \_\_\_\_\_  
 City Attorney

BY: \_\_\_\_\_  
 Mayor

ROANOKE CITY COUNCIL

**DRAFT BY-LAWS  
OF  
THE ROANOKE RIVER ADVISORY BOARD**

**ARTICLE I**

Membership

**Section 1. Eligibility:** The Roanoke River Advisory Board shall be composed of fourteen (14) members from the participating political subdivisions of the County of Bedford, the County of Franklin, the County of Montgomery, the County of Roanoke, the City of Roanoke, the City of Salem, and the Town of Vinton. Each participating political subdivision shall have two (2) members, one (1) member being a member of the Planning Commission of said jurisdiction and one (1) member being a citizen-at-large who shall reside in a voting precinct whose area shall include the shoreline of the Roanoke River. The chief planning official of each of the participating political subdivisions shall be ex-officio members.

**Section 2. Election to Membership:** Members of the Roanoke River Advisory Board will be appointed by the respective governing bodies of the political subdivision which they represent, and all members of the Advisory Board shall serve at the pleasure of the respective governing bodies. Appointments to the Advisory Board shall be made at the annual governing body organization meetings.

**Section 3. Voting:** Each member shall have one (1) vote at any membership meeting at which s/he is present. Proxy voting will not be permitted at any meeting or election. Ex-officio members shall not be entitled to vote.

**Section 4. Regular Meetings:** The regular meetings of the Roanoke River Advisory Board shall be held on the \_\_\_\_\_ (day) of each month at \_\_\_\_\_ (time).

**Section 5. Special Meetings:** Special membership meetings may be called by any three (3) voting members of the Roanoke River Advisory Board representing two or more jurisdictions, and shall be called by the Secretary upon receipt of a petition signed by three (3) members of the Roanoke River Advisory Board who are in good standing. Written notice of such meeting shall be mailed by the Secretary at least five (5) days prior to the date of the meeting and a notice shall state the purpose of the meeting and no other business shall be transacted unless unanimously approved by the voting members of the Roanoke River Advisory Board.

**Section 6. Emergency Meetings:** Emergency meetings may be called by the chair, after consultation with at least one (1) Roanoke River Advisory Board member from Bedford, Franklin, Montgomery, and Roanoke counties; the cities of Roanoke and Salem; and the Town of Vinton, and shall be called by the Secretary. Notice of such a meeting shall be given by the Secretary at least twenty-four (24) hours prior to the date of the meeting, stating the purpose of the meeting and no other business shall be transacted.

**Section 7. Quorum:** Quorum for Roanoke River Advisory Board meetings shall be a majority of the voting members in attendance. A plurality of the member jurisdictions must be present.

**ARTICLE II**

Officers

**Section 1. Officers:** The Officers shall be the chair, vice-chair, secretary, and treasurer, all of whom shall serve until their successors are duly elected. The Chair shall preside at all meetings of the Roanoke River Advisory Board and shall perform such other duties as are incident to her/his office or are properly

required of him by the Roanoke River Advisory Board, and to authorize the disbursement of appropriated funds after approval by the Roanoke River Advisory Board and in conformity with the Roanoke River Advisory Board approved budget or a Roanoke River Advisory Board approved amended budget.

The Vice-Chair shall exercise the authority of the Chair in her/his absence and perform such other duties as may be assigned to her/him by the Chair of the Roanoke River Advisory Board.

The Secretary shall be responsible for recording the minutes of the Roanoke River Advisory Board meetings and maintaining such records as may be required of her/him by the Chair of the Roanoke River Advisory Board. S/he shall have charge of the correspondence, notifying members of meetings, keeping a roll of the members with their addresses, and carrying out such other duties incident to her/his office as the Chair may require or the Roanoke River Advisory Board may assign.

The Treasurer shall collect and receive all monies due, belonging or donated to the Roanoke River Advisory Board. S/he shall deposit the same in a bank designated by the Roanoke River Advisory Board in the name of the Roanoke River Advisory Board. Her/his financial records shall at all times be open to inspection by the Roanoke River Advisory Board and s/he shall report to them at every meeting the condition of the Roanoke River Advisory Board's finances.

The offices of Secretary and Treasurer may be held by the same person.

Section 2. Elections: The candidate receiving the greatest number of votes for each office shall be declared elected.

Section 3. Vacancies: Any vacancies occurring among the officers during the year shall be filled for the unexpired term of office by majority vote of the Roanoke River Advisory Board at its first regular meeting following the creation of such vacancy or at a special Roanoke River Advisory Board meeting called for that purpose; except that a vacancy in the office of Chair shall be filled automatically by the Vice-Chair and resulting vacancy in the office of Vice-Chair shall be filled by the Roanoke River Advisory Board.

### ARTICLE III

#### Committees

(section reserved)

### ARTICLE IV

#### General Provisions

Section 1. Calendar: The fiscal year of the Roanoke River Advisory Board shall begin on the first (1st) day of July and end on the thirtieth (30th) day of June in each year.

Section 2. Amendments: Amendments to the By-Laws may be proposed by a resolution by a member of the Roanoke River Advisory Board and shall be submitted to the membership at a regular or special meeting. A copy of the resolution must accompany the notice of the meeting and such notice shall be given at least ten (10) but not more than thirty (30) days prior to the meeting. The proposed amendment shall be adopted upon receiving affirmative votes of more than two-thirds (2/3) of membership.

Section 3. Work Programs: Annual work programs are to be developed by the Roanoke River Advisory Board Chair or in the event the Roanoke River Advisory Board requests such assistance, a person appointed by the Roanoke River Advisory Board. The program shall be reviewed and approved by the Roanoke River Advisory Board and forwarded to participating political subdivision for formal action. A

copy shall be made available to the public at cost. Copies shall also be filed with the offices of the chief planning officer for those participating political subdivisions for distribution to members of the respective planning commissions and governing bodies.

**Section 4. Voice Votes:** Voice votes are allowed and roll call votes shall be taken upon the motion of any voting member of the Roanoke River Advisory Board.

**Section 5. Conflicts:** Any conflict between these By-Laws and the joint agreement by and between Bedford, Franklin, Montgomery, and Roanoke counties; the cities of Roanoke and Salem and Town of Vinton shall be resolved in favor of the joint agreement.

**Section 6. Parliamentary Procedure:** The Roanoke River Advisory Board shall be governed by Roberts Rules of Parliamentary Procedure.

**Section 7. Compensation:** The respective governing bodies may determine compensation to be received by their respective appointed Roanoke River Advisory Board members.





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