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PROTECTING COASTAL AND WETLANDS RESOURCES: A GUIDE FOR LOCAL GOVERNMENTS

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This document is one of many currently available that addresses coastal and wetlands resources protection and some of the difficult contemporary decisions facing local governments. The ideas it presents are not new; indeed, the document relies extensively on the work of previous authors, including David Burke, Jon Kusler, Thomas Daniels, and many others cited throughout the text. The document is unique, however, in that it represents EPA's first attempt to present these issues in a comprehensive, integrated guide designed for small-town planners, local government representatives, and concerned citizens. We hope that it will prove useful to these communities in planning, designing, implementing, and enforcing measures to preserve and protect their coastal and wetlands resources.

TABLE OF CONTENTS

Page

PREFACE x

CHAPTER 1 - INTRODUCTION 1

WHAT IS GROWTH MANAGEMENT? 2

THE PROBLEM 3

Why are Coastal and Wetlands Resources Important? 3
Why are Coastal and Wetlands Resources Threatened? 5
What is Being Done? 6

THE NEED FOR LOCAL ACTION 7

CHAPTER 2 - FORMULATING A LOCAL PLAN 9

WHY PLAN? 10

WHAT IS IN A PLAN? 11

WHO PLANS? 11

THE PLANNING PROCESS 11

Step 1: Define the Planning Context 12
Step 2: Understand Your Community 13
Step 3: Establish Goals and Objectives 16
Step 4: Prepare Plan 17
Step 5: Implement, Monitor, and Enforce the Plan 20

BUILDING A CONSENSUS 20

DETERMINANTS OF SUCCESS IN MANAGING THE PLANNING PROCESS 21

CHAPTER 3 - THE USE OF ZONING AND OTHER REGULATORY MEASURES TO PROTECT COASTAL AND WETLANDS RESOURCES 25

THE BASICS OF ZONING 25

The Purpose of Zoning 26
The Limits of Zoning 26
The Content of a Zoning Ordinance 26
Developing a Zoning Ordinance 27
Administering a Zoning Ordinance 30
Enforcing a Zoning Ordinance 30
Amending a Zoning Ordinance 31

TABLE OF CONTENTS
(Continued)

Page

DESIGNING SENSITIVE AREA PROTECTION ORDINANCES 33

What is a Sensitive Area Protection Ordinance? 33
Establishing Other Sensitive Area Districts 39

OTHER ZONING-RELATED TECHNIQUES 40

Buffer Zones 40
Overlay Zones 41
Large Lot Zoning 43
Downzoning 43
Cluster Zoning and Density Requirements 45
Transfer of Development Rights 46
Planned Unit Developments 47
Set Asides 47
Bonus and Incentive Zoning 47
Interim Development Controls 48

SUBDIVISION CONTROLS 48

PERFORMANCE REGULATIONS 50

Performance-Related Ordinances 50
Building and Related Codes 52
Permit Processing Fees and Performance Bonds 52
Restrictive Covenants and Deed Restrictions 53
Site Plan and Design Review 53
Mitigation 54

CHAPTER 4 - THE ACQUISITION OF WETLANDS AND COASTAL AREAS 61

WHY ACQUIRE WETLANDS AND COASTAL AREAS? 61

WHO ACQUIRES WETLANDS AND COASTAL AREAS? 61

FACTORS TO CONSIDER BEFORE ACQUISITION OF
A WETLAND OR COASTAL AREA 62

TECHNIQUES OF ACQUISITION 63

Full Acquisition 63
Partial Acquisition 65
- Conservation Easements 65
- Deed Restrictions 68
- Post Acquisition Disposal 70

TABLE OF CONTENTS
(Continued)

Page

FINANCING ACQUISITION EFFORTS 71

Local and State Government Sources 71
Private Sources 71
Federal Government Sources 72

STRUCTURING AN ACQUISITION PROGRAM AND IMPLEMENTING AN ACQUISITION STRATEGY 73

Land Trusts 74
Land Banks 76
Greenways 76
Land Exchanges 78
Other Techniques for Facilitating Acquisition 79

CHAPTER 5 - USING TAXES, FEES, AND OTHER ECONOMIC TOOLS TO FINANCE AND ENCOURAGE THE PROTECTION OF COASTAL AND WETLANDS RESOURCES 81

TAXES 82

Revenue Sources 82
Tax Incentives 83

FEES 84

User Fees 84
Impact Fees 84
Capacity Credits 85

FINES AND PENALTIES 86

DEBT FINANCING 86

PRIVATE SECTOR SUPPORT 87

CHAPTER 6 - SELECTING APPROPRIATE TECHNIQUES TO PROTECT COASTAL AND WETLANDS RESOURCES 89

MANAGEMENT TECHNIQUES COMPARED 89

HOW TO CHOOSE AMONG MANAGEMENT TECHNIQUES 92

Need 92
Feasibility 92
Support 92

TABLE OF CONTENTS
(Continued)

Page

INTEGRATED MANAGEMENT AND OTHER EFFORTS TO PROTECT COASTAL AND WETLANDS RESOURCES 93

BIBLIOGRAPHY **95**

LIST OF APPENDICES

APPENDIX A - CASE STUDIES **107**

HEDGES CREEK, OREGON: A CASE HISTORY OF HOW A CITY ORDINANCE WAS USED TO PROTECT A WETLAND 107

WETLANDS PROTECTION IN URBAN AREAS: THE EXAMPLE OF FORT COLLINS, COLORADO 109

HARFORD COUNTY, MARYLAND: USE OF OVERLAY AND BUFFER ZONES TO PROTECT WETLANDS 111

THE CHESAPEAKE BAY CRITICAL AREA ACT: MARYLAND WORKS TO IDENTIFY AND PROTECT SENSITIVE AREAS 113

DENVER'S PLATTE RIVER: USE OF A GREENWAY TO PROTECT A RIVER . . . 115

FLOODPLAIN ZONING IN LYCOMING COUNTY, PENNSYLVANIA 116

PENNYPACK CREEK, PENNSYLVANIA: A CITIZENS' WATERSHED PROTECTION ASSOCIATION 117

WISSAHICKON CREEK, PENNSYLVANIA: A LOCAL GOVERNMENT WATERSHED PROTECTION ORDINANCE 119

ANNE ARUNDEL COUNTY, MARYLAND: THE USE OF WETLANDS IN WASTEWATER TREATMENT 121

ATTEAN, MAINE: WHEN THE TERMS OF AN EASEMENT ARE VIOLATED . . . 123

LOUISIANA: THE ROLE OF CITIZEN INITIATIVES 125

MANAGING DEVELOPMENT AND MAINTAINING AFFORDABLE HOUSING IN OREGON 127

CALIFORNIA'S COASTAL PLAN: THE USE OF PLANNING AND ACQUISITION TO PROTECT COASTAL RESOURCES 128

LIST OF APPENDICES
(Continued)

Page

DOOR COUNTY, WISCONSIN, REVISES ITS ZONING ORDINANCE 129

PROTECTING FLORIDA'S COASTAL WATERS: COMPREHENSIVE PLANNING FOR THE FUTURE 130

TRANSFER OF DEVELOPMENT RIGHTS IN HOLLYWOOD, FLORIDA 133

WISCONSIN'S SHORELAND AND FLOODPLAIN ZONING PROGRAM 134

PROTECTION THROUGH LAND ACQUISITION: SHEBOYGAN, WISCONSIN'S PIGEON RIVER CORRIDOR 135

USING COMPREHENSIVE PLANNING AND TRANSFERS OF DEVELOPMENT RIGHTS (TDRs) TO PROTECT THE NEW JERSEY PINE BARRENS 136

APPENDIX B - FEDERAL REGULATIONS AND PROGRAMS 139

WETLANDS PROTECTION 139

Clean Water Act Section 404 139
Rivers and Harbors Act (1899) 145
The National Wetlands Policy Forum 145
National Environmental Policy Act (NEPA) 145
Food Security Act (1985) 146
Department of Agriculture ASCS Water Bank Program 146
Emergency Wetlands Resources Act (1986) 146
Executive Orders 11988 and 11990 147

LAND ACQUISITION PROGRAMS 147

Fish and Wildlife Service Programs 147
Land and Water Conservation Fund 148

HABITAT PROTECTION 148

North American Waterfowl Management Plan 148
National Wild and Scenic Rivers Act (1968) 149
Endangered Species Act 149

GROUND WATER PROTECTION 149

COASTAL LAND MANAGEMENT AND MARINE AND ESTUARINE PROTECTION 151

Coastal Zone Management Act (1972) and Amendments 151
Coastal Barriers Resources Act (1982) 152
National Flood Insurance Program 152

LIST OF APPENDICES
(Continued)

Page

EPA's Coastal Protection Activities 153
- Regulatory Programs for Control of Point Source Discharges 153
- Nonpoint Source Management 154
- National Estuary Program 156
- Chesapeake Bay Program 157
- Great Lakes Program 157
- Near Coastal Waters Program 158
- Gulf of Mexico Program 159
- Ocean Dumping 159
- Marine Debris 160

APPENDIX C - THE STATE ROLE IN PROTECTING COASTAL AND WETLANDS RESOURCES 163

REGULATORY PROGRAMS 163

Regulations Administered at the State Level 163
State Input into Federal Regulations 165
Regulations Administered at the Local Level 166
Limitations of State Regulations 168

INDIRECT REGULATION OF COASTAL AND WETLANDS RESOURCES 169

NONREGULATORY PROGRAMS 169

Acquisition Programs 169
Tax Incentives 170
Educational Outreach 170

APPENDIX D - THE TAKINGS ISSUE 173

A LAYMAN'S GUIDE TO THE TAKINGS ISSUE 173

1987 SUPREME COURT DECISIONS 175

APPENDIX E - CONTACTS FOR FURTHER INFORMATION 177

EPA Regional Offices--General Information Numbers 177
EPA Headquarters 179
State Agecies 179
U.S. Army Corps of Engineers--Regional Offices 183
U.S. Fish & Wildlife Service 184
National Oceanic and Atmospheric Administration 184
State Coastal Zone Management Program Managers 184
Non-Profit Organizations 187

LIST OF FIGURES

Page

FIGURE 1 - ZONING ORDINANCE SAMPLE TABLE OF CONTENTS 28

FIGURE 2 - CREATING A ZONING ORDINANCE 29

FIGURE 3 - AMENDING A ZONING ORDINANCE 32

FIGURE 4 - SOME PRINCIPAL WETLAND DATA SOURCES 36

FIGURE 5 - THE USE OF VARIABLE VS. FIXED BUFFER ZONES 42

FIGURE 6 - SUBDIVISION ORDINANCE SAMPLE TABLE OF CONTENTS 49

FIGURE 7 - COMPARISON OF MANAGEMENT TECHNIQUES FOR PROTECTION OF COASTAL AND WETLANDS RESOURCES 90

PREFACE

You are a member of a volunteer planning commission in a growing community that contains ecologically significant wetlands resources ....

You are an elected official in a coastal community where population growth and development is accelerating erosion of soils into the bay and damaging estuarine habitats ....

This guide is written for you and others like you across the country: local citizens or officials concerned with protection of significant coastal and/or wetlands resources, but unsure of the tools available to protect these sensitive areas as growth occurs. You are probably already aware of the important role that coastal and wetlands resources play in the environmental and economic well-being of your community -- providing habitat for a wide variety of plant and animal life (the basis of the local fishing industry), maintaining water quality, controlling erosion, and offering natural beauty and recreational opportunities valued by residents and tourists. How can you protect these resources?

Growth management is a process, involving both public and private interests, to plan and guide development to achieve agreed-upon goals and objectives for the community. Growth management is ultimately a local concern, and is often among the most difficult and contentious issues communities face. Successfully protecting coastal and wetlands environments in the face of growth requires harnessing the energies of diverse constituencies -- concerned citizens, local government officials, representatives of the business community and conservation groups, and state and federal government officials -- to find mutually acceptable ways to manage resources in the community.

This guide serves the following purposes:

- To encourage comprehensive planning that involves both public and private interests to achieve a balance between quality development and resource protection, particularly of coastal and wetlands environments

- To describe successful techniques and concepts used by local governments, planners, and citizens to balance growth and resource protection.

You may wish to read it front-to-back, or you may prefer to use the remainder of this preface, which describes the manual's organization, to identify particular topics of concern.

Chapter 1 - Introduction includes a general discussion of the concept of growth management. It explains why it is important **to protect coastal and wetlands resources**, and describes the many benefits these resources provide. The chapter also briefly describes the drastic loss of these areas in the past, and the **threat posed by unmanaged growth.** Finally, it explains why the local level is the best place to make management decisions.

Contents of Chapter 1

- What is Growth Management
- The Problem
- The Need for Local Action

Chapter 2 - Formulating a Local Plan introduces the concepts and main tenets of local land-use planning. It discusses the **need for comprehensive planning**, the basic elements of a plan, the **five main steps in the planning process** -- defining the context; understanding the community; establishing goals and objectives; preparing the plan; and implementing, monitoring, and enforcing the plan -- and the importance of **achieving a consensus** among major stakeholders in land-use decisions. This material may be familiar to local officials already involved in planning, but is included as background for those new to the field.

Contents of Chapter 2

- Why Plan?
- What Is In a Plan?
- Who Plans?
- The Planning Process
- Building a Consensus
- Determinants of Success in Managing the Planning Process

Chapter 3 - The Use of Zoning and Other Regulatory Measures to Protect Coastal and Wetlands Resources starts with **the basics of zoning**, explaining this most common method of land-use regulation. The chapter then describes the use **of sensitive area protection ordinances** to protect estuaries, wetlands, and other coastal areas, and briefly explores a variety of **zoning techniques**, including standard and variable buffer zones, overlay zones, large lot zoning, downzoning, cluster zoning and density requirements, transfers of development rights, planned unit developments, set-aside clauses, bonus and incentive zoning, interim development controls, and subdivision controls. The chapter also includes a section on the use of **performance regulations** to protect coastal and wetlands areas.

Contents of Chapter 3

- The Basics of Zoning
- Designing Sensitive Area Protection Ordinances
- Other Zoning-Related Techniques
- Subdivision Controls
- Performance Regulations

Chapter 4 - The Acquisition of Coastal and Wetlands Areas discusses how to protect coastal and wetlands areas through acquisition, and lists several questions local leaders should ask in order to **determine the type and extent of acquisition** to be pursued. It then explains the advantages and disadvantages of several techniques, including **full acquisition, conservation easements, deed restrictions**, and **post-acquisition disposal**. It also examines two types of private organizations (land trusts and land banks) and two types of programs (greenways and land exchanges) that communities can employ to acquire sensitive lands, and describes several federal and state programs that acquire or help communities to acquire environmentally significant areas.

Contents of Chapter 4

- Why Acquire Wetlands and Coastal Areas?
- Who Acquires Wetlands and Coastal Areas?
- Factors To Consider Before Acquisition of a Wetland or Coastal Area
- Techniques of Acquisition
- Financing Acquisition Efforts
- Structuring an Acquisition Program and Implementing an Acquisition Strategy

Chapter 5 - Using Taxes, Fees, and Other Economic Tools to Finance and Encourage the Protection of Coastal and Wetlands Resources illustrates the use of taxes as **revenue sources** for environmental programs or as **incentives** to reward favored land uses. It discusses the role of user fees on public services, impact fees for development projects, and capacity credits for future public projects. The chapter also comments on the use of debt to finance capital improvements that benefit wetlands or coastal areas, and notes the importance of private sector financial support for individual programs.

Contents of Chapter 5

- Taxes
- Fees
- Fines and Penalties
- Debt Financing
- Private Sector Support

Chapter 6 - Selecting Appropriate Techniques to Protect Coastal and Wetlands Resources discusses the implementation of a local management program. It **reviews the various tools** examined in the manual, evaluating their technical **effectiveness**, likely **acceptability** in the community, relative **cost** and relative **complexity**. It then explores ways for communities to **choose among management techniques** to develop an integrated approach that best suits local needs.

Contents of Chapter 6

- Management Techniques Compared
- How to Choose Among Management Techniques
- Integrated Management and Other Efforts to Protect Coastal and Wetlands Resources

The manual also includes a **Bibliography** of pertinent sources for further guidance, and several appendices. **Appendix A** presents numerous **case studies** of how states and communities have used management techniques to protect coastal and wetlands resources. These case studies are also referenced throughout the text. **Appendix B** reviews **federal regulations and programs** pertinent to coastal and wetlands environments. **Appendix C** provides examples of successful **state programs**, some administered by state governments, others administered at the county or local level. **Appendix D** analyzes the legal aspects of government restrictions on private property, discussing how to implement local land-use regulations while avoiding **unlawful "taking" of private property**. Finally, **Appendix E** lists **phone numbers and addresses** for numerous federal, state, and private organizations that may be of assistance.

Communities' needs differ. For this reason, the guide does not dictate specific solutions, but provides information on the process of protecting coastal and wetlands resources -- deciding which areas to focus on, determining what options are available, and taking the necessary steps to implement management policies. The text includes references indicating where to go for further information, and offers concrete suggestions for getting started in your community. Ideally, this guide will help local leaders harness and direct growth in ways that protect the nation's coasts and wetlands, preserving our natural heritage for generations to come.

Throughout the text, examples that illustrate ways in which some communities have already taken action to protect their coastal and wetlands resources are highlighted in boxes. Also, Appendix A contains 19 cases studies that provide additional examples of the concepts in the text.

This guide is intended for the leaders and citizens of growing communities who are concerned about the effects of development on wetlands and coastal resources. Designed with nonprofessional planners in mind, it was inspired by the widely felt need for a discussion of techniques by which local governments can realize their growth and economic expansion objectives, and still protect valuable natural resources. The purpose of this guide is not to discourage growth and development, but to help communities balance development with other community objectives for natural resource protection. It seeks to familiarize local leaders and concerned citizens with management tools that can be employed to preserve critical coastal and wetlands areas, and to help them plan and implement effective strategies to protect their coastal and wetlands resources.

This chapter contains explanations of the following topics:

- What is growth management
- Why coastal and wetlands resources are important
- How coastal and wetlands resources are threatened
- What is being done about the problem
- Why local action is necessary.

CHAPTER SUMMARY

- The impacts of development on coastal and wetlands resources are substantial. Citizens of towns where development pressures are increasing need to understand the process, programs, and techniques used to promote high quality development while protecting significant natural resources.
- Growth management -- the use of planning, zoning and other techniques to direct the quality, rate, and location of development -- involves the development of community consensus to balance economic interests with environmental and other concerns.
- Preservation of wetlands and coastal areas such as estuaries, beaches, and barrier islands offers important economic and environmental benefits: flood protection; water quality enhancement; shoreline erosion control; and support for wildlife habitats, aquatic ecosystems, commercial fisheries, and recreational activities. The commercial and recreational value of these resources is extremely important to both national and local economies.
- Despite their importance, coastal and wetlands areas are threatened by a range of human activities associated with development and population growth.
- Local action is necessary and appropriate to manage growth and development to protect these natural resources.

WHAT IS GROWTH MANAGEMENT?

Growth management is the use of planning, zoning, and other techniques to direct the quality, rate, and location of a community's development. Successful growth management involves consideration of many aspects of development. Among the economic and social factors a growing community may wish to consider are its unique historic, cultural, and aesthetic features; the need to provide adequate affordable housing and public services; the desired location of commercial activities; and the community's overall goals for economic development. Communities are also likely to face a variety of environmental concerns, many of which are related to the health, safety, and welfare of the population. Among these are flood control, protection against erosion, management of wastewater, and the provision of clean drinking water. In addition, the community will want to consider such environmental amenities as protection of sensitive ecosystems, provision of open space, and opportunities for outdoor recreation. In short, the community must consider all the factors that, combined, determine its quality of life and sense of place.

In its discussion of management techniques, this guide will pay special attention to those tools that are most applicable to the protection of coastal and wetlands resources.[1] By design, this focus is limited. It is not our intent, however, to suggest that this interest dominate all others. Indeed, it is essential that local planners recognize the competing claims for use of the land, and work to include all interests in achieving consensus on how best to reconcile competing interests. Protecting significant natural resources is an important growth management goal, but only one of many that communities must achieve.

> A wave of poorly managed growth is transforming America's suburbs and small towns, changing some suburbs into "accidental cities" and small towns into suburbs. This transformation is bringing to these communities many of the drawbacks of big cities, such as traffic congestion, with few of the positive qualities that can make cities exciting and enjoyable places. While citizens, officials, and planners ponder what to do, some of the ingredients critical to making a community more liveable -- open space, rivers and other natural features, scenic and productive agricultural lands, historic buildings -- are deteriorating or disappearing rapidly. How can localities effectively manage growth and protect their special places?
>
> Source: Conservation Foundation Letter, 1987, No. 6, p. 1.

[1]While this guide focuses on the protection of coastal and wetlands resources, many of the techniques described are also applicable to other ecologically sensitive areas (e.g., inland lakes, streams, forests, and other habitats). All such areas should be considered in developing an environmentally sound growth management plan.

THE PROBLEM

Why are Coastal and Wetlands Resources Important?

> More than 70 percent of commercially important fish and shellfish species depend on coastal habitats. The combined commercial and recreational catch of these species contributes over $30 billion annually to the U.S. economy.

Coastal and wetlands resources provide a variety of benefits important to a community's economic and environmental health. Coastal habitats like estuaries, beaches, barrier islands, and near coastal waters are critically important resources.[2] Because of their unusually high biological productivity, these waters are home to a great variety of plants and animals. Estuaries are essential to the U.S. fishing industry, providing nursery and spawning grounds for 60 to 90 percent of commercial fish catches. Approximately 87 percent of the national dollar value of U.S. finfish harvests are species whose life cycles depend on coastal habitats. Each acre of the Atlantic coast estuarine system can produce up to 125 pounds of commercial fish.[3] In addition to commercially valuable species, many of the nation's endangered or threatened species depend on coastal habitats, as do millions of shorebirds, migratory waterfowl, and other types of wildlife. In Chesapeake Bay, the largest estuary in the country, more than 2,000 plants and animals have been identified, including 41 endangered or threatened species. Puget Sound contains more than 200 varieties of fish and 14 species of marine mammals. The Gulf of Mexico provides critical habitat for 75 percent of the waterfowl migrating through the United States.[4] The importance of these waters for boating, swimming, and recreational fishing is also unsurpassed. Florida's beaches, for example, attract more than 13 million tourists per year and generate revenue in excess of $4.5 billion. Water-related tourism also generates $8-12 billion for communities in the Great Lakes basin. Together, the economic, aesthetic, environmental, and recreational values of coastal habitats are irreplaceable.

Wetlands are often a key component of estuaries and as such are frequently found along the oceanic coast. However, unlike estuaries, which require a mix of fresh and salt water, wetlands habitats can exist entirely in fresh water. As a result, wetlands exist throughout the interior of the country also. Wetlands are important because they play a key role in regional hydrologic cycles by retaining and storing runoff from heavy rainfall, slowing the flow of water to streams and rivers, and reducing the chances of flooding. In addition, some of the retained water may percolate into underground aquifers and recharge ground water supplies. Wetlands can also act as pollution filtration systems, halting the flow of sediments, nutrients, and some chemical contaminants to both surface and ground water. Along the coast, wetlands control shoreline erosion by absorbing the force of storm waves. Beyond these environmental benefits, some wetlands provide timber and other natural products for commercial use. Wetlands also support a wide variety of recreational activities, including fishing, hunting, canoeing, wildlife observation, and simple appreciation of open space.

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[2]EPA's 1987 Near Coastal Waters Strategy defines "near coastal waters" as "inland waters to the head of tide, the territorial seas, and the contiguous zone, including areas of greater distance where necessary to protect coastal barrier islands and the mouths of certain estuaries."

[3]The National Wetlands Policy Forum, Protecting America's Wetlands: An Action Agenda, Washington, DC: The Conservation Foundation, 1988, p. 9; and U.S. Environmental Protection Agency, Marine and Estuarine Protection: Programs and Activities, 1989, pp. 3-5.

[4]State of the Environment: A View toward the Nineties, Washington, DC: The Conservation Foundation, 1987, p. 290; and U.S. Environmental Protection Agency, Marine and Estuarine Protection: Programs and Activities, 1989, pp. 3-5.

COASTAL AND FRESHWATER WETLANDS VALUES

Fish and Wildlife

- Fish spawning and nursery areas and habitat
- Shellfish habitat
- Waterfowl and other bird nesting areas and habitat
- Furbearer and other wildlife habitat

Environmental Quality

- Water quality maintenance
  - Pollution filter
  - Sediment removal
  - Oxygen production
  - Nutrient recycling
  - Chemical and nutrient absorption
- Aquatic productivity
- Microclimate regulation

Socioeconomic

- Flood control
- Wave damage protection
- Erosion control
- Ground water recharge and water supply
- Timber and other natural products
- Energy source (peat)
- Livestock grazing
- Fishing and shellfishing
- Hunting and trapping
- Recreation
- Aesthetics
- Education and scientific research
- Cultural history
- Archeology

Adapted from: Ralph Tiner, Wetlands of the United States: Current Status and Recent Trends, U.S. Fish and Wildlife Service, 1984, p. 13.

Why are Coastal and Wetlands Resources Threatened?

Despite their extraordinary value, damage to coastal and wetlands habitats has been accelerating. At the time the nation was settled, approximately 215 million acres of wetlands existed in the continental United States. Only 99 million acres remained by the mid-1970s, just 46 percent of the original acreage.[5] Despite a number of programs that have been instituted to slow the loss, wetlands continue to be lost at an alarming rate.

For decades, wetlands were viewed as unproductive wastelands, as breeding grounds for mosquitos and disease. As the nation grew, they were energetically converted to farmland and other uses. Up to the present, the conversion of wetlands to farmland has been a major factor in wetlands loss, accounting for approximately 87 percent of the loss from the mid-50s to the mid-70s.[6] Some agricultural activities, such as cranberry cultivation, can take place in wetlands with relatively minor physical modifications to the land; however, most agricultural uses of wetlands require that they be drained. When wetlands are drained or filled, they lose the ability to perform their natural functions.

Apart from agriculture, wetlands losses are due primarily to residential, commercial, or industrial development. In some cases, wetlands represent the only suitable sites for particular water-dependent uses, such as ports and marinas. In other localities, wetlands may be the last large, undeveloped tracts within or close to growing population centers. As communities look to expand, these sites emerge as possible locations for new development. In addition to direct conversion of wetlands, development can lead to the degradation of wetlands and coastal areas by increasing runoff from projects on adjacent uplands, or by otherwise altering area hydrology.

> The population density of coastal counties is five times greater than non-coastal counties nationwide, and counties on the Atlantic coast are ten times more densely populated than inland counties.

The pressures on coastal habitats are similar to those on wetlands and are equally persistent and growing. The natural beauty of these ecosystems is one of the chief threats to their survival. People appreciate the unique qualities of coastal areas and are drawn to barrier islands, beaches, and the shores along coastal rivers. Americans are moving to the coast in increasing numbers; almost half of the United States population now lives in coastal areas.[7] The total coastal population between 1960 and 2010 is expected to increase by almost 60 percent; Florida's population alone is expected to increase by 226 percent during these years, with current estimates of 3,000 to 4,000 people per week moving to the Florida coasts.

Problems associated with this growth, such as municipal sewage, industrial discharges, and nonpoint source pollution, threaten coastal ecosystems. Nutrients from sewage treatment plants, storm water runoff from lawns and agricultural lands, faulty septic systems, and even ground water discharges accelerate eutrophication, altering oxygen availability and damaging the productivity of coastal waters. Combined

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[5]U.S. Department of the Interior, The Impact of Federal Programs on Wetlands, 1988, p. 1.

[6]Ibid. Also, see OTA, Wetlands: Their Use and Regulation, 1984, p.7.

[7]U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, 50 Years of Population Change along the Nation's Coasts, Washington, DC, April 1990.

sewer overflows and inadequate wastewater treatment threaten shellfish beds with human pathogens; in 1985, nearly one-third of the productive shellfish areas in the U.S. were closed or limited due to actual or potential contamination.

Toxic pollutants from a variety of sources -- including municipal and industrial sources, leachate from hazardous waste storage or disposal sites, contaminated sediments disturbed by dredging or natural processes, and deposition of pollutants from the air -- threaten ecological resources and human health. Runoff to estuaries from urban areas carries nutrients from fertilized lawns, oil, grease, and toxics from paved surfaces, and numerous trace metals from a range of sources. In many places fish and shellfish are overharvested. Habitats for living creatures, vital parts of estuarine ecosystems, are being disturbed by land development, the dredging of channels and marinas, and the disposal of dredged materials in other areas. The cumulative effect of these factors threatens to overwhelm the recuperative powers of coastal ecosystems.[8]

What is Being Done?

Federal and state governments today recognize the public value of coastal and wetlands resources and have taken action to stem the tide of destruction and degradation. Notable among federal efforts is the Clean Water Act, which regulates the discharge of pollutants into the nation's waters, limits the filling of wetlands, and established the National Estuary Program to protect and clean up estuaries around the nation. In addition, many states have passed coastal and wetlands protection acts.

Appendix B provides a description of federal programs and initiatives that address coastal and wetlands resources. Included is a detailed discussion of the Section 404 program for dredge and fill activities, and a review of the updated Coastal Zone Management Act, which authorizes grants for land use and other planning efforts.

Appendix C provides an overview of selected state programs and initiatives.

By themselves, however, these actions are not enough. While national and regional direction is important for well-coordinated protection efforts, it is at the local level that most decisions directly affecting development are made. The role of local governments and planners is crucial to the present and future protection of our nation's coastal and wetlands resources. This guide focuses on that role, and on the use of local planning, regulation, acquisition, and other conservancy techniques to preserve these valuable resources.

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[8]U.S. Environmental Protection Agency, Marine and Estuarine Protection: Programs and Activities, 1989, pp. 3-5; and Coastal Waters in Jeopardy: Reversing the Decline and Protecting America's Coastal Resources, Oversight Report of the U.S. House of Representatives, Committee on Merchant Marine and Fisheries, Subcommittee on Fisheries and Wildlife Conservation and the Environment and Subcommittee on Oceanography, December 1988, pp. 10-15.

THE NEED FOR LOCAL ACTION

The desire for home rule and local control over local concerns is a powerful theme in American history. The U.S. Constitution reserves to states all responsibilities for land-use planning except those that conflict with interstate commerce. States have in turn traditionally delegated land-use regulation to local powers, where the health, safety, and overall welfare of the community is best discerned and protected. This control may take the form of authority to adopt official maps and comprehensive plans, to enact zoning ordinances or subdivision regulations, or to restrict shoreline, floodplain, or wetlands development. Growing awareness of the larger-than-local impacts of land-use decisions, however, has recently led some states to assert greater influence over local land-use decisions. The form of this increased intervention ranges from requirements that local plans be consistent with state or regional goals, to detailed criteria that local planners must follow in developing and implementing local plans. Localities where land-use controls are weak or lacking will likely be most dramatically affected by increasing activity on the state and regional level.

Despite growing recognition of the role of state and regional planning, local planning is still critical. People generally believe that they know what is best for them -- that local problems are best addressed by local solutions. Land-use issues exemplify this attitude. Few concerns mobilize a community as rapidly as the proposed siting of a hazardous waste facility in its midst, or the elimination of public access to a favorite beach. This attitude is natural when it is the citizens of a single community who are most affected by land-use decisions. It is they who best understand community needs, and who, through their local governments, have direct means to influence the course of events.

Making decisions about land use has long been within the purview of local governments. There are compelling reasons for those at the local level to take the lead in pursuing policies to protect coastal and wetlands resources:

- Local citizens and officials are the most familiar with local problems and needs, and are in the best position to articulate and reconcile competing land use interests.

- Despite a proliferation of federal and state programs that now affect local land-use decisions, much of the power to influence land-use patterns remains at the local level, and no single federal or state agency has sole responsibility for these concerns.

- Building in unsuitable areas has caused persistent environmental problems in many communities. Such environmental losses may be permanent. Delays in addressing environmental challenges are costly -- environmental problems do not go away if left alone. Local citizens and officials can often act more quickly than the state or federal government to identify and to address such challenges in time.

- Development has meant more congestion and stress on linear services, such as transportation, refuse collection, and water and sewer provision. Local government is responsible for the provision of many of these public services, and thus bears the cost of poor planning.

- Local government also is responsible for the siting of public facilities, an important factor that directs the course of community growth. Such facilities include roads, water supplies, sewer systems, landfills, schools, and police and fire stations. Their location is important in determining the attractiveness of an area for further development.

- Many of the benefits of protecting ecologically sensitive areas such as coastal and wetlands habitats accrue at the local level.

Thus, local governments are often best equipped to understand their community's needs and concerns, and to act quickly and effectively to protect local resources. As discussed in the next chapter, action to protect local resources and to guide growth and development is generally most effective when it is based on comprehensive planning. The development of such a plan, which embodies community consensus on land-use goals and objectives, is a key step in ensuring that local actions are effective and will endure.

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The planning process, whether formal or informal, helps a community understand its unique resources, the problems these resources face, and the measures that may be required to protect them. It establishes goals and objectives for the future, explicitly recognizing potential conflict between different resource uses. Finally, the planning process can provide a road map for a community's actions to manage growth and protect coastal and wetlands resources.

Communities may address coastal or wetlands management issues within the context of a comprehensive plan or through a special use plan. Comprehensive or master plans articulate the community's vision for its future by establishing long-range goals for development. They provide guidance on broad policy questions, from the formulation of regulations and public investment programs to requirements that must be met in order for residential building permits to be issued. Comprehensive plans may include guidelines and policies for the protection of wetlands and coastal areas. Special use plans may either stand alone or enhance a comprehensive plan to address particular concerns such as the need to protect environmentally important areas.

CHAPTER SUMMARY

- Planning establishes both a conceptual and a legal framework for individual land-use decisions, based on a community's shared vision of its future.
- A plan describes existing development, infrastructure, and natural resources, then recommends land-use policies for future development. Comprehensive plans address economic, cultural, historic, social, and environmental interests in an integrated framework.
- Successful planning involves all elements of a community in articulating goals and objectives that reflect community consensus.
- A formal plan reflects this vision by specifying general guidelines and concrete actions for future development and resource protection.

Comprehensive planning has become increasingly important in small towns and communities as:

- Towns realize that zoning alone does not always ensure that new development is integrated into the community in ways that protect and enhance the visual, aesthetic, historic, and cultural attributes of the community
- Planners see that development plans can meet zoning provisions in every respect but still lead to traffic congestion; degraded or over-burdened water supplies, utilities, waste management facilities, and roads; and the loss of significant natural resources.

This chapter addresses the following issues concerning community planning:

- Why plan?
- What is in a plan?
- Who plans?
- The planning process
  - Step 1: Define the planning context
  - Step 2: Understand your community
  - Step 3: Establish goals and objectives
  - Step 4: Prepare plan
  - Step 5: Implement, monitor, and enforce the plan
- Building a consensus
- Determinants of success in managing the planning process.

WHY PLAN?

Many communities are looking to a more rigorous planning process to guide their land-use decisions, especially as the potentially detrimental impact of unmanaged development on the character and quality of local life becomes clear. Planning is a way to solve problems, capitalize on opportunities, and encourage objective, comprehensive decisionmaking. Planning is a way to encourage high quality development while protecting important natural and cultural areas. It is driven by local needs and values. It allows local policy makers to be future-oriented, rather than reactive and crisis-oriented. It protects certain land uses in advance of efforts to alter them. In short, a successful planning process helps direct where, when, and how development should occur.

> A locality's plan guides its planning commission and governing body in decisions regarding proposals for private development and placement of public facilities. It serves as the foundation for zoning and subdivision ordinances and other land-use regulations.

The importance and relevance of the planning process and the plan that results from it have increased as localities have attempted to introduce rational, consistent objectives into their land-use decisions, and to allocate scarce resources to areas of greatest need. Too often, local officials have found themselves having to make land-use decisions on a case-by-case basis, focusing on a particular site or crisis rather than adopting a consistent, integrated approach to development. The potential result: inability of local governments to provide high quality public services; degradation of the environment; traffic jams; and, despite zoning regulations, a pattern of development inconsistent with that which the community desires. Planning has also become more widespread as it has become clear that the legality of zoning ordinances depends on their consistency with adopted comprehensive plans.

WHAT IS IN A PLAN?

A plan coordinates land-use decisions by describing existing patterns of community life -- including demographic trends, housing, economic activity, natural resources and infrastructure -- and recommending policies (including control of land uses) to manage future development.[1] It consists of maps of the community and its resources and text that explicitly addresses conflicts and tradeoffs among development, environmental protection, social policy, safety, transportation, design, and a myriad of other factors. It is implemented through the use of zoning ordinances and other regulatory and nonregulatory mechanisms, and serves as the legal basis for such ordinances.

The components of local plans that are relevant to sensitive resources such as coastal and wetlands habitats are as varied as the plans themselves. A comprehensive plan addresses all relevant aspects of community needs and land use. It would obviously be incomplete without considering environmentally significant areas and the tradeoffs that accompany different uses of these areas. Most plans designate sensitive areas as such, and specify land uses for them that protect their ecological integrity. Special purpose planning, for wetlands or estuary and coastline protection, is one piece of a comprehensive plan.

WHO PLANS?

The planning process provides a forum for generating open discussion and cooperation, and for resolving disputes among interested parties. The general public, local government, environmental and citizen groups, developers, and the business community are usually active participants.[2] It is an opportunity for a community to set joint goals and establish priorities, to develop a vision of that community's future.

A local planning commission (either elected or appointed) usually oversees the planning process and adoption of a legally acceptable plan, which may be a comprehensive master plan or a minor special purpose plan. In either case, effective planning requires commitment of public resources: time, effort, and financial backing. It also requires conviction on the part of those involved to make it work. Institutional and management capacity will in part determine the magnitude of the planning effort, and whether to embark on a comprehensive or master plan, a special use or minor plan, or to amend the existing plan.

THE PLANNING PROCESS

There are (typically) five main steps in the planning process:

- Step 1: Define the context of the planning effort.
- Step 2: Understand the community, its resources and the challenges facing it. Gather data to clarify and substantiate the existence of resources and problem areas.
- Step 3: Establish goals and objectives.

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[1]Here, the term "land use" is used in its broadest sense, to include all aspects of the plan: community resources and infrastructure, natural environment, transportation, housing, and land use. The natural environment component may include environmentally significant areas such as floodplains, estuaries, beaches, barrier islands, wetlands, areas supporting flora and fauna, etc.

[2]Because the impacts of development and the boundaries of sensitive environments are not always confined to one jurisdiction, comprehensive planning may need to involve citizens and officials of all jurisdictions in a watershed. The importance of watershed planning is discussed later in this chapter.

- Step 4: Prepare the plan.
- Step 5: Implement, monitor, and enforce the plan.

Step 1: Define the Planning Context

• Investigate Existing Programs that Affect Your Jurisdiction

Variations in local decisionmaking power directly affect the planning process. In some states, localities have limited authority to act in the absence of specific state enabling legislation. Florida, New Jersey, Oregon, Vermont, and Virginia are among those that mandate planning; the nature of the plan is specified by state law. In other states, traditions of strong home rule mean that a great deal of decisionmaking power is delegated to the local level. Other localities have no decisionmaking power, but are instead governed by strong county or regional governmental bodies that may coordinate land-use planning. Because of these variations, a community must be aware of the extent of its legal authority.

Successful planning efforts are coordinated with other governmental bodies. There may be significant resources and assistance available at the federal, state and regional levels, and the nature of local plans and policies may be dictated by state or regional planning bodies. In most areas, however, planning remains in the purview of local government. State and federal agencies are often best used as sources of information, financing, and technical assistance.

> Coordinate with federal, state, regional, and other local efforts.

• Review Existing Local Land-Use Policies that Affect Coastal and Wetlands Habitats

Many communities have enacted regulations that protect -- or are detrimental to -- coastal and wetlands habitats. Existing regulatory programs that control land and water uses will play an important role in shaping a community's options to effect change.

• Identify Constituencies Interested in Local Action

Planning is a public process, and early involvement of the general public in planning efforts is crucial. Both public and private stakeholders in land-use decisions ought to be represented, including farmers, business leaders, planners, developers, local and state government representatives, environmental groups, and local residents.

• Organize Available Resources, and Assess the Potential Scope of Local Action

Planning efforts are limited by a community's willingness to devote time, staff, and financial resources to what is a time-consuming and complicated process. A careful inventory of planning resources will help organizers determine the scope of the planning effort. Take advantage of technical assistance and financial support from other governmental and nongovernmental bodies.

Step 2: Understand Your Community

Effective planning to protect coastal and wetlands resources requires collecting a great deal of diverse information about the jurisdiction in question. This information will allow participants in the planning process to realistically assess issues, problems, and opportunities facing their community, establish priorities, and eventually come up with a plan of action. This step includes three components:

- Identification of baseline conditions and trends
- Identification of important natural resources
- Identification of key problems and threats.

SOME TIPS FOR BUILDING PUBLIC SUPPORT

- Hold public meetings or hearings, early and often, formal and informal, providing concerned citizens with an opportunity to express their views and influence decisionmaking before any decisions have been made.

- Concentrate on the specific values of coastal and wetlands resources when looking for support. For example, highlight erosion control and water quality issues to garner the support of the local water department. Or emphasize aesthetic and recreational values of beaches and the opportunity for clustering (and lower costs) to developers.

- Be inclusive. Try to involve:

  - Government officials (elected and appointed): federal, state, county, and local
  - Business representatives
  - Community organizations
  - Landowners
  - Recreational interests
  - Environmental and conservation groups
  - Technical support: scientists, engineers, lawyers, etc.

- Include the public in enforcement efforts. Encourage members of the public to report violations and act as stewards of their environment. To be credible, local authorities must act promptly on such information.

- Provide technical assistance and information about the value of coastal and wetlands habitats, threats to them, and ways of protecting them. Arrange citizen education efforts, community workshops, training, and dissemination of information through other means.

- Develop mechanisms for consultation among affected parties.

- Recognize the tradition of property rights and individuals' reluctance to support policies that might impair property values.

- **Identify Baseline Conditions, Trends, and Resource Base**

Participants in the planning process gather information to understand the current state of their community, articulate expectations for its future, pinpoint where problems either already exist or are likely to arise, and determine areas of need. This information-gathering process culminates in a profile of the community to be covered by the plan. The general profile explains:

- Economic, social, and demographic patterns and trends
- Land-use patterns and trends
- Natural characteristics, including geologic, soil, and ground water data
- Existing infrastructure and carrying capacity, maintenance, and capital improvement data.

The degree of detail of available information varies. Where information is not available, the community can commission studies to be performed by staff or consultants. More frequently, it is necessary to make do with available resources. Possible sources of information needed to profile the community's resources and to formulate a plan include:

- County clerk or engineer
- State highway commission
- State league of cities
- State board of water resources
- State division of parks and recreation
- USDA Soil Conservation Service and Soil Conservation Districts
- U.S. Geological Survey topographic maps
- State department of economic development
- Regional or state planning bodies
- Agricultural or other extension service
- State conservation commissions
- State department of natural resources
- State department of environmental regulation
- State historic preservation office
- Private watershed associations, land trusts, or conservation organizations
- The state natural heritage program.

- **Identify Critical Resources**

> Steps in Resources Assessment:
>
> 1. List sites.
> 2. Describe sites.
> 3. Discuss benefits of resource protection.
> 4. Identify areas most critical to resource protection.

At the same time that they describe the demographic, economic, and natural baseline conditions and trends in a community, participants in the planning process should identify and define the bounds of critical areas -- those segments of land and water within their jurisdiction that are particularly sensitive or serve important purposes and might warrant protection. At this point, coastal and wetlands habitats can be targeted for protection. Whether as part of a comprehensive plan or a special purpose plan, identification and definition of these critical areas is crucial. This step allows planners to then determine which areas would benefit most from protection, and which areas are most suited to protection (they are not necessarily the same). Formal identification of key resources generally entails the development of a map and a written description of their characteristics.

Effective protection of coastal and wetlands resources requires that localities comprehensively evaluate their geological, hydrological, and environmental resources. **Coastal and wetlands resources are part of a larger watershed; actions outside their immediate boundaries affect them, and these impacts in turn exceed the immediate boundaries of the coastal or wetlands area.** For example, sources of urban and rural nonpoint source pollution may severely damage wetlands or estuaries within the same watershed, but miles away.[3] Thus, emphasis should be placed on developing a comprehensive understanding of the physical and biological relationships within a watershed. Documenting relationships among key resources may include, for example, using ground water flow maps to assess the adequacy of present and future water supplies subject to contamination from local sources of pollution. Coupled with information about sources of point and nonpoint source pollution, these maps can help identify linkages between pollutants and aquifers that must be understood in order to protect future drinking water quality. Ground water and surface water mapping, along with information on vegetation and soil types, can help managers identify habitat essential for preservation and promotion of fish and wildlife, and for meeting demands for outdoor recreation and scenic quality.

- **Identify Potential Problems and Threats**

Combining an understanding of a community's baseline conditions and trends allows the planner to determine the most serious problems that growth poses. For example, if projections of population growth indicate that additional housing will be required, is expansion of housing stock likely to affect sensitive areas? Will new roads, utilities, or other infrastructure be needed? If so, to what extent? Local planners should consider the various indicators of growth, such as building permit applications and issuances, water usage, school enrollment trends, and traffic patterns in characterizing future growth. Potential threats to sensitive environments should be explicitly recognized. The information collected during early stages of the planning process can then be used to establish priorities, to begin to pinpoint the areas in which a community should focus its scarce resources.

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[3] Charles Thurow, et al., Performance Controls for Sensitive Lands: A Practical Guide for Local Administrators, Chicago: American Society of Planning Officials, 1975, p. 49.

Step 3: Establish Goals and Objectives

The community must attempt to decide on the relative importance of different land uses and governmental priorities (including residential or commercial development, open space, or infrastructure). The community can then delineate specific goals and objectives for different areas according to community needs, fiscal capacity, and the physical features of the land. It is critical that all stakeholders be involved in the formation of goals and objectives for the community. Only then can decisions be made that consider both the needs of private and public development and the protection of natural resources. Objective consideration of all perspectives will ensure that future progress both adequately protects valued resources and promotes the community's shared vision for its future.

- **Overarching Goals**

The community's overarching goals guide its land-use decisions. In some small communities, pressing concerns that might be embodied as goals include:

- Managing and directing growth
- Providing for economic development
- Ensuring sufficient affordable housing
- Preserving rural character
- Protecting life and property from floods
- Maintaining the viability of agricultural uses in the face of more profitable development options
- Protecting open space, natural resources and unique sites.

Whether for a 10-year, 5-year or 1-year duration, a plan's goals express local desires regarding land use and development -- commercial, industrial and residential placement; transportation and recreation; public facilities; energy and water; open space; and other natural environment considerations. These goals reflect:

- The heterogeneity of the local environment
- The diverse demands on and needs of the community
- Long- and short-term costs and benefits
- Infrastructure impacts
- Risks to human health and the environment.

It is crucial to evaluate and reconcile these many competing interests. Once local goals are established, the community can then evaluate the watershed to determine where planning efforts should focus, and what other jurisdictions might need to become involved.

- **Critical Area Protection Objectives**

Within the context of its broad goals, a local plan needs to set forth objectives for the protection of critical areas. The specifics of these will vary depending on the characteristics of the land in question, and will reflect the community's decisions regarding tradeoffs among different aspects and impacts of growth and development.

For example, objectives for the protection of coastal and wetlands resources might include:

- To protect ground water, for the purpose of preserving the integrity of drinking water supplies
- To protect surface water, for the purpose of preserving drinking water and other commercial, industrial, or recreational uses
- To protect soils, for the purpose of preserving agricultural productivity, protecting human health, and preventing erosion
- To protect fish spawning grounds and shellfish habitat to maintain the local fishing industry
- To protect endangered species and wildlife habitats
- To cost-effectively control and minimize flooding
- To provide recreational uses.

In light of these objectives, a community's land-use policies may prohibit development in some areas. In others, they may limit land uses to those with minimal environmental impacts. In still others, they may impose few or no restrictions, or provide for new development or increased density of development.

Step 4: Prepare Plan

Preparing a comprehensive plan involves synthesizing the many concerns analyzed during the information gathering and assessment phases (Steps 1 and 2) to develop a detailed statement of what a community intends to be (Step 3) and to specify the steps it will follow to get there (Step 4). The land-use component of the plan estimates the amount of land suitable for different uses and those that should be restricted, estimates the amount of land needed to satisfy population growth and economic demand, and suggests what activities go on what parcels. It attempts to minimize conflicts between uses, and to assure that future uses will be located near adequate public services. It strives to protect critical areas such as coastal and wetlands habitats while providing for economic growth and prosperity.

This step in the process involves development of alternatives for implementing the goals and objectives that are summarized in the plan. A community's list of alternatives is developed by applying the information and insight it has garnered to a series of policy and program options. In formulating specific proposals, a community should consider:

- What are the principal threats to coastal and wetlands resources?
- What specific areas should be protected, and to what degree?
- What must be accomplished to protect coastal and wetlands resources?

- What can be accomplished (given available resources and constraints)? Which options are likely to inspire the most public and political support? The community's potential to act will be a function of the resources -- including funds, staff time, and goodwill -- available to it.

- What other programs can be leveraged to protect coastal and wetlands areas? How can new efforts build on existing programs or policies? A community might retrofit existing policies/regulations rather than promulgate new ones.

Many localities rank the areas that they have identified in the information-gathering and analysis phases of the planning process, in an effort to determine how scarce resources may be most effectively allocated. They then develop a land-use plan that, to the maximum extent feasible, satisfies the community's goals and objectives. Where habitats and other resources span across jurisdictions, localities will need to join forces to ensure adequate and appropriate consideration of potential impacts.

Rank sites:

1. Critical
2. Essential
3. Desirable
4. Future action.

- **Consider a Watershed Planning Approach**

The effectiveness of any coastal or wetlands protection strategy is tied to oversight of activities in the entire watershed. Consideration of the entire watershed is important for several reasons. First, the impacts of development are not always localized and can affect resources throughout the watershed. Second, by examining the entire watershed, planners can best discern areas where growth and development would be most suitable, due either to the presence of existing infrastructure or the lack of significant threats to sensitive natural resources. Finally, local planners can evaluate the progress of existing control efforts throughout the watershed, and can use this information to target scarce resources and identify where protection of coastal and wetlands areas is weakest.

An integrated watershed protection program, as embodied in a comprehensive plan, might include many different provisions, including ones for:

- Wetlands and floodplain protection ordinances
- Flood control programs
- River corridor management
- Sewer overflow provisions and siting controls
- Control of septic systems or requirements for pumpout stations for small boats
- Designing and siting wastewater treatment facilities
- Surface and ground water quality controls
- Nonpoint source pollution controls.[4]

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[4]For a good discussion of nonpoint source pollution, see Nancy Hansen, et al., Controlling Non-Point Source Water Pollution: A Citizen's Handbook, The Conservation Foundation and National Audubon Society, 1988.

The planning process should identify the extent to which these concerns are already addressed, and where there are gaps that need to be filled. It may be that encouraging erosion control practices, careful management of fertilizers and pesticides, and other efforts to control nonpoint source pollution within a watershed are more effective in protecting a wetland than are development regulations. Wisconsin, Florida, and Louisiana are examples of states that coordinate land-use programs with other water quality protection efforts throughout a watershed.

Recent amendments to the Coastal Zone Management Act mandate that states with approved coastal zone management programs develop a program to assess and control nonpoint source pollution problems that threaten coastal waters and resources. For more information on this important legislative initiative, see Appendix B's discussion of the Coastal Zone Management Act and the 1990 Amendments.

- **Integrate Land Use and Environmental Concerns with Other Aspects of the Plan**

While effective strategies to protect coastal and wetlands resources might focus on individual land-use decisions, it is important to look at a broader range of community concerns to maximize effectiveness and minimize conflicts. The development of roads, for example, often has a profound impact on growth. Similarly, the construction of capital facilities, such as sewage treatment plants and sewers, can induce growth in previously undeveloped areas. Whether or not excess capacity is built into these facilities can also affect land-use patterns. Planning for the provision of such services therefore becomes crucial.

Like statutes in many other states, the Pennsylvania Municipalities Planning Code requires comprehensive plans to contain transportation and public facility planning components.

Some communities have sought to protect sensitive coastal environments by carefully siting public facilities away from the threatened resource. Communities can control the extension of public services (i.e., water and sewerage lines) and direct construction of capital projects (e.g., roads) to suitable areas, encouraging growth where it can best be supported and away from sensitive areas that may be adversely affected. Of course, the provision of public utilities is not the only force driving development decisions: location, land value, transportation, and the value of other improvements tend to overshadow the provision of water, wastewater treatment, and other utilities. Public infrastructure can, however, be important in affecting the timing and cost of development. For example, some communities have adopted minimum facilities ordinances as part of their growth management strategies. These ordinances stipulate that development proposals must have access to minimum public services, including water and sewer, roads, police, fire, and education before development is allowed to begin.

Appendix A includes case studies on numerous state and local initiatives involving **comprehensive planning** from Ft. Collins, Colorado; Chesapeake Bay, Maryland; Pennypack Creek, Pennsylvania; Oregon; Florida; and California.

Step 5: Implement, Monitor, and Enforce the Plan

A plan that sits on a shelf, its recommendations unheeded, is of no value. To be effective, participants in the planning process must be willing to guide their recommendations through to implementation. A well-structured plan includes an implementation strategy that describes steps for translating the plan into action and monitoring the extent to which the plan's goals and objectives are achieved. It also includes provisions for modifying the plan, as needed, to accommodate new goals or achieve better results.

BUILDING A CONSENSUS

Land-use decisions have often been contentious. The increasing concern for and complexity of environmental issues has merely added further challenges to the process. More than ever before, if a community's actions are to be effective and to endure, land-use decisions must involve all groups with a stake in the shape and form of growth and development. From this participation must come consensus, if not on the specific details of every project, at least on the overall goals and objectives of the community.

Building and maintaining consensus is important throughout the development and implementation of a plan, but is perhaps most essential in the pre-planning stage. It is at this stage that the goals and objectives that will guide each subsequent step are first established. Combined, the goals and objectives represent the community's shared vision of its future. They are not generally associated with specific development or conservation projects, but instead provide the framework within which specific decisions are made. Pre-planning consensus building requires making every effort to include all interested parties in shaping these goals and objectives, ensuring that each group articulates its vision for the future, and enabling these groups to work cooperatively to generate a shared view. With this framework in place, the plan for guiding growth, development, and conservation can then be structured.

Structuring a process whereby conflicting interests can reach consensus can be extremely challenging. The approach used will vary depending on the particular mix of participants, relative levels of expertise, extent of disagreement, and the complexity of techniques and authorities considered. The following six strategies focus on the role of local planners in generating consensus on land use decisions. No one approach is the "right" approach; rather, each has advantages, depending on the mix of individuals and local circumstances involved.[5]

- Strategy One: The Planner as Regulator. In this strategy the planner concentrates on finding and assembling facts and rules, processing the information so that others can make decisions. Often, however, the planner also interprets the merits of techniques being considered, evaluating both the political and technical factors involved. How the planner presents information can be as important as what information is presented.

- Strategy Two: Premediation and Negotiation. Here planners try to represent the interests of the "other side" in separate meetings with developers or other community members. The planner typically relies on professional judgment to anticipate the concerns of a group without formally consulting with that party. Planners who use this strategy may successfully limit conflict, but risk being wrong about a group's concerns and assuming too much power over the outcome of negotiations.

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[5] The following summary of planning strategies is adapted from an article by John Forester, "Planning in the Face of Conflict: Negotiation and Mediation Strategies in Land Use Regulation," APA Journal, Summer 1987.

- **Strategy Three: The Planner as a Neutral Resource**. Here planners bring all sides together and serve as a neutral go-between by answering technical questions and acting as a referee when conflict erupts. This approach has the advantage of including all sides in the development of land-use plans. It is difficult, however, for a planner to remain neutral, and this strategy may not succeed in generating consensus when neither side is willing to give.

- **Strategy Four: Shuttle Diplomacy**. To avoid direct confrontation between opposing groups, planners may choose to facilitate negotiation by representing the opposing views to groups individually. This strategy differs from the premediation strategy in that planners actually solicit the viewpoints of the groups they try to represent. Planners who use this strategy often feel they have more bargaining power -- to present an exaggerated position in order to reach an agreement that ultimately meets the major objectives of each side. The planner may also decide to use professional judgment to make concessions on "less important" issues in the interest of achieving an agreement.

- **Strategy Five: The Planner as an Active and Interested Mediator**. In this strategy planners actively attempt to gain the trust of each side by listening to and respecting each position. The planner then presents each side's concerns to the other, often expressing an opinion about the merits or drawbacks of a position. Because the planner has access to important information and has a vested interest in the outcome, planners who use this strategy believe in sharing their opinions and actively promoting an outcome.

- **Strategy Six: You Mediate, I'll Negotiate**. Here planners find someone else to mediate during open meetings between all interested parties, while they act as negotiators for a position or advisors to a particular group. The mediator may be a member of the planning board or a volunteer from the community. The planner retains a substantially interested posture, while another party convenes negotiation meetings.

In most situations, the development of consensus will require a mix of these strategies. However accomplished, it is critical to involve as many community members as possible in decisionmaking, and to allow all interests to be voiced. The approach to consensus building will then depend, among other things, on the extent of disagreement, the techniques available, and the urgency of the problem being considered.

DETERMINANTS OF SUCCESS IN MANAGING THE PLANNING PROCESS

Examination of local efforts to protect coastal and wetlands resources nationwide points to a number of criteria that seem to characterize successful approaches to using land-use management as one way of protecting these resources. Among these criteria for success are:

1. Clearly defined goals and objectives. Communities that have been most successful in protecting their coastal and wetlands resources have implemented programs and policies that reflect clearly defined and realistic goals and objectives. These goals and objectives are generally the product of an acutely felt need to do something to protect certain resources, a well-informed and scientifically based understanding of the characteristics of that resource and the threats to it, and, perhaps most important, a significant planning effort.

2. Strong information base and readily available technical backup. The community has surveyed and defined its resources and analyzed its land. It has carefully analyzed policy options with respect to their economic, social, political, and environmental impacts.[6]

3. Regulatory and legal authority. The community has established its regulatory and legal authority to protect sensitive areas through an adopted comprehensive plan, clear enabling statutes at the state and/or local level, and "minimum state standards."

4. An explicitly integrated approach. The community has developed an explicit approach to ensure that land-use policy is consistent with and bolstered by other environmental protection efforts, such as pollution prevention efforts at nearby industrial sites. Land-use planning and regulation takes place in conjunction with prohibition of certain activities, rational siting, nonpoint source pollution programs, etc. A community is more likely to succeed when it recognizes the interdependent nature of land-use management decisions and coordinates its actions to pursue its goals in an integrated fashion.

5. Public participation. Successful efforts to protect wetlands and coastal areas are based on public participation in the decisionmaking process. Public support is important to all aspects of protecting coastal and wetlands resources, including planning, program development, implementation, and enforcement. Public understanding and support is fostered through an open, organized, and credible process, which includes all affected parties. The first step is to develop publicly accepted common goals and to build a coalition that addresses the many dimensions of the growth management and sensitive area protection issue. An alliance of development and environmental interests, and voluntary participation by landowners, will clearly be an asset, while little public participation could become an impediment to protection efforts.

6. Political leadership is a major factor in building strong public support. In many respects, protecting wetlands and near coastal waters is a political problem, not a technical one. Inadequate leadership is therefore an impediment to protecting endangered resources. Political pressures can even result in policies contrary to a community's stated goals.

7. Close cooperation. Successful efforts to protect coastal and wetlands resources involve close cooperation among intergovernmental, interagency, and intersectoral parties. Uncooperative or inflexible attitudes can endanger efforts to protect these resources from the start. The likelihood of success is enhanced if efforts are based on flexibility, recognition of the need to balance public and private interests, and a willingness to negotiate. In addition to working with local public and private interests, successful communities also develop working relationships with federal and state authorities, benefiting from their resources and expertise and avoiding jurisdictional conflicts.

8. Adequate financial support. Successful efforts to protect coastal and wetlands resources require adequate financial support. Acquisition programs entail a much greater up-front cost than most regulations, but the administrative costs of implementing and enforcing effective regulations should not be overlooked. Site design review, for example, can have significant costs in terms of required staff time and expertise.

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[6]Data gathering and analysis are often best accomplished at the state level, but many communities have found it necessary to supplement information and analysis available from federal, state, and regional sources with their own research. In cases where scientific and technical information and impact evaluation are unavailable or beyond the means of a community, the community must rely on what data is available.

9. Effective attention to implementation. Successful efforts to protect coastal and wetlands resources pay attention to implementation issues, the requirements of which go beyond adequate funding. Clear administrative responsibilities and management, careful monitoring, and enforcement are important as well, and require a long-term view. Inadequate funding, lack of oversight and enforcement, and insufficient staff support are impediments to protecting these important resources. To avoid these problems, a community should, whenever possible, adapt its environmental protection initiatives to an existing regulatory framework.

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THE USE OF ZONING AND OTHER REGULATORY MEASURES TO PROTECT COASTAL AND WETLANDS RESOURCES

CHAPTER 3

Local policymakers have access to many regulatory tools that can be used to protect coastal and wetlands resources, including land-use ordinances such as zoning and related techniques, subdivision controls, and performance regulations. This chapter discusses the use of these tools to guide development in designated critical environments and to channel development to less sensitive areas. It begins with an overview of zoning as a tool for land-use control, discusses its application to wetlands, coastal zones, and other sensitive areas, and examines zoning variants such as cluster zoning, bonus zoning, and others. It then reviews the use of subdivision controls to protect coastal and wetlands resources. Finally, it explains the purpose of performance regulations, and describes how such controls can be used to preserve the quality of sensitive environments.

THE BASICS OF ZONING

- The purpose of zoning
- The limits of zoning
- The content of a zoning ordinance
- Developing a zoning ordinance
  - How the zoning process works
  - First steps
  - Where to get help
- Administering a zoning ordinance
- Enforcing a zoning ordinance
- Amending a zoning ordinance.

CHAPTER SUMMARY

- Zoning, the most common land management tool, separates a jurisdiction into land-use zones and districts, designating permitted, prohibited, and conditional uses. Zoning ordinances provide a regulatory framework for protecting coastal and wetlands resources.
- Sensitive Area Protection Ordinances are zoning regulations specifically designed to protect wetlands, coastal ecosystems, and other important natural resources.
- Related regulatory techniques that can be employed to protect sensitive areas include buffer and overlay zones, large lot and cluster zoning, downzoning, density limitations, set asides, interim development controls, planned unit development and subdivision regulations, bonus and incentive zoning, and transfers of development rights.
- Performance regulations, such as those governing control of runoff from a construction site, offer another means of managing development to ensure the protection of sensitive areas. Performance regulations may be supported by plan and design reviews to verify compliance with applicable standards.
- Compensatory mitigation -- the restoration or creation of new ecosystems, particularly wetlands -- may help to offset the unavoidable loss of sensitive environments.

The Purpose of Zoning

Zoning is the most common method of land-use regulation. Its underlying purposes are:

- To allocate land use by district
- To minimize incompatible land uses
- To avoid over-concentration of population
- To facilitate service provision
- To protect existing uses and natural resources
- To direct or spur development.

The Limits of Zoning

Zoning is not an appropriate tool for reshaping land uses that are already in place, nor is it generally used to respond to undesirable development. If the planning commission or governing body seeks to react to a specific event rather than to establish consistent quality standards, the proper response is probably a mechanism other than zoning.

The Content of a Zoning Ordinance

Whether zoning for single-family homes, commercial use or wetland protection, the overriding principle behind the zoning ordinance is the same, adapted by each locality to its individual circumstances. The zoning ordinance separates a jurisdiction into land-use zones and districts, and for each zone designates permitted uses, uses that are subject to conditional approval, and prohibited uses. Permitted uses are generally allowed by right; other uses may require a special permit. The ordinance generally consists of text and a map. The text explains uses by zone, permitting, and other aspects of the zoning process. The map reflects the locality's master plan and supports the text. Nuisance ordinances (pertaining to noise and air pollution or dangerous structures, for example) are usually separate from the zoning ordinance.

There are many standards and aspects of land use that designers of the regulation might address. These include:

- Permitted uses
- Excluded uses
- Special uses
- Accessory uses
- Conditional uses
- Special exceptions
- Required lot size and setbacks

- Maximum coverage ratio
- Minimum/maximum building size
- Height limitations
- Variances.[1]

How standards are structured, and their degree of specificity, is a function of the locality's land-use objectives. Figure 1 (page 28) shows the table of contents of a model zoning ordinance, illustrating its basic structure.

Developing a Zoning Ordinance

- **How the Zoning Process Works**

Figure 2 (page 29) depicts a simplified view of the zoning process in a community where a planning commission that reports to the governing body is responsible for the formulation of land-use regulation. Note that public input is an important component of the process.

- **First Steps** -- Before drafting zoning regulations:
  - Review state enabling legislation (the annotated version is easier to work with). State planning and zoning enabling legislation, which authorizes zoning on the local level, varies by state. While most rural governments are required to adopt a zoning ordinance, some rural townships may not have the authority to do so. Land-use regulation in these cases transpires at the state or regional level.
  - Become familiar with local land-use studies or the local land-use plan. This plan must be officially adopted. If a locality has a zoning ordinance but no town plan, the ordinance can be declared invalid by the courts. The plan's land-use section and map will provide the basis for the zoning ordinance.
  - Assure that the local planning commission, from which the regulations will emanate, is properly constituted and convened.
- **Where to Get Help** -- For help drafting or amending zoning regulations:
  - Recent zoning regulations of similar or nearby localities, although not directly applicable, can be a useful guide.
  - Planning departments at nearby universities, or the state chapter of the American Planning Association, may be able to provide technical assistance to the small town in the throes of drafting zoning regulations.
  - The state or county agency in charge of planning may also be able to provide technical assistance and advice.

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[1] Thomas L. Daniels, et al., The Small Town Planning Handbook, Washington, DC: Planners Press (American Planning Association), 1988, p. 109.

Figure 1

ZONING ORDINANCE

SAMPLE TABLE OF CONTENTS

1. Introduction

   a. Source of Authority to Regulate
   b. Purpose of Ordinance
   c. Definitions
   d. Who Must Comply

2. Zoning Maps - Areas to be Regulated

   a. Boundaries
   b. Amendments
   c. Annexation

3. General Standards/Provisions across all Districts

4. Zoning Districts (separate section for each)

   a. Location or Applicability
   b. Permitted Uses
   c. Development Standards

5. Nonconforming Uses

6. Special Provisions

7. Administration and Enforcement

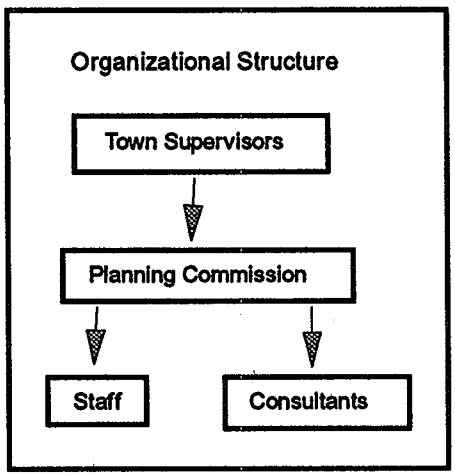
   a. Planning Commission
   b. Board of Adjustment or Appeals
   c. Permits and Fees
   d. Variances
   e. Penalties

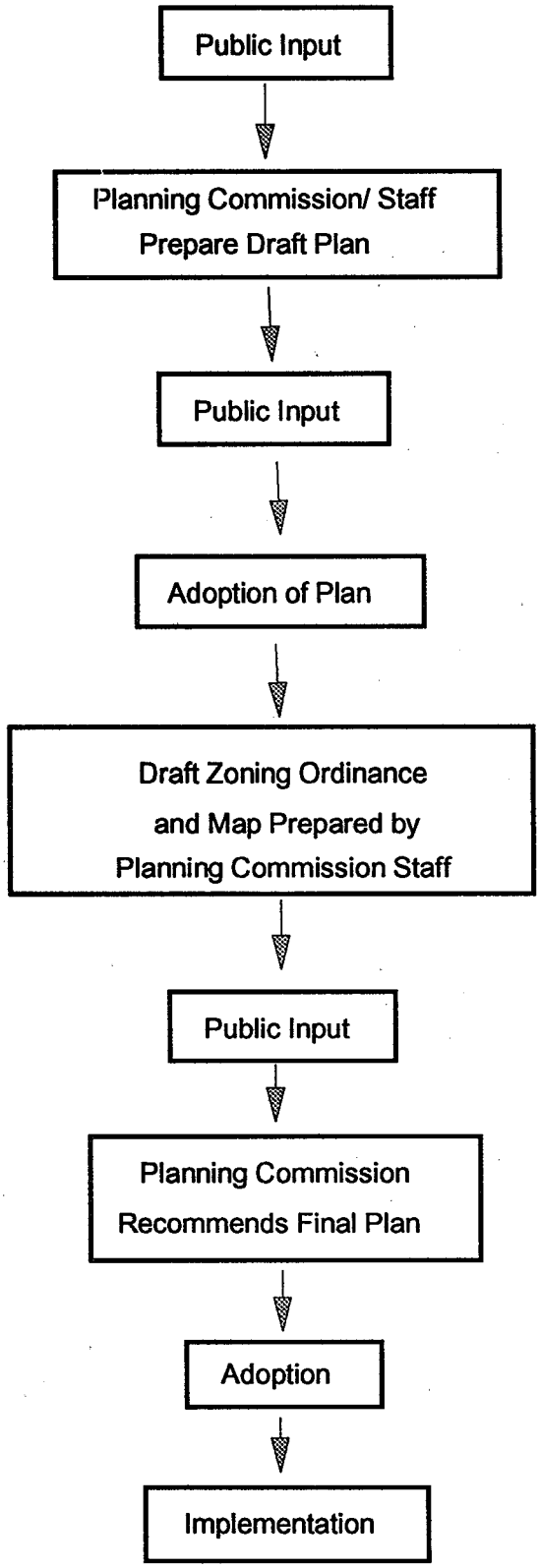
8. Amendment Procedure

Source: IEc, adapted from Daniels, The Small Town Planning Handbook, p. 104, and Wisconsin DNR, New and Improved Floodplain and Shoreland Guidebook.

Figure 2

CREATING A ZONING ORDINANCE





Source: IEc, adapted from Daniels and others.

There are numerous publications available to assist localities in preparing zoning regulations. The Small Town Planning Handbook suggests the following:

- Frank, et al., eds., The Practice of Local Government Planning
- Dudley Hinds, Winning at Zoning
- Clan Crawford, Strategy and Tactics in Municipal Zoning
- Frederick Bair, The Zoning Board Manual
- The American Planning Association, Land Use Law and Zoning Digest (monthly) and The Language of Zoning
- Clark Boardman Company, Zoning Law Report (monthly).

Administering a Zoning Ordinance

Zoning regulations should be drafted, or at least commented on, by a professional planner. Once enacted, they are generally administered by a zoning administrator, in conjunction with a zoning board of adjustment. The zoning board of adjustment, the responsibilities of which may instead be performed by the local planning commission, rules on applications for variances and attempts to resolve other zoning-related conflicts.

Enforcing a Zoning Ordinance

The design of land-use ordinances is generally more flexible than other regulatory measures. For this and other reasons, zoning regulations are often difficult to enforce. To help make the ordinance effective, localities need to carefully monitor land-use activities under their jurisdiction, and should be willing to prosecute violators of zoning codes. Enforcement efforts may be hindered by light fines and penalties, lax monitoring, and inconsistent prosecution efforts.[2]

Zoning ordinances are best enforced by careful review of applications for development permits and requests for zoning variances. Projects that receive initial approval, however, may violate permit conditions during the course of construction. In the event that a violation is discovered during project construction, a municipality may issue an administrative order or pursue a court injunction to halt construction temporarily. Subsequently, the municipality may require abatement of the violating action. Planning boards in some areas require posting of a bond or similar performance guarantee to ensure compliance with local zoning ordinances.

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[2]If enforcement efforts are lax, private citizens may file a *writ of mandamus* ordering local officials to enforce land-use laws.

Amending a Zoning Ordinance

The zoning ordinance describes the process by which the map and ordinance itself can be amended. Such amendments could include changes in zone boundaries, density, or designated uses. In general, the process is initiated by the filing of a petition in favor of amendment (see Figure 3, page 32). As when the ordinance was originally adopted, the planning commission holds hearings and makes a recommendation to the governing body.

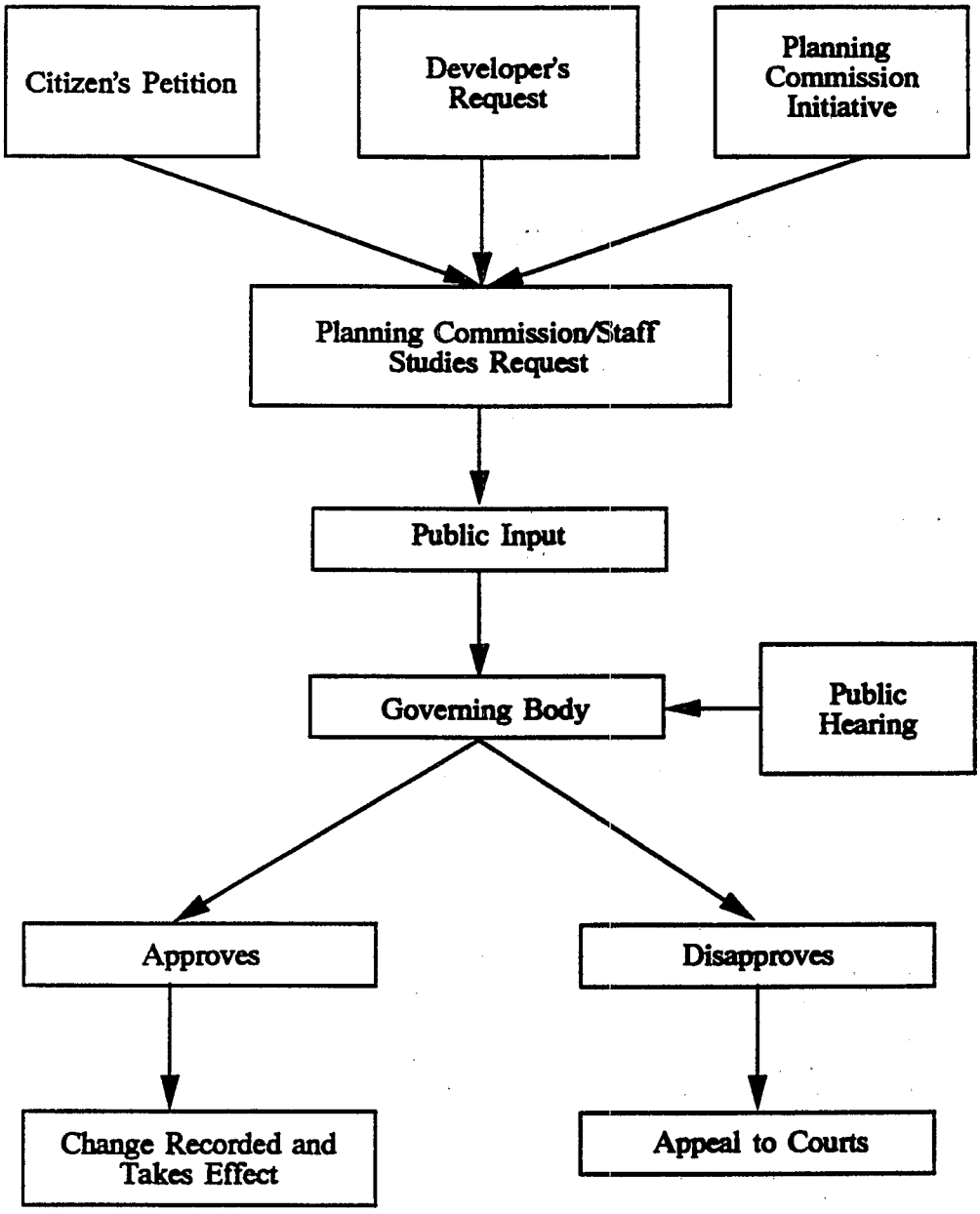
Amending comprehensive zoning regulations is often an effective means of protecting sensitive environmental areas. For example, a floodplain ordinance could be amended to improve wetlands protection. Such an amendment would require:

- Addition of a definition of wetlands to the definitions section of the regulation
- Creation of a wetland subdistrict in the floodplain zone
- Addition of procedural regulations and land-use restrictions by adding standards to control filling, dredging, drainage, and other uses detrimental to the wetland portions of the floodplain.

Adapting existing regulations by amending local zoning ordinances can be a manageable and effective way of protecting coastal and wetlands resources. The possible nature of such amendments is discussed in greater detail later in this handbook.

Zoning ordinances created or revised to address development pressures in **Door County, Wisconsin**, and in **Lycoming County, Pennsylvania**, are included as cases studies in Appendix A.

Figure 3
AMENDING A ZONING ORDINANCE



Source: IEc, adapted from Daniels and others.

DESIGNING SENSITIVE AREA PROTECTION ORDINANCES

- What is a sensitive area protection ordinance?
  - Purpose of sensitive area protection ordinances
  - Defining and mapping the wetland/sensitive area
  - Determining permitted, prohibited, and special uses
  - Levying penalties.
- Establishing other sensitive area districts
  - Open space and conservation districts
  - Floodplain protection districts.

What is a Sensitive Area Protection Ordinance?[3]

The most common type of sensitive area protection ordinance creates a special district where sensitive areas such as estuaries, wetlands, or barrier islands are identified and potentially damaging activities are restricted. These regulations can be either standalone ordinances or single components of comprehensive zoning regulations.

Whatever their authorizing mechanism, sensitive area protection districts designate lands to be protected -- including wetland or specific sensitive environment protection districts, or conservation, natural resource, or floodplain districts. Special-use districts may be particularly relevant to areas where land values are high, and land use conflicts unavoidable. In addition to being protected by specific ordinances (to be discussed in detail below), wetlands and other sensitive environments can be designated low-density residential and open-space zones, or protected through large lot size restrictions and siting controls (limiting grading, filling, dredging, etc.).

A wetland or sensitive area protection ordinance applies only to the land specified in the ordinance itself. Because this land may also be affected by offsite activities, it is important to view the sensitive area and programs to protect it as components of an overall system. In general, communities should consider provisions that minimize the extent and pervasiveness of development in or near sensitive areas. Clustered zoning, for example, may result in less disruptive development than large lot restrictions or low density provisions, which can lead to more widespread, infrastructure-intensive development. These options are discussed later in this chapter.

An ordinance designed to protect wetlands or other sensitive environments, whether subsumed in comprehensive zoning or an independent regulation, consists of four main sections that address in turn:

- The purpose of the wetland/sensitive environment protection ordinance

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[3]David Burke, et al., Protecting Nontidal Wetlands, Chicago: American Planning Association, 1988, and Jon Kusler, Our National Wetland Heritage, Washington, DC: The Environmental Law Institute, 1983, were important sources for this section, and are recommended to the reader particularly for examples of specific provisions of sensitive area protection ordinances.

- The definition of the wetland/sensitive environment in question, with maps delineating its boundaries
- Permitted, prohibited, and special uses
- Penalties for violating the ordinance.

These components of a wetland protection ordinance are discussed below.

Wisconsin requires cities and villages to take measures to protect shorelands and wetlands. The state's model shoreland/wetland zoning ordinance suggests that the sensitive area district include all wetlands of at least five acres in size and within 1,000 feet of the ordinary highwater mark of variable lakes, ponds, or flowage, or within 300 feet of the ordinary highwater mark of navigable rivers or streams. Residential development is prohibited in the shoreland/wetland zone. Hiking, biking, trapping, hunting, and other uses that do not involve wetland alteration are permitted. Some wetland-altering construction is permitted, subject to constraints upon size, design, and function.

Source: Institute for Environmental Negotiation, Shoreline Management Options for Virginia Coastal Localities, 1988, pp. 36-37.

- **Purpose of Sensitive Area Protection Ordinances**

The first section of the wetland or sensitive area protection ordinance describes the goals and objectives of the regulation. Some ordinances articulate overarching goals pertaining to the public welfare, while others are more specific. Some communities seek strict preservation, while others might focus on pollution control. In the case of wetlands, all protection ordinances seek to maintain the regulated area as a functioning ecosystem. Examples of possible goals, drawn from actual ordinances, are listed below. No matter how they are structured, the overarching goals of regulations should be:

- To eliminate or avoid at the outset any detrimental impacts of changes in land use
- To protect and minimize natural hazards to public health, safety, and welfare
- To protect and preserve the natural functions of the sensitive area
- To maintain consistency with other plans and regulations
- To minimize the impact of development and restore or replace the sensitive area as necessary.[4]

Other specific goals might include:

- To secure safety from floods
- To prevent damage to wetlands from erosion, turbidity, or siltation

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[4]Burke, op. cit., p. 36.

- To prevent loss of fish, other beneficial aquatic organisms, wildlife and vegetation, and destruction of natural habitats

- To control water pollution

- To protect potable water supply from drought, overdraft, pollution, or mismanagement.

- **Defining and Mapping the Wetland/Sensitive Area**

1. Definition -- The second section of the ordinance specifies criteria for identifying the sensitive environment to be protected, and includes maps of the areas subject to the ordinance. Wetlands may be defined in a variety of ways. An ordinance may include a scientific and legal definition of the sensitive area, based on some combination of vegetation, soil type, and hydrology. Some definitions include all three criteria, others one or two. The U.S. Fish and Wildlife Service's wetland classification system is widely used.

> EPA's regulations, developed under Section 404 of the Clean Water Act, define wetlands as "those areas that are inundated or saturated with surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."

2. Mapping -- In addition to specifying verbal criteria used to identify sensitive areas, ordinances also include maps of the area in question. Many communities have adopted mapping to avoid the difficulties and ambiguities inherent in defining some sensitive areas, particularly wetlands. But mapping wetlands with precision can be particularly difficult (partly because of the seasonal variation of their boundaries). The ability of a locality to map its sensitive areas can also be constrained by the availability of funds and technical expertise. Maps are therefore most often used in conjunction with definitions and case-by-case site analyses.

   There are many sources of data for mapping purposes. These include:

   - National wetlands inventory maps (U.S. Fish and Wildlife Service)

   - Soil maps (U.S. Department of Agriculture, Soil Conservation Service)

   - Flood hazard maps (Federal Emergency Management Agency, individual communities)

   - Topographic maps (U.S. Geological Survey)

   - Aerial photographs and satellite imagery

   - Tax maps.

   Figure 4 (page 36) presents more information on these data sources. Other possible sources for use in mapping sensitive areas include state fish and game inventories, natural heritage programs, and coastal zone management programs.[5]

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[5]Also see W.J. Mitsch and J.G. Gosselink, Wetlands, NY: Van Nostrand Reinhold, 1986; and U.S. Army Corps of Engineers, Wetland Delineation Manual, Technical Report Y-87-1, Environmental Laboratory, Waterways Experiment Station, 1987.

Figure 4

SOME PRINCIPAL WETLAND DATA SOURCES

Title of Data Source	Information Displayed	Scale	Suggested Wetland Uses	Source
National Wetlands Inventory Maps	A wide variety of information pertaining to vegetation, water regime, and other parameters.	1:24,000 1:100,000	1. Regulatory mapping. 2. Aid in processing permits. 3. Acquisition. 4. Siting.	U.S. Fish and Wildlife Service and the Geological Survey
USGS topographic maps (7 1/2' and 15')	Topographic contours, major roads, railroads, utility lines, contours, water bodies, houses, town names, county and town boundaries, vegetated and nonvegetated wetlands.	1:24,000	1. Enlarged for use as wetland base map. 2. Interim wetland map. 3. Watershed boundaries. 4. Source of topographic information.	U.S. Geological Survey
SCS Soil Survey	Soil Types	Range from 1' = 600' to 4' = 1 mile	1. Interim wetland map. 2. Determination of soil suitability for onsite waste disposal. 3. Determination of soil structural bearing capacity.	USDA Soil Conservation Service
State Wetland Maps	Wetland vegetation boundaries. Varied (depending on state).	1:2,400 to 1:24,000	1. Interim wetland regulation maps. 2. Permanent wetland maps (depends on scale).	State wetland programs.
Flood Hazard Boundary Maps: USGS, HUD	Flood-prone areas	Approx. 1:24,000	1. Interim mapping of wetlands. 2. Assess flood-hazard potential at wetland sites.	Federal Emergency Management Agency (FEMA). Also, consult state agency responsible for flood management.
Floodplain Information Reports, Army Corps of Engineers	Standard project floodplain, 100-year flood evaluation wetland boundaries (some maps).	Range from 1' = 500' to 1' = 1,000'	1. Assess flood hazard potential at wetland sites.	Army Corps of Engineers Floodplain Management Service
USGS, Hydrologic Investigations, Atlas, Hydrology & Water Resources	Maps differ but may contain wells, test holes, bedrock, or groundwater quality information.	1:24,000	1. Determine groundwater flow systems. 2. Determine aquifer recharge areas.	U.S. Geological Survey
Subdivision maps	Dimensions of property, size and location of house, width of easements. Wetland and floodplain boundaries (some circumstances).	1' = 40' 1' = 60' 1' = 100'	1. Determine precise wetland boundaries (some instances). 2. Evaluate individual developments.	Municipal offices
Air photos, various sources	Existing uses, vegetation, water resources, roads (black and white stereoscope).	Range from 1:7,200 to 1:58,000	1. Define wetland boundaries based upon vegetation. 2. Use as base maps. 3. Evaluate individual proposed uses.	USGS USDA ASCS States Private

Source: Burke, op. cit., p. 34.

- **Determining Permitted, Prohibited, and Special Uses**

There is a broad array of approaches to regulating both wetland and sensitive area use. Each locality must determine its own needs, what use patterns to allow, and how specific to make its regulations. For example, some ordinances prohibit dredging and filling outright, while others allow dredging and filling for certain purposes. Each locality determines whether to use specific or general performance standards, to limit use by activity type or density restrictions, or to use some combination thereof.[6] Most regulations list permitted and prohibited uses, and establish a permitting process for special uses that requires a case-by-case review by the regulating authorities.

1. Permitted uses. Permitted uses are those allowed by right: no permit is required or one is issued automatically. These uses may be limited to activities that must be carried out without filling, flooding, draining, dredging, tilling, or excavating, such as:

   - Conservation of soil, vegetation, water, fish, and wildlife
   - Outdoor recreation, such as hiking, fishing, hunting, swimming, and boating
   - Harvesting of wild crops and horticulture
   - Fish and wildlife management activities
   - Other "soft" conservation or low intensity uses
   - Temporary storage.

   Permitted uses may also include those that involve some combination of filling, flooding, draining, dredging, tilling, or excavating -- with strict conditions generally included, such as:

   - Temporary water stabilization measures
   - Flooding, dam construction, and ditching for specified cultivation
   - Ditching, tilling, dredging, excavating, or filling to maintain or repair drainage systems
   - Limited excavation and filling for the construction of pastures, piers, and docks
   - Public improvements such as bridges, roads, and trails.

2. Prohibited uses. In most ordinances, prohibited uses refer to all those that are not permitted by right or issued individual permits after case-by-case evaluation. Occasionally, ordinances list prohibited uses. For example, prohibited uses often include:

   - No landfilling, dumping, or excavation
   - No dredging, draining, or filling
   - No damming or relocation
   - No building, structure, or permanent storage of materials

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[6]Burke, op. cit., p. 36.

- No construction or alteration

- No underground storage tanks

- No package sewage treatment plants

- No discharge or use of lawn fertilizers and hazardous chemicals.

3. Special uses. The ordinance also may establish a list of specific uses that are allowed by special permit, or general standards for such special uses. If so, the ordinance must specify the permitting procedure. Applications for special uses are generally reviewed on a case-by-case basis by the body responsible for administering the zoning ordinance. In general, these uses are evaluated according to the criteria listed in the goals and objectives section of the ordinance. Performance guidelines may be applied to special uses, or the ordinance may specify particular factors that the permitting authority should consider. The permitting authority can also require permit fees or performance bonds to assist with enforcing conditions of the permit.

The City of Sanibel, Florida, has enacted a zoning ordinance that includes a Special Interior Wetlands District. The ordinance requires that any development in the zone meet an extensive set of development requirements, limiting, for example, size, purpose, impervious surfaces, excavation and filling, clearing of vegetation, driveways, and roadways.

Source: Institute for Environmental Negotiation, Shoreline Management Options for Virginia Coastal Localities, 1988, p. 38.

Special uses are often accompanied by location, design, and construction requirements. Some examples of special uses are:

- Construction and maintenance of roads that are necessary for some designated purpose (e.g., silviculture)

- Construction and maintenance of nonresidential buildings with a designated purpose (e.g., raising waterfowl), if such a building cannot be located outside the wetland

- Establishment and development of public parks, recreation, and outdoor education areas

- Construction and maintenance of electric, gas, telephone, water, and sewer lines and related public utilities.

A city ordinance in Tualatin, Oregon, created a **Wetlands Protected Area** and a **Wetlands Fringe Area** within the **Hedges Creek** wetland. Maryland's **Chesapeake Bay Critical Areas Act** requires local jurisdictions to map critical areas within its boundaries and classify them according to the intensity of existing land use activity. Development in **Resource Conservation Areas** is strictly limited. See Appendix A for details on both these efforts.

- **Levying Penalties**

The ordinance should delineate penalties to be imposed on violators. Penalties may include fines, imprisonment, and/or requirements that the offending party restore the affected area. Enforcement is crucial to protecting the designated sensitive area.

Establishing Other Sensitive Area Districts

The above discussion focuses primarily on the establishment of wetland protection districts and wetland protection ordinances. The structure of other sensitive environment area ordinances would proceed along similar lines. Discussed below are two broader types of sensitive area districts that a locality might consider.

- **Open Space and Conservation Districts**

Open space and conservation districts are generally defined more broadly than a wetland protection district. They do, however, share the characteristics of the sensitive area protection ordinance described above. While not a substitute for public acquisition of open space, open space zoning protects wetlands and other sensitive areas by restricting development. Designers of open space zoning plans must be wary of formulating regulations that might be viewed by the courts as so restrictive as to amount to a taking without compensation.[7] Open space zoning can be carried out through minimum lot provisions, density requirements, cluster zoning, and other techniques discussed later in this guidebook.

- **Floodplain Protection Districts**

Floodplain zoning ordinances usually are applied to mapped flood zones along rivers and oceans, with boundaries determined by the 100-year floodplain. While not designed specifically for wetland protection purposes, floodplain zoning ordinances may be used to protect them.

Floodplain regulations often permit some filling, drainage, dredging, grading, and construction. Modest amendments to such an ordinance to strengthen its wetland protection components may be a viable alternative to a separate wetland protection ordinance. In addition to separate ordinances, floodplain-specific regulation may be in the form of overlay districts or part of the building permit review process (see below). Floodplain and sensitive area protection ordinances that are enacted to protect human health and safety may not prevent engineered solutions such as structural flood-proofing.

To qualify for federal floodplain insurance through the National Flood Insurance Program (NFIP), floodplain zoning, subdivision controls, and building codes must be in place. As a result, floodplain regulations, based on the 100-year floodplain, are the most extensive and longest-standing sensitive area controls on the books today. NFIP dictates certain land-use and construction standards that govern development in areas subject to flooding. For example, new structures in the 100-year floodplain must be elevated to the 100-year base flood elevation, and development must be limited in the floodway. Some states and localities go beyond basic NFIP requirements.[8]

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[7]Legal considerations and the taking issue are discussed later in this chapter and in Appendix D.

[8]For more, see Pennsylvania Department of Environmental Resources, Office of Policy, Stormwater Management: A Review of Municipal Practices and Regulations, and Environmental Concerns in Local Floodplain Management. Harrisburg: 1980. Also, see Appendices B and C.

Wisconsin's Water Resources Act requires communities along its Great Lakes shores to develop and adopt **shoreline and floodplain zoning ordinances**. The County Planning Commission in **Lycoming County, Pennsylvania**, assisted local municipalities in enacting **floodplain ordinances**. Case studies on both efforts are included in Appendix A.

OTHER ZONING-RELATED TECHNIQUES

- Buffer zones
- Overlay zones
- Large lot zoning
- Downzoning
- Cluster zoning and density requirements
- Transfers of development rights
- Planned unit developments
- Set asides
- Bonus and incentive zoning
- Interim development controls.

Buffer Zones

One chief weakness of the sensitive area protection ordinance is that, by definition, its jurisdiction is limited to the sensitive area. But land uses in adjacent areas often have significant effects on coastal or wetlands environments. In addition, these adjoining areas may be environmentally sensitive as well. Requirements for creatively using undeveloped and natural zones around coastal and wetlands areas are becoming increasingly common.

The New Jersey Pinelands Management Plan establishes variable buffer zones designed to preserve important wetlands from subtle changes that accompany upland development. Buffer distances range from 50 to 300 feet, and are based on an in-depth evaluation of vegetation, water quality, habitat and sociocultural value. Appendix A includes a detailed discussion of the New Jersey Pinelands Management Plan.

Zoning regulations can establish buffer zones with restricted uses around protected areas, in addition to explicitly limiting development of sensitive areas. These can be structured in two main ways:

1. A standard buffer district can be established that covers a specified area surrounding the regulated sensitive area. For example:

   - A 1,000-foot buffer where impervious surface is limited to 5 percent

   - A 200-foot buffer running from the mean high-water line, wherein stringent environmental controls apply.

   Standard buffer zones are often arbitrary boundaries around a coastal or wetland area. While they are easy to administer, they do not necessarily serve their intended purpose (as Figure 5, page 42, shows).

2. Alternatively, a variable buffer, the width of which changes depending on specific criteria, can be established. This might be in the form of a minimum fixed buffer plus a floating buffer, where the width of the floating area is determined by particular characteristics.[9] For example, the width of the floating buffer may depend on the presence of wetlands, steeply sloped terrain, mature woodlands, poorly drained soil, etc. Designating floating areas poses more administrative requirements than a simple static buffer zone.

In establishing buffer zones, restricted uses are developed that are less stringent than those specified for the sensitive area itself, but provide a greater degree of protection than the underlying zoning regulation. Such buffer zones serve to insulate the wetland or other sensitive area from the potential negative impacts of surrounding development. Vegetated buffer strips, for example, filter pollutants in runoff. They may also protect shorelines from structural damage. In general, the effectiveness of vegetated buffer strips in controlling impacts from runoff depends on the width of the buffer, its slope, the type of vegetation, the runoff flow rate, and the pattern of flow across the filter. Communities with access to technical information about aquifer flow, migration pathways, and other aspects of geology, geography, and hydrology can custom-design buffer zones for maximum protection.

Harford County, Maryland, amended its overlay zone Natural Resource District to create **buffer zones** around streams, shorelines, and wetlands. See Appendix A for more information on this initiative.

Overlay Zones

A sensitive area protection district can be enacted through overlay zoning. In essence, an overlay zone is placed on top of a base zone to create a double zoning ordinance, and is useful for adopting wetland protection in areas that are already bound by zoning ordinances. Any development must then meet the requirements of both zoning ordinances. Overlay zoning is particularly useful in areas with natural hazards or areas that can be defined according to specific criteria. Traditionally used by larger communities, overlay zoning can be applied to any existing zoning regulation. Overlay zones are typically administered by transparent map overlays.

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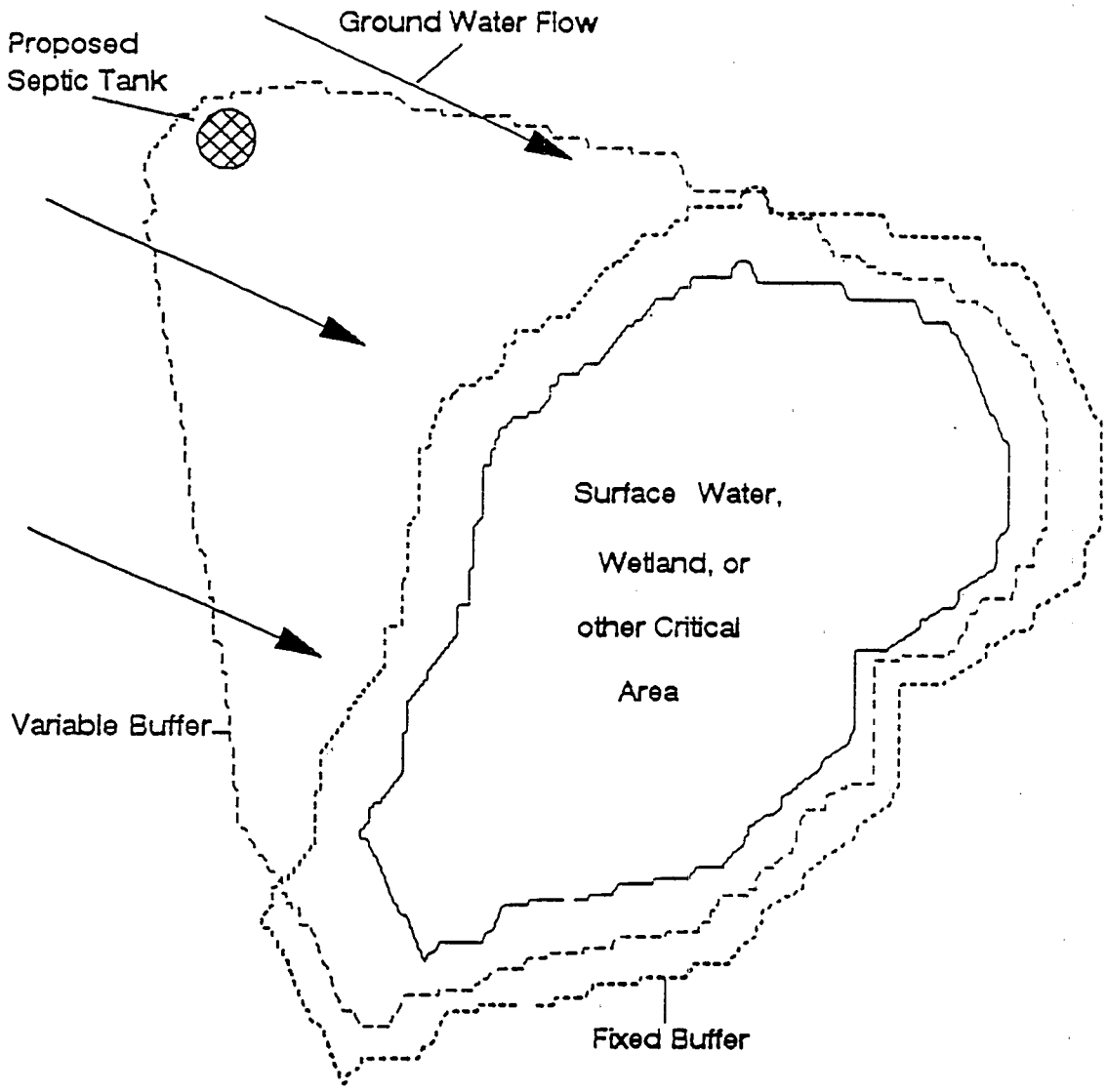
[9]A floating area or zone refers to a zone that has not been mapped. The width of the area is not pre-determined but instead depends on site characteristics.

Figure 5

THE USE OF VARIABLE VS. FIXED BUFFER ZONES



The variable buffer zone provides greater protection to the critical area.

Source: Industrial Economics, Inc.

An overlay zoning ordinance to protect coastal or wetlands areas that is based on scientific and technical criteria and focuses on the functions of the sensitive area generally works better than one based on arbitrary boundaries. The information-gathering and analysis phase of the planning process is a major contributor to the development of successful overlay zones.

Large Lot Zoning

Large lot zoning is used for conservation areas, agriculture, forests, and other lands where protection and use is conducive to large zones and low densities. It is a particularly useful technique for reducing the quantity and impact of septic system leachate that might migrate into water supplies. There are potential dangers inherent in large lot zoning, however. Designating large minimum lot size in residential areas may be construed as exclusionary zoning, clearly illegal if discriminatory. In addition, large lot zoning, applied haphazardly, can contribute to exurban sprawl, increasing pressure on public services such as roads and water and sewer lines.

A recent study by the Center for Rural Massachusetts examined development projects throughout the rural Connecticut Valley region and compared conventional techniques (standard zoning and subdivision practices) with more innovative techniques, given the same amount of new development. The study considers sites with various basic landscapes, and demonstrates the enormous improvements associated with more creative development scenarios. For example, instead of the more traditional large lot zoning provisions, this study recommends protecting open fields or agricultural areas with provisions that require all new development to occur on less than 50 percent of farmland or open fields. Buildings would be located either in a wooded fringe area, or screened from fields by newly planted tree shelters.

Source: Robert D. Yaro, et al., Dealing with Change in the Connecticut River Valley: A Design Manual for Conservation and Development, Center for Rural Massachusetts, 1988.

Downzoning

Downzoning applies to areas that are already zoned but not yet developed, and describes the mechanism by which the zoning regulations applicable to a particular area are made more restrictive. It is an essential tool in areas where conditions, community goals and objectives, and growth pressures have changed. For example, a wetland area zoned for commercial use but heretofore undeveloped might be downzoned to a less intensive use.

Owners of land to be downzoned are likely to be strongly opposed to any plan that results in their loss of property rights without compensation for lost value. As a result, downzoning can be very controversial and subject to legal challenge. The downzoned landowner must be left with reasonable use for his/her land.

LEGAL CONSIDERATIONS AND THE TAKINGS ISSUE

The conflict between the property rights of landowners and society's imposition on these rights raises numerous legal questions. While zoning and other land-use regulations are legitimate exercises of the government's police power, many zoning regulations have been subject to legal challenge. By designating permitted and prohibited uses, zoning can enhance the value of land for some while imposing losses on others.

Government cannot overly constrain a landowner's use of his property without compensation. However, fear of legal challenge should not be a deterrent to well-drafted and well-researched land-use regulations. Many legal observers of the conflict between private property rights and potential government takings have found that the restrictions on state and local government to regulate land use is slight. The courts have consistently found that if the property owner is left with reasonable economic use (not highest and best economic use) of his land, and the regulation advances clearly stated public policy interests (as embodied in the local plan), there is no taking.

Land use disputes are generally based on one of three constitutional doctrines:

- The right to due process of law, which protects the individual against arbitrary and capricious treatment
- The right to equal protection, which embodies the notion of fairness
- The right protected by the takings clause, which states that just compensation must be paid for property taken by the government.

Most litigation surrounds the takings clause. Legal tradition has never found private property rights to be supreme; instead, these rights are held subject to government authority to regulate. In determining whether a regulation constitutes a taking, the courts look at the reasonableness of the regulatory mechanism, and its consistency with the intent and application of the jurisdiction's plan. Central questions include:

- Does regulation promote an objective of the governmental concern, and is there a clear relationship between regulation and those objectives?
- Do similar landowners receive similar treatment?
- Does the objective being met by the regulation produce a benefit for the entire community for which compensation ought to be paid?
- Does the regulation too severely diminish property value? Does it overly constrain the ability of the landowner to earn a fair return on his land?

LEGAL CONSIDERATIONS AND THE TAKINGS ISSUE (continued)

The legal treatment of zoning to protect environmentally sensitive areas has changed. It is increasingly likely that the courts will allow the strict restrictions imposed by some localities. However, the conflict is far from over. Some legal decisions have removed the reasonable return limitation on certain environmental regulations aimed at wetlands preservation. Others have invalidated open space ordinances on equal protection grounds, finding that they exclude low and moderate income families from the community.

Appendix D discusses the takings issue in greater detail.

Source: Lawrence B. Burrows, Growth Management, New Brunswick: Rutgers University, 1978, pp. 115-166.

Cluster Zoning and Density Requirements

Cluster zoning and density requirements are essentially identical approaches. They regulate the placement of structures on a lot, allowing a developer to build more densely than the basic zoning ordinance dictates provided that other parts of the site are not developed. This method encourages large landowners to concentrate development on a section of their land, resulting in the same amount of total development on less space.

Density requirements might take one of the following forms:

- An open space ratio, where a designated percentage of a landowner's holding must be preserved as open space. This often also allows for the clustering of development on a site, and makes particular sense if portions of the site have physical limitations.

- An impervious surface ratio, limiting the amount of space that can be covered by roads, sidewalks, parking, or other impenetrable surfaces. This ratio is intended to limit runoff, other nonpoint source pollution, and other negative impacts on the site.

> In Wake County, North Carolina, impervious surfaces are limited to 6 percent in some residential watershed

- A density limit expressed in terms of dwellings per acre for residential use. This is also a component of traditional zoning.

- A floor area ratio, expressed as the ratio of total building floor area to total site area. This approach, rather than a density limit, is commonly applied to regulate nonresidential development.

The theory behind the use of cluster zoning or density requirements to protect environmentally sensitive areas is simple. The rigid specifications for equal lot sizes and dimensions that characterize traditional zoning often do not result in the most efficient and environmentally sensitive use of a site. Averaging and clustering permit smaller lots and higher densities in those parts of a site most conducive to development, and allow the remaining land to be devoted to open space. The overall density of the site remains at the same level as under a traditional zoning ordinance.

Cluster zoning and density requirements are also often attractive for other reasons. By reducing the need for new roads, utility lines, and other linear services, they can reduce the overall cost of development, both to local government and private landowners. In addition, homeowners may find that the value of their property appreciates more due to the proximity to protected, visually appealing areas; uninterrupted views are maintained, as are open fields and pastures, without limiting the amount of new development. Finally, cluster zoning and density requirements are particularly attractive in small towns where resources for conservation efforts are limited; these techniques are relatively easy to administer and generally fair to both landowners and developers, saving both time and scarce resources.

Myrtle Beach, South Carolina's Coastal Protection Overlay Zone transfers density away from the shoreline. Activities within the 50-year erosion line are severely restricted, while sideyard requirements are relaxed.

Source: Institute for Environmental Negotiation, Shoreline Management Options for Virginia Coastal Communities, 1988, p. 18.

Transfer of Development Rights

Over the past decade, an innovative incentive-based concept, transfer of development rights (TDR), has received a great deal of attention from professional planners. Legally, a TDR program redistributes the location of allowed development by separating the physical land from its development potential. In practice, a TDR program can shift development from sensitive environments to targeted growth areas. Using the TDR approach, local government would restrict development in coastal or wetlands areas but provide for the compensation of the owners of restricted properties by allowing them to sell their "development rights" to others. The seller then would be prohibited from developing his/her land (through a permanent deed restriction), and the buyer could add the purchased rights to those which ordinarily exist for his/her property. For example, the purchaser of development rights could increase the density or floor area of his development (beyond ordinary zoning limits) by an amount based on the number of development rights acquired.

A TDR program provides an incentive to owners of sensitive lands to sell their development rights, while others would have an incentive to buy those rights if they desire to develop in excess of the local zoning ordinance. The conceptual simplicity of this approach makes TDRs attractive. However, many more jurisdictions have authorized programs than have experienced actual transfers. Successful TDR programs require that an adequate market exists for development rights in targeted growth areas. TDRs will not work as well in areas where the "receiving zone" for development rights is small relative to the protected area, or where development rights would sell for a price far below what the restricted landowner should receive as just compensation. The limited success of these programs thus far indicates the difficulty of designing and implementing a TDR program.

Transfer of development rights programs have been used to preserve sensitive areas in **Hollywood, California**, and the **New Jersey Pine Barrens**. Appendix A contains case studies of both programs.

Planned Unit Developments

In the course of zoning a community, local planners may choose to designate certain areas -- generally large, undeveloped tracts of land -- as planned unit developments (PUDs). In essence, a PUD is a planned community within which steps can be taken to protect sensitive environments from the outset. PUDs are most commonly used for housing developments, but also can be applied to mixed and commercial uses. The PUD process involves public officials in determining the nature of the development, drawing on both underlying subdivision and zoning regulations. It is similar to a subdivision procedure in that the project's area is considered in its entirety; like zoning, densities are stipulated, but on a site rather than lot-by-lot basis. Clustering, set asides, and open space provisions are important components of many PUDs.

Set Asides

A set-aside clause establishes a formula dictating the portion of a sensitive area that may be developed and the portion that must be left undisturbed. The percentage of the land that must be left untouched is determined by the planning commission, specified in the ordinance, and based on the characteristics of the critical resource. Wetland or habitat set asides, conservation space factors, and open space ratios refer to the same mechanism.

In Largo, Florida, for example, the Comprehensive Development Code states, "As a condition of approval, the developer may be required to set aside land for permanent open space." In New Hanover County, North Carolina, an overlay district requires that conservation space (in an amount that varies by the type of resource) be set aside.[10]

Bonus and Incentive Zoning

Bonus or incentive zoning techniques award developers supplemental development rights (greater permitted density or building height, for example) in exchange for public benefits. For example, a developer might be allowed to build higher than zoning regulations allow in exchange for preserving some percentage of open space onsite. In another case, a developer might be permitted to increase density provided that amenities (parks, plazas, and others) are included. The specifics of the bonus zoning scheme are negotiated between the governing body and the developer.

Bonus zoning, generally used in urban areas, has grown in popularity and use in recent years, and can be applied to protect wetlands and coastal waters. For example, a developer who agrees to preserve the wetland portion of a site might be permitted to exceed allowed densities on the remainder of the site.

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[10]Institute for Environmental Negotiation, Shoreland Management Options for Coastal Virginia Communities, p. 32.

Interim Development Controls

Interim development controls can be used to slow or temporarily halt the development process. To preserve the character of a local plan, for example, the following mechanisms serve as temporary injunctions against development activity:

- Temporary ordinances pending revision of the plan
- Adequate facilities ordinances (also included as part of permanent development ordinances)
- Building permit moratoria
- Water and sewer moratoria.

These measures can offer protection to provisional areas until they are covered by permanent controls. They should be of limited duration and impact, used to keep the planning process intact by prohibiting nonconforming uses. Interim development ordinances provide a pause, giving a community the chance to reassess or complete the planning process, or to study methods to solve a particular problem. They are not substitutes for a comprehensive land-use program, but can be used to slow growth that is encroaching on sensitive areas until a plan is approved. They cannot be effectively used to stop development permanently, but may protect the planning process during periods of transition and provide a respite until adequate public services become available.

Although potentially of great value, interim development controls may also backfire. For example, a water and sewer moratorium or a building permit moratorium can cause a run on permits prior to enactment. In addition, interim development controls tend to be controversial, seen potentially as an example of government overstepping its authority. These measures, therefore, should be applied with caution, and only in cases where rapid response is required and other measures are infeasible.

SUBDIVISION CONTROLS

Like planning and zoning, the purpose of subdivision regulations is to provide for stable and orderly development. Subdivision regulations apply to undeveloped areas. They establish standards for lot division and service provision, controlling the process of converting raw land into developable parcels. The subdivision process spells out requirements for installation of utilities and other infrastructure, and for preservation of open space. By stipulating government review of subdivision plans, a community can ensure adequate provision of public services, enforce a pre-existing zoning ordinance, and place emphasis on the effects of proposed development on the environment. The subdivision also establishes uniformity for lot purchasers, and provides for land registration. Plat maps reflect the results of the actual subdivision. The table of contents of a hypothetical subdivision ordinance is presented in Figure 6 (page 49).

Subdivision regulations can be used to protect coastal and wetlands resources without an explicit zoning ordinance that specifies the protection of these areas. For example, in areas without sewer hookups, subdivision regulations might prohibit or otherwise limit the development of land (like beachfront or wetlands). They might require open space set asides, or stipulate that use may not induce flooding, contribute to water pollution, or adversely affect coastal or wetlands regions. Other restrictive covenants are possible.

Subdivision regulations should be explicitly tied to site design review, and should be evaluated with a community's goals and objectives in mind. Subdivision proposals should be reviewed with an eye to unforeseen negative impacts, and communities should seek creative means of structuring subdivisions to

Figure 6

SUBDIVISION ORDINANCE

SAMPLE TABLE OF CONTENTS

1. Introduction

   a. Source of Authority to Regulate
   b. Purpose of Ordinance
   c. Definitions
   d. Who Must Comply

2. General Requirements

   a. Conformity to Plan and Official Map
   b. Compliance with Zoning Regulations

3. Characteristics of the Land

4. Subdivision Design Standards

   a. Street Plan, Design, Sidewalks, Alleys
   b. Utilities
   c. Lots
   d. Open Space

5. Platting Procedures

   a. Application Process
   b. Planning Commission Review and Recommendation
   c. Public Approval Process

6. Administration and Enforcement

   a. Administering Body
   b. Variances
   c. Fees and Penalties

Source: IEc, adapted from Daniels, op.cit., p. 127.

respect sensitive environmental areas like coastal and wetlands habitat. For example, the subdivision proposal must adequately provide for sanitation and water supply. A community can phase in the development of a subdivision, and can make provision of required public services contingent on certain actions on the part of the developer.

The subdivision regulation is in many respects similar to a planned unit development (PUD) code, not specifically regulating the sensitive environment but generally prohibiting building in areas where soil, subsoil, or flooding would create public health or safety hazards. Subdivision regulations often include cluster options, and can be amended specifically to address uses with detrimental impacts on coastal and wetlands resources.

It is common for a subdivider to be required to donate land or compensation for schools, parks, or other public amenities, or to set aside land for other public purposes.[11] In this manner, subdivision regulations can be drafted to require protection of coastal or wetlands areas and provide for recreational and other low-intensity uses of open space.

PERFORMANCE REGULATIONS

- Performance-related ordinances
  - What are performance standards?
  - Using performance zoning to protect environmental integrity
- Building and related codes
- Permit processing fees and performance bonds
- Restrictive covenants and deed restrictions
- Site plan and design review
- Mitigation
  - Determining the need for compensatory mitigation
  - Institutional and administrative responsibility
  - The future of compensatory mitigation.

Performance-Related Ordinances

- **What are Performance Standards?**

Performance standards regulate the effects of land-use activities rather than the activities themselves. Performance-based techniques grew out of concern that traditional planning and zoning methods were too rigid, resulting in land-use management by exception, focusing excessively on parcel-by-parcel development and producing segregated land uses.

[11] Such "exaction" requirements provide compensation for the negative impacts of a development.

One means of implementing performance standards is through performance zoning. Under a performance zoning scheme, a locality is divided into zones based on standards, such as building size limits, density requirements, water quality goals, or traffic limits, rather than land uses (such as residential, commercial, etc.). The zoning ordinance that is based on performance standards generally involves fewer zoning districts than traditional zoning. The performance standards themselves can be detailed criteria or general performance guidelines, and are used to evaluate any special permit requests. More detailed criteria may be preferable in cases where frequent encroachments are expected. Language prohibiting uses "not in harmony with surrounding uses" is considered too vague to have much impact.

The specific standards of performance zoning render it better equipped to handle the problems associated with variances and conditional uses than traditional zoning. Furthermore, using performance standards rather than prohibiting certain uses outright can avoid the taking issue. The primary difficulty with performance zoning regulations lies in the formulation of the standards themselves.

Regardless of whether they are implemented through performance zoning or other means, performance standards can be used to maintain open space and to protect the integrity of environmentally sensitive areas. The impacts that performance approaches can address include storm water runoff, wetland destruction, effects on vegetation and ground water quality, and others.

- **Using Performance Standards to Protect Environmental Integrity**

Many performance criteria may be specified in a sensitive area protection ordinance. These criteria can either establish specific requirements by which a permittee must abide, or guidelines that the permitting authority must apply in determining whether to grant a permit. In the case of coastal or wetlands habitat protection, standards might include specific criteria addressing the following:

- Filling and sloping (specifying, for example, placement and quality of fill and incline of slope)
- Disturbance of vegetation, habitat, or wildlife, (specifying, for example, what disturbances are allowed)
- Release of wastewater and use of pesticides and fertilizers (specifying, for example, how much wastewater and which pesticides)
- Use of best management practices (BMPs) during development (specifying, for example, the BMPs to be used to manage storm water runoff and the schedule and methods by which BMPs are to be maintained)
- Water quality standards
- Provisions for changes of ownership.

> Protecting trees helps maintain water quality, reduces erosion, enhances air quality, benefits wildlife, and improves aesthetics. Some communities -- like Leon County, Florida, and Bridgeton, Maine -- have enacted tree-protection ordinances that specify the criteria and conditions according to which trees may be removed.

Or, performance standards might establish general guidelines, instructing the permitting authority to consider:

- Whether any activities associated with development (including filling, dredging, discharges, runoff, storm water retention, and use of pesticides or herbicides) have a net adverse effect on the regulated area

- The ability of the regulated area to perform its hydrological functions and prevent flooding
- Changes in grades, ground cover, or drainage that might result in erosion
- The extent of siltation or leaching and its impact on water quality
- Changes in water volume, velocity, temperature, toxicity, etc., and their effects on flora and fauna.

Building and Related Codes

Towns typically use performance standards in codes that govern building, sanitary hookups, and a number of other concerns.

- Building codes describe the standards regulating new construction. Generally, localities adopt a standard building code (a number of standard building codes exist), and add, alter, or delete sections to meet local needs. These regulations can be used to control development in areas of flood hazard or to govern the award of building permits in coastal and wetlands areas.

- Sanitary Codes prohibit septic tanks in high ground water areas and can thereby protect wetlands and coastal waters. Improperly located or malfunctioning septic tanks are a major source of water pollution and a serious health threat. As a result, many states and localities regulate the placement, design, and operation of onsite sewage disposal systems. For example, Franklin County, Florida, as part of regulations designed for Florida's Areas of Critical Statewide Concern, controls the siting and type of sewage treatment systems. In Maine, the minimum Shoreland Zoning Ordinance controls siting as well. Some regulations subject alternative treatment systems to additional standards.[12]

- Special Purpose Codes include, for example, regulations regarding sand and gravel extraction, tree cutting, storm water management and pollution controls, and special site plan review.

Permit Processing Fees and Performance Bonds

Permit processing fees and performance bond requirements are often specified in the special use section of a zoning ordinance, and may be required before a permit is granted. Permit processing fees allow local authorities to recover some of the cost of processing permit applications. Performance bonds insure the locality against damage caused to the critical environment and are held in recompense for any violation of the conditions set forth in the permit. For example, a local ordinance might include a requirement for posting a performance bond to ensure that storm water improvements are completed.

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[12]Institute of Environmental Negotiation, Shoreland Management Options for Virginia Coastal Communities, pp. 35-36.

Restrictive Covenants and Deed Restrictions

A restrictive covenant or deed restriction represents an agreement between the buyer and seller of a plot of land that specifies requirements that must be observed when the new owner builds on or uses the property. In the case of transfer of development rights, for example, a restrictive covenant is attached to the deed of the landowner selling the development rights, preventing him/her from developing that land in the future. Deed restrictions, in the form of conservation easements, are discussed in detail in a later chapter.

Site Plan and Design Review

Reviewing site plans and project design to ensure compliance with local, state, and regional regulations is a potentially powerful means of protecting fragile wetlands and/or near coastal ecosystems. By evaluating the relationship between a development project and the community's agreed-upon goals and objectives, site planning and design review can avoid many problems down the road.

Local plans should articulate clearly the objectives sought from site plan reviews, both to ensure that developers submit thorough plans and to protect against potential challenges to local planning decisions. For example, the review process may require site plans to address:

- Legal issues, or conformity with applicable local, state, regional, and federal rules and regulations
- Traffic considerations, ensuring the convenience and safety of both vehicular and pedestrian traffic
- Parking, such as provisions for off-street loading and unloading, adequate parking, lighting, and internal traffic control
- Town services, ensuring that demands on existing services and infrastructure are reasonable
- Pollution control, including both sewage and refuse disposal, surface and ground water protection, and soil erosion controls both during and after development
- Nuisances, such as noise, smoke, vapors, fumes, dust, glare, etc.
- Existing vegetation, minimizing its removal and providing for its replacement where needed
- Amenities, such as vegetated buffers, roadside plantings, retention of open space and agricultural land, etc.
- Town character, ensuring its preservation through, for example, the use of setbacks, location of parking, and compatible architecture.[13]

Once difficult for a locality to require, site plan and design review has become accepted and is often mandated before development is permitted to proceed. While the burden of proof is generally placed on the developer, fair review requires sufficient administrative resources and technical expertise on the part of the community. Once subject to legal challenge, negotiations between local government and developers are now used increasingly to fashion acceptable development agreements.

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[13]Robert D. Yaro, et al., Dealing with Change in the Connecticut River Valley: A Design Manual for Conservation and Development, Massachusetts Department of Environmental Management, Center for Rural Massachusetts, 1988.

Mitigation

When evaluating proposed development, local planners should first look for opportunities to avoid any negative impacts on coastal or wetlands areas. Many of the techniques described throughout this handbook are designed to achieve this goal. When negative impacts cannot be avoided, performance standards and other methods can be used to help minimize their severity and scope. Finally, for the remaining unavoidable impacts, local planners may require compensatory mitigation, the restoration or creation of new ecosystems to compensate for damaged areas. Although still controversial, this type of mitigation is increasingly recognized as a means to offset the unavoidable full or partial loss of important environmental resources, particularly wetlands.[14]

The feasibility and success of attempting to compensate for the loss of tidal and inland wetlands by building artificial ecosystems continues to be questioned. The science of enhancing or creating these sensitive environments is far from perfect. In fact, numerous studies suggest that artificial wetlands do not fully replicate the biological diversity and functions of natural wetlands. Some claim that compensatory mitigation encourages irresponsible development, prompting promises of future offsite action rather than specific steps to reduce negative impacts onsite. Given its increasing popularity, local planners should be aware of the benefits and drawbacks of compensatory mitigation in order to evaluate effectively the potential short- and long-term impact of this option on the functions and values of wetland areas.

CREATING WETLANDS IN CALIFORNIA

Intense population pressure in the state of California has greatly increased the demand for water. Construction of state water project facilities, however, has led to major losses of wetlands and associated wildlife in the southern portion of the state, and helped spur a state legislative mandate to increase wetlands over the next decade by 50 percent.

To meet this goal, the California Wildlife Conservation Board approved a wetlands development project within the Department of Fish and Game's San Jacinto Wildlife Area. Funded by two bond issues, the project proposes to use a system of underground pipelines that will distribute reclaimed water from the Eastern Municipal Water District pipeline throughout the flatter portions of the 4,860-acre wildlife area. This new water supply will develop additional wetlands and provide green feed for waterfowl, create and irrigate wildlife habitat in the floodplain grasslands, and re-establish a band of riparian habitat along the former channel of the San Jacinto River. In total, the project is expected to develop at least 1,000 new acres of wetland habitat.

Source: "Proposition 70 Gives New Funds for Wildlife," Outdoor Californian, Vol. 50, No. 6., November-December 1989, pp. 8-10.

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[14]As discussed in Appendix B, a memorandum of agreement between the Army Corps of Engineers and EPA provides guidance on the use of compensatory mitigation to address unavoidable losses to wetlands areas due to activities regulated under Section 404 of the Clean Water Act.

- **Determining the Need for Compensatory Mitigation**

Should compensatory mitigation be allowed at all? When should a development project be mitigated? What defines acceptable mitigation? In developing a mitigation policy, planners must work together to:

- Determine when mitigation is acceptable. Before exploring the options for wetland creation or restoration, a community should ensure that alternative sites and project specifications have been fully explored. If there are no alternatives, the project may receive a permit that requires mitigation.

- Measure damage to the original wetland. The damage to a wetland by development may be measured by acres or by the functions and values lost. Measuring lost functions is difficult, however, because of the large number of variables that must be considered, including diversity and amount of plant and animal species, acreage of floodwaters, and drainage capacity. A wetland's value is also difficult to quantify, as it depends on the complex and dynamic relationship between the wetlands functions and the particular location and community surrounding the wetland.

- Define what constitutes restoration or creation. A new wetland could conceivably try to replicate the original in terms of function, acreage, location, or a combination of all three. Many mitigation proposals, however, seek to recreate only a fraction of an ecosystem's original function.

- Determine when offsite mitigation is acceptable. Mitigation may be located either onsite or offsite. Generally, locating enhanced, restored, or created wetlands in or adjacent to the original drainage basin is considered preferable to locating them far away, since onsite mitigation may lessen the damage of the proposed activity. For example, filling or draining wetlands can result in less flood control in a drainage area; onsite mitigation may help sustain at least some of the drainage area's flood-control function.

> Artificial wetlands were created as part of an overall wastewater management program for the **Mayo Peninsula** in **Anne Arundel County, Maryland**. The offshore wetlands filter treated effluent, resulting in purification exceeding regulatory minimums. See Appendix A for more information.

In general, onsite mitigation may include reasonable reductions in the size or scope of the project; changes in construction, type, methods, or timing of the project; and improvements in operation and maintenance. Offsite mitigation is intended to compensate for the remaining, unavoidable losses incurred by the project. While offsite mitigation is usually less expensive for the developer, it will not always compensate for the losses of the original wetland.

- **Institutional and Administrative Responsibility**

Even if the technical disputes surrounding mitigation are resolved, institutional questions remain. These include deciding whether the newly created or restored wetland will replicate the habitat, function, or acreage of the original, ensuring responsibility for maintaining and monitoring the created or restored wetland, and determining the cost of mitigation efforts. Created and restored wetlands may initially be more sensitive and vulnerable, and so may require greater care and monitoring to ensure the sustained health of the wetland. Restoring or creating wetlands and estuarine ecosystems has also proven to be extremely expensive, and provisions for financing these efforts must be secured.

- **The Future of Compensatory Mitigation**

The increasing efforts to compensate for alteration and destruction of coastal and wetlands areas represent an attempt to replace sensitive areas that cannot be saved from development. Many states require compensation for the adverse effects of development on wetlands and coastal areas. Based on the scientific uncertainties of mitigation and the need to lessen adverse impacts on or adjacent to the original wetland, it is generally agreed that mitigation should be onsite and should replicate the functions of the original resources as much as possible. However, there remains significant scientific uncertainty about the benefits, feasibility, and long-term effectiveness of newly created or restored wetlands. EPA recognizes that compensatory mitigation may provide a unique opportunity to mitigate environmental impacts, and encourages further research to perfect and evaluate this approach. EPA's current position, however, is that given the scientific uncertainty associated with the success of man-made wetlands, compensatory mitigation is appropriate only in cases where the natural wetland loss is unavoidable.

MITIGATION PROCEDURE IN PENNSYLVANIA

The Pennsylvania Department of Environmental Resources determines the extent to which a project will damage wetlands by consulting with such agencies as the Pennsylvania Fish Commission, the Pennsylvania Game Commission, the U.S. Fish & Wildlife Service, and EPA Region III. Other means of impact evaluation include the Wetland Evaluation Technique (WET) and the U.S. Fish and Wildlife Habitat Evaluation Procedure (HEP). After the extent of loss is determined, the Department notifies the applicant, who is then responsible for documenting the mitigation strategy it will pursue to compensate for the damages incurred by the project. The usual response by the applicant is to propose action to avoid detrimental impacts, redesign the project, create wetlands, or change project operation. The Department reviews the mitigation proposal to determine if it is acceptable. Any deficiencies are discussed with the applicant. If the applicant refuses to make further concessions, the Department must decide whether the public, social, and economic benefits of mitigation outweigh the environmental damage. In effect, Pennsylvania's requirements for review and regulation ensure that wetlands receive the same degree of consideration as any lake, stream, or body of water in which permitted activity is proposed.

The most difficult part of this process is the evaluation of environmental harm, which determines the extent of mitigation required. Pennsylvania owes much of its success with mitigation to cooperative efforts between the Department of Environmental Resources and other environmental agencies mentioned above.

Source: Khervin D. Smith. "Pennsylvania's Wetland Mitigation Procedure," National Wetland Symposium Proceedings, held in New Orleans, LA, October 8 - 10, 1986, Washington, DC: US Department of Commerce, May 1988, p. 90-92.

MITIGATION BANKING

One approach to offsite mitigation is mitigation banking. Under this approach, a developer seeking to fill or build in a wetland or coastal area contributes funds to a mitigation bank. The mitigation bank, generally administered by a public agency or commission established for this purpose, acquires and protects or restores another wetland or coastal site. Typically, the mitigation area is established first, and "credits" are deducted from the bank for unavoidable impacts to wetlands resulting from later development efforts.

There have been very few mitigation banks nationwide (15 as of 1989). One of these, Bracut Marsh, lies on the northern California coast. A former saltwater marsh, this site was filled and converted to an industrial park. It was restored under the management and financial backing of the California Coastal Conservancy (CCC). Seventy-five percent of CCC's effort was funded by payments from developers, who contributed to the bank in return for the right to fill small and isolated marshes, mostly within the city of Eureka. The developers purchased mitigation credits on a square-foot-for-square-foot basis.

Another example of a mitigation bank is the Tenneco LaTerre Corporation's bank of 5,000 acres of coastal marsh in Terrebone Parish, Louisiana. Efforts to increase freshwater and sediment inflow, improve water circulation, and reduce saltwater intrusion in this area created benefits that have been quantified using the U.S. Fish and Wildlife Service's Habitat Evaluation Procedure. Tenneco (or another party buying mitigation credits from Tenneco) uses these banked benefits to offset unavoidable impacts on fish and wildlife resources due to future development activities, such as creation and maintenance of oil and gas exploration canals.

Sources: Caroline Isber and Robert L. Kerr, "Wetland Mitigation Banking: A Study of the Development and Implementation of the Bracut Marsh Mitigation Bank," prepared for the Office of Policy, Planning, and Evaluation, U.S. Environmental Protection Agency; and David M. Soileau, "Final Report on the Tenneco LaTerre Corporation Mitigation Banking Proposal, Terrebonne Parish, Louisiana," prepared for the Division of Ecological Resources, U.S. Fish and Wildlife Service, 1984.

Land-use regulations like those described above are as widely used as they are varied. Because local governments are generally familiar with land-use controls like zoning, modified regulations that protect coastal and wetlands environments can often be quickly designed and implemented. Even in cases where enacting or modifying a zoning ordinance may be fraught with political complications, the process by which ordinances are adopted and amended provides for public debate, helping to articulate concerns and build political consensus for a local growth management approach. The degree to which zoning, performance standards, and related techniques succeed in protecting coastal and wetlands habitats depends upon community priorities and the care with which the standards are designed, implemented and enforced.

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WHY ACQUIRE WETLANDS AND COASTAL AREAS?

Acquiring wetlands and coastal areas offers a community direct control of activities within them. Regulations, like those discussed previously, govern and preserve sensitive environments from alteration or development, but may change with a turnover in local government or economic or political pressures. In contrast, acquisition can make protection more permanent, enabling a community to fulfill many of its needs: flood management; recreational open space; historic preservation; or water quality protection. As discussed below, the acquisition of wetlands and coastal areas within a community can benefit the community both financially and aesthetically, and often gains broad public support. The main impediment to acquisition is its potentially high cost.

CHAPTER SUMMARY

- Acquisition of wetlands and coastal areas gives a community direct control over use of the land within them.
- Partial acquisition, through the use of conservation easements or deed restrictions, governs the management and use of the land without assuming direct ownership.
- Federal, state, local, and private sources can be tapped to help finance acquisition and conservation efforts.
- Techniques for structuring and implementing an acquisition program include the creation of a land trust, a land bank, a greenway, or a land exchange initiative.

WHO ACQUIRES WETLANDS AND COASTAL AREAS?

Wetlands, beaches, and other environmentally important areas can be acquired for preservation by either the public or private sector. Federal, state, and local governments have acquired wetlands and coastline, as have several national private conservation organizations, including the Nature Conservancy and the Audubon Society. At the local level, concerned citizens have formed conservation and watershed commissions, land trusts, historic preservation commissions, wildlife clubs, and foundations to locate, acquire, and manage threatened wetlands and coasts. These local initiatives have proved to be important means of leveraging government efforts to protect environmentally important areas.

Most acquisition efforts begin reactively. That is, the citizens of a community realize that environmentally significant land in their area is threatened and want to protect and maintain it for its aesthetic, ecological, or historic value. For example, it was the threatened development of a 100-acre farm adjacent to French Creek, near the site of the Valley Forge battleground, that rallied local Pennsylvania citizens to organize themselves and form the French & Pickering Creeks Conservation Trust.[1] Prior acquisition in areas where development is likely to occur in the future may also assist a community in protecting environmentally important resources.

FACTORS TO CONSIDER BEFORE ACQUISITION OF A WETLAND OR COASTAL AREA[2]

The land value of a coastal wetland, estuarine area, or riverfront is generally high, making acquisition expensive. The value of some inland wetlands may be lower, depending on location and development pressure. Several factors should be considered before committing funds, time, and energy to a parcel of land. Questions that need to be answered early in the acquisition process include:

- Is acquiring wetlands or coastal areas consistent with the goals and objectives of the community's land use management plan? For example, will it be used for educational purposes, flood control, recreation, or some other purpose?

- Is the wetland or coastal area ecologically worth protecting?

- Can the community effectively protect the wetland or coastal area from development, trespassers, or other damaging intrusions?

- An important aspect of wetlands and near coastal waters is their close ecological relationship with their surroundings. Often, however, parcels of land are scattered throughout a community. Will acquiring a particular parcel of land extend present holdings or provide a toehold that can be extended by contiguous acquisitions in the future?

- Will the land be transferred to another entity or organization after acquisition?

- Are there sufficient financial and staff resources to monitor and protect the acquisition? How much funding is available for this purpose? Will the staff be paid, or will the community need volunteers? Is future funding secure?

The answers to these questions will determine the type and extent of acquisition that can be pursued. Once these issues have been addressed, the community can employ a wide variety of techniques to acquire and manage a wetland or coastal area. The following section explains the most commonly used methods of acquisition, discusses the benefits and drawbacks of each, and provides examples. Potential sources of funding will be discussed at the end of this chapter.

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[1]Russell L. Brenneman and Sarah M. Bates, "Criteria for Acquisition and Management," Land-Saving Action, The Conservation Foundation, 1984.

[2]Based in part on Brenneman and Bates, pp. 35-38.

TECHNIQUES OF ACQUISITION

Full Acquisition

Outright purchase of the land, or "fee simple" acquisition, assures complete public control of and responsibility over a wetland or coastal area. The title to the land and all property rights are transferred from one party, a private owner, to another, a local government or other organization interested in resource protection.

Acquisition involves the following steps:[3]

- Evaluate the wetlands or coastal areas in the community and assess the threat of development, the habitat value of the land, and how much should be acquired to effectively protect the resource. An important consideration in any acquisition is the condition of adjacent lands. If only a fraction of the resource is protected, developments close by may destroy the ecological balance in the protected area.

- Determine which wetlands or coastal areas in a community are already protected by regulations, which may be protected, and which are not protected. Those tracts not protected by regulations may be the most sensible to protect by acquisition.

- Decide which critical areas should be acquired first, due to imminent threats of development or lack of regulation. These lands often have the highest property values, and are most easily acquired by local governments or private groups that have substantial and immediate access to funding.

- Negotiate with landowners to begin the acquisition process.

- Appraise the land with the owner and his/her representative. The owner generally must be offered at least the amount specified by the appraiser, but price and conditions of sale can be negotiated. Among the factors that should be considered in the land appraisal are soil structure, productivity, water, development potential, and the value of surrounding lands.

- Prepare environmental impact statements, if necessary. In some states, and for acquisitions using federal funding, a determination must be made on whether an environmental impact statement is required. If one is necessary, it must be prepared before the acquisition occurs.

- Begin the final negotiations with the landowner. If the title of the land is unclear or the owner refuses to sell, the land cannot be acquired by negotiations. However, the vast majority of the lands acquired by local governments are purchased through negotiated agreements.

- Close the deal, including legal steps such as drawing and executing the deed, the mortgage deed, and note; approving any exceptions on the title policy; certifying the survey; and prorating real property taxes to the date of closing.

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[3]Dr. Jon A. Kusler, Our National Wetland Heritage: A Protection Guidebook, The Environmental Law Institute, 1983, pp. 102-104.

If negotiations with the owner are not successful, the community may take the land by the process of eminent domain, but must provide compensation to the landowner. (Otherwise, an unconstitutional taking may result, as discussed in Appendix D.) Both public and private organizations can help with funding, including the Nature Conservancy and federal and state agencies. These organizations have extensive experience guiding communities through the acquisition process, and can direct interested parties to available technical assistance and financial resources in their area.

- **Advantages of Full Acquisition**

  - Public ownership guarantees considerable or total protection for the land, which subsequently can be preserved, managed, or used for recreation, research, or educational purposes. For example, ecologically significant tracts of land along the Connecticut River have recently been purchased by the Nature Conservancy and local conservation groups, protecting the ecological integrity of the river corridor.

- **Disadvantages of Full Acquisition**

  - A major impediment to outright purchase is the cost. Wetland and coastal acreage is generally expensive, and removing land from public tax rolls results in the loss of tax revenues for the community. Rural communities can be hit especially hard, because many rural lands are already publicly owned.[4] Subsequent maintenance and management cost may also be high for the new owners. However, there are several sources of funds that both public and private agencies can use to purchase and maintain wetlands or coastal areas. These are presented later in this chapter.

  - Land that has been purchased by one government agency may be later developed by another.

  - The citizens of a community may oppose selling community property to a government agency.

  - If development is imminent, attempting to purchase the land may require too much time to be effective.

  - Purchase of a tract of land may drive up market values of adjacent lands, increasing speculative and development pressures.

  - Purchasing land may also divert an agency's resources from other priorities that require substantial use of funds.

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[4]Barbara C. Brumback, Westi Jo de Haven-Smith, ed., "Land Acquisition: Composing Workable Strategies," Growth Management Innovations in Florida, Joint Center for Environmental and Urban Problems, 1988, p. 179.

SAVING THE CONNECTICUT RIVER

The Connecticut River flows 404 miles through Vermont, New Hampshire, Massachusetts, and Connecticut. Citing it as the "ecological thread that ties New England together," the Nature Conservancy has launched a $10.3 million campaign to protect and maintain 102 valuable ecological habitats along the river. Many of these habitats are among the last of their kind in New England, including bogs and fens, old-growth and floodplain forests, riverside grasslands, and tidal marshes.

The Nature Conservancy has bought several tracts of land and is negotiating to purchase more. Other parcels of land have been donated by private citizens and business concerns, such as Champion International Corporation. In addition, an innovative agreement reached between the Nature Conservancy and New England Power Company (NEPCO) led NEPCO to designate some of its properties as "special habitats" and allow the Nature Conservancy to monitor and protect them. Several local groups have joined with the Nature Conservancy in this effort, including the Connecticut River Watershed Council. The Council watches over the river and has its own land trust, which owns and manages some properties along the river.

Source: The Nature Conservancy Magazine, Vol. 38, No.5, September/October 1988.

Partial Acquisition

Absolute ownership of the land may not be necessary to protect the land's environmental and scenic value. Unless the land is extremely fragile, control over the use of the land may be enough. This can be accomplished through partial acquisitions, often termed acquisition-of-interest.[5] Partial acquisitions are especially attractive where land prices are high, funding is constrained, or a community is heavily dependent on tax revenues. Three techniques of partial acquisition -- conservation easements, deed restriction, and post-acquisition disposal -- are discussed below.

- **Conservation Easements**

A conservation easement is a legal agreement that a property owner makes to restrict the type and amount of development that takes place on the property. The owner retains basic ownership and use rights, but sells the development rights -- the right to develop or alter the wetland or coastal area -- to a public agency, land trust, or historic preservation organization. Easement holders include groups like the Nature Conservancy, local and regional land trusts, and citizen conservation groups. The easement is recorded at the county or town records office, so that future owners will be informed of any restrictions.

Conservation easements are usually negative easements. That is, they prevent certain uses of the land, such as cutting trees, farming, or filling wetlands. Easements that benefit a piece of adjacent land are termed "appurtenant" easements. Thus, an example of a negative appurtenant easement is an agreement by a landowner not to farm a slope adjacent to a neighbor's wetland.

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[5]Brumback, op. cit., p. 179.

Easements are usually written specifically for a certain parcel of wetland or coastline, and can protect the land for perpetuity, which restricts it from development despite any change of ownership. In some cases, an easement may apply to a piece of land for only a specified term, after which the owner is no longer bound to its requirements. The process of pursuing an easement on a certain property should include the following steps:[6]

- Tour the property with the owner to determine if it meets the organization's criteria, and whether the owner is willing to accept the restrictions of the easement. At this point, the financing of the negotiation should be discussed. The owner may wish to sell or donate the land itself, or may prefer to pursue the sale of an easement instead. At this stage it is important to develop a sense of the financial and other requirements of land management.

- Decide whether to pursue the easement. It may at this stage be determined that another tool is a more viable option.

- Record the area's condition by compiling a baseline data inventory of the property. This can be done by documenting or photographing the important resources. An inventory clearly suggests the value of the easement and which restrictions should be included in the easement, and meets the IRS regulations for easement donors who want to deduct their gift.

- Begin legalizing the easement by consulting with attorneys who are familiar with easements. Care should be taken to ensure that rights included in the easement are clearly delineated. The acquiring community should:

    1. Maintain a list of skilled legal advisors, accountants, and other specialists to assist and advise the property owner whenever needed.

    2. Obtain a title report from a licensed land title company. This will identify the legal owner of the property, include a property description for the baseline data, and include information on legalities such as mortgages.

    3. Obtain mortgage subordination. If a lender ever forecloses on the mortgage, the easement may be terminated, even if it was originally written for perpetuity. If the easement is a donation, the IRS requires mortgage subordination for the donor to claim a tax deduction. Therefore, it is important to convince the lender to become junior to the easement.[7]

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[6]Janet Diehl and Thomas S. Barrett, The Conservation Easement Handbook, San Francisco: Trust for Public Lands, 1988, pp. 62-68.

[7]This process may be difficult and time-consuming. Some acquisition organizations, such as the Maryland Environmental Trust, use a mortgage subordination form that facilitates the process. In the absence of a similar form, explain to the lender the purpose and benefits of the easement, cite whatever local subordination precedents there are, and send the lender copies of publications that explain easements.

- Obtain a qualified and accurate appraisal of the land. An overestimated appraisal, by qualifying the donor for a deduction that is too large, can lead to an IRS audit and penalty for the donor. However, a qualified appraisal, including a property description, the method of evaluation used, information about the appraiser's qualifications, and a description of the fee arrangement, should satisfy all IRS requirements. A valuable resource for this purpose is the National Trust for Historic Preservation and The Land Trust Exchange's publication, Appraising Easements: Guidelines for Valuation of Historic Preservation and Land Conservation Easements.

- Approve the final easement document by the appropriate authorities, such as the town board of selectmen. It also must be signed by all parties concerned and recorded in the local deed recorder office or any other office required by state and local law.

- Inform the public, state, and other government officials of the easement acquisition efforts.[8] This is important for two reasons:

    1. Publicity may educate more people about the value of easements and may lead to more acquisitions.

    2. If the terms of the easement are violated, it will be noticed more quickly than if nobody is aware of the easement restrictions.

- Assure monitoring, enforcement, and management of the easement. In cases where the acquiring agency is small or was recently formed, this may include recruiting an existing easement program or conservation group to act as a backup grantee to manage the easement. As the example of the Big Blackfoot River in Montana suggests (see box on page 69), the management of an easement can be re-examined annually to ensure that all parties involved are satisfied.

Advantages of Conservation Easements

- Organizations may acquire wetlands or coastal areas at a lower cost and avoid some of the management and political problems that outright purchase entails. Landowners are often more amenable to granting easement rights than to selling their land outright.

- Critical environments can be protected by the terms of an easement, allowing them to perform their normal functions for wildlife and the watershed. However, the productivity of the land for other uses—agriculture or timber, for example—can be retained.

- In some states, an owner who grants some public access to the easement land is eligible for income tax deductions. Depending on the state and the attitude of local officials, an easement may also reduce the market value of the land, reducing property taxes and the estate tax that heirs to large properties must pay. This also reduces speculative pressures on adjacent lands.

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[8]The Brandywine Conservancy, which protects watersheds in southeastern Pennsylvania, notifies a township of any easement it has acquired within the town's boundaries. The Conservancy sends a map, outlines the easement's restrictions, and offers to answer any questions the town council may have.

Disadvantages of Conservation Easements

- If the easement is temporary, the protection of the land ends when the easement terminates.
- Easements may cost nearly as much as outright purchase of the land and are prone to administrative difficulties.
- Easements can generally be used only to preserve existing land use patterns, not to significantly change land use.
- Easements may be difficult to enforce. Enforceability varies from state to state. In Massachusetts, the state attorney general, municipalities, and a group of ten or more citizens can sue to enforce the restrictions on an easement.[9]
- Like outright purchase, easements may be ineffective when development is imminent or growth pressure is so strong that the landowner wants to sell the land to developers.

Acquisition and **conservation easements** are important components of the Pennsylvania **Pennypack Creek Watershed Association**'s conservation strategy. The city of **Sheboygan, Wisconsin**, also used **acquisition** to assemble a publicly owned corridor along the Pigeon River. Appendix A includes case studies on these initiatives.

The importance of drafting easements clearly and specifically, and ensuring that landowners understand all its provisions, is illustrated in a case study of an **easement violation**, also included in Appendix A.

- **Deed Restrictions**

Much like conservation easements, deed restrictions are clauses in a property deed that restrict development or uses by a new owner that would damage, destroy, or alter a sensitive environment.[10] Also known as a restrictive covenant, this agreement must be officially recorded by the government to be enforceable as civil law. When a landowner donates land to a government agency or charity, he or she may include a reverter clause, stipulating that if the land is not managed and used as specified in the deed, the property reverts back to the original owner or heirs, or to a conservation group such as the Audubon Society. Restrictions may specify requirements that must be observed when a building is constructed. Deed restrictions may offer tax advantages to the donor.

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[9]Kusler, op. cit., p. 111.

[10]Michigan Department of Natural Resources, Land and Water Management Division, Wetland Protection Guidebook, 1988, p. 13.

MONTANA AND THE BIG BLACKFOOT RIVER EXPERIENCE

The problem: During the late 1960's and early 1970's, a 30-mile stretch of the Big Blackfoot River in western Montana came under increasingly strong pressure from recreational use, including kayakers, floaters, fishermen, and campers. The banks along the Big Blackfoot were owned by ranchers, who were growing frustrated with the litter, vandalism, and traffic on their lands. The landowners wanted to preserve the agricultural nature of their lands and the natural state of the river. They also wanted to maintain some public access to the river, realizing that if they granted it, the potential for governmental intervention would be lessened.

The solution: Beginning in 1975, a task force slowly emerged, composed of ranchers and representatives of public and private organizations. With the aid of a representative from the Bureau of Outdoor Recreation, a document that provided a framework for both long-range protection of the river and for the management of public use on both public and private lands was developed.

Use of easements: The landowners used conservation easements to protect the Big Blackfoot River while still maintaining ownership. In easement documents written specifically for this situation, the landowners donated to the Nature Conservancy property rights -- such as the right to subdivide, clearcut timber, dredge, or establish feedlots -- that could impair the river's natural, scenic, and aesthetic quality. The ranchers kept all other rights, including their rights to selectively harvest timber, graze livestock, cultivate crops, and irrigate.

The ranchers also managed recreational use within the river corridor by designating points for public access. Three of these are for overnight camping, while the rest are only for daytime use. The public may park only in designated areas, must pack out litter and garbage, and may build campfires only in overnight areas. In 1978, the Montana Department of Fish, Wildlife, and Parks assumed managerial responsibility for the project under a self-renewing annual contract with the landowners. During the summer, a river warden is assigned to the area, with periodic patrolling during the rest of the year.

Despite the restrictions, the public is satisfied with the project, as are the landowners, who have both retained their ownership rights and maintained the tradition of public access to the river.

Source: Russell L. Brenneman and Sarah M. Bates, "Criteria for Acquisition and Management," Land Saving Action, The Conservation Foundation, 1984, pp. 3-7.

- **Post-Acquisition Disposal**

Post-acquisition disposal is a combination of full acquisition and partial acquisition techniques in which a community may acquire a parcel of land in fee simple, then dispose of some or all of the property rights.[11] The community can transfer property rights temporarily, with a lease, or permanently, with actual resale. The resale can be selective, accompanied by restrictions that limit the land's future use. This arrangement allows the acquiring community to retain title to the land, while leasing it to other entities under conditions that mesh with the community's land management objectives.

Advantages of Post-Acquisition Disposal

- By disposing of some property rights, the community's management costs are reduced and a portion of the acquisition costs are recouped.

- It is often easier to acquire a given tract of land, because landowners are more willing to participate. This is especially true when the acquiring community can lease the land back to the original owner.

- Land that is leased or resold is often subject to local property taxes, enhancing the local tax base.

Disadvantages of Post-Acquisition Disposal

- As with any acquisition technique, a major impediment to post-acquisition disposal is cost.

- Putting together strategies using these techniques and negotiating with landowners can be time-consuming.

- Finally, the acquiring community must still monitor the land to ensure that the conditions of the disposal are being met.

At Land-Between-the-Lakes, the Tennessee Valley Authority has acquired land that it leases back to farmers to grow their crops. The lease-back arrangement requires that the farmers leave a portion of the crop unharvested to provide food and shelter for wildlife.

[11]Brumback, op. cit., pp. 182-184.

FINANCING ACQUISITION EFFORTS

Communities may be able to finance acquisition efforts by drawing on several potential sources of funds. Methods of financing acquisition and other conservation efforts are discussed more thoroughly in Chapter 5.

Local and State Government Sources

Local and state governments can use general funds from property or sales tax revenues to partially or fully finance acquisition of environmentally sensitive areas. These funds can be appropriated directly from the general budget, or can come from special taxes or fees. Many states generate revenue for land acquisition and maintenance through an income tax checkoff program, such as New York State's Return-a-Gift-to-Wildlife program. States may also issue general obligation or revenue bonds, following approval of a bond act by voters in a referendum. Acquisition programs can also be funded by fees charged to groups that use the resource or otherwise benefit from the acquisition. For example, many states dedicate licensing fees for hunting or fishing to state conservation programs, including the purchase and management of sensitive areas. States may also impose severance taxes on the extraction of state mineral resources. Real estate transfer taxes link the source of the revenue directly with the need for acquisition, recreation, or stewardship land uses. Finally, value-added taxes extract a percentage of the capital gain received on a sale of land that has benefitted from a change in zoning, a major variance, or similar relief from land-use regulations.[12]

Many states have programs specifically designed for land acquisition. For example, the Florida Department of Natural Resources has two programs devoted to land acquisition: the Conservation And Recreational Lands Program and Save Our Coast. In California, the responsibilities of the state Coastal Conservancy include acquisition and restoration of wetlands and waterfront areas.

> The city of Sheboygan, Wisconsin, used a combination of local funding and donations from private sources to acquire environmentally sensitive land along the Pigeon River.

Private Sources

Several private nonprofit organizations, such as the Nature Conservancy and the Trust for Public Lands, offer funds for acquisition and preservation of sensitive environments. These organizations also offer assistance in planning, organizing, and implementing acquisition efforts.

Individuals or corporations may also be interested in donating funds or property. Such a donation often qualifies the donor for a tax break. Local governments must keep in mind, however, that donated properties will still require funds for management and upkeep. They also should keep in mind that exempting donated properties from local property taxes may erode the tax base and affect the availability of funds for other local initiatives.

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[12]Charles C. Morrison, "Funding Land Resource Acquisition, Recreation Facility Development, and Stewardship in New York State - The Next Step," unpublished, New York State Department of Environmental Conservation, 1989.

FUNDING SOURCES FOR WETLAND ACQUISITION IN MICHIGAN

- Michigan Natural Resources Trust Fund. An organization interested in acquisition must obtain an application from the Michigan Department of Natural Resources and apply by April 1 of each year. The fund provides money to purchase valuable recreational, scenic, and environmentally important land.

- Michigan Duck Stamp Program. Money from the sale of stamps goes toward the purchase of wetlands by the state.

- Private sources. Donations include gifts of money or property from individuals or corporations, or funds raised at the grassroots level by local citizens.

- Environmental Organizations. The Michigan Nature Conservancy, Michigan Nature Association, Ducks Unlimited, and local land trusts often contribute to wetland acquisition efforts.

- Local governments.

Source: Michigan Department of Natural Resources, "Wetland Protection Guidebook," 1988, pp.13-14.

Federal Government Sources

Depending on the project, federal funds for state and local acquisition efforts may be available through agencies such as the Fish and Wildlife Service and the National Park Service. As described in Appendix B, both of these agencies offer matching grants or revenue-sharing to states for the acquisition and management of wildlife areas.

The National Park Service also allocates money to each state for acquisition and development projects through the Land and Water Conservation Fund (LWCF). As outlined in Appendix B, each state is required to prepare a Statewide Comprehensive Outdoor Recreation Plan (SCORP) to qualify for these funds. The purpose of the SCORP is to:

- Identify priorities for providing and protecting open spaces/outdoor recreation resources in the state.

- Establish policies for outdoor recreation and land uses among state and local agencies.

- Guide expenditures of public funds for park acquisition and outdoor recreation development.

- Ensure cooperation and coordination among federal and state recreation agencies.

The SCORP is developed based on information collected through public meetings, workshops, and surveys. Completed SCORPs are submitted to the Park Service by the state Governors' offices and must be approved before funds are contributed to the states' projects. While most funds are devoted to state

projects, private conservation organizations have joined forces and funds with state agencies in the past to acquire sensitive environmental areas. Section 303 of the Emergency Wetlands Resources Act of 1968 requires state SCORPs to specifically address state wetlands as an important outdoor recreation resource unless the state has submitted and received approval on a wetlands priority plan.

FUNDING SOURCES FOR ACQUISITION IN MARYLAND

The state of Maryland provides a number of examples of the use of government funds to acquire sensitive areas. One is the development of the Capper-Cramton Stream Valley Park System, a joint initiative which relied on one-third federal funds and two-thirds state funds to acquire stream valley parklands along the tributaries of the Potomac and Anacostia Rivers. Under this program, the Maryland National Capital Parks and Planning Commission (MNCPPC) has acquired nearly 2,500 acres of parkland. In addition, the MNCPPC has gone beyond the Capper-Cramton program to independently acquire 2,445 acres of parklands within 11 additional stream valley systems.

Maryland's Program Open Space, administered by the Maryland Department of Natural Resources, also provides funds for communities wishing to acquire sensitive environments. The program was started with a $20 million bond act and is continually funded by a ½ of 1 percent tax on the transfer of all real estate. Program Open Space is designed to help communities acquire lands for recreational and open space uses -- either via outright purchase, transfer negotiations, condemnation, or donation. Half of the funds are allocated to the state for acquisition only, and half go to counties and cities, which may also use the funds for facility development. Projects may include additions to parks, forest, wildlife areas, and beaches. All projects must be consistent with priorities established in the Maryland Outdoor Recreation and Open Space Plan prepared and maintained by the Department of State Planning. Overall, since 1970, appropriations based on the real estate transfer tax have generated $444.6 million for open space preservation and facility development.

Sources: Timothy R. Henderson, Wendy Smith, and David G. Burke, Non-Tidal Wetlands Protection: A Handbook for Maryland Local Governments, Maryland Tidewater Administration, March 1983; and Charles C. Morrison, "Funding Land Resource Acquisition, Recreation Facility Development, and Stewardship in New York State - The Next Step," Office of Land Resource Planning, New York State Department of Environmental Conservation, 1989.

STRUCTURING AN ACQUISITION PROGRAM AND IMPLEMENTING AN ACQUISITION STRATEGY

Community leaders often look to cooperation between the public sector and private interests to help implement aspects of an acquisition plan. Indeed, local policymakers should be sure to take full advantage of private initiatives to protect wetlands and coastal areas. While local governments traditionally have jurisdiction over land-use policy, they often lack the means to use the techniques described above to acquire environmentally sensitive areas. Across the country, nonprofit environmental and conservation organizations try to fill the gap, working with government, landowners, and the general public to protect important

ecosystems. This assistance may be in the form of legal advice, technical expertise, and/or financial support. The following section discusses how communities can organize to create a nongovernmental acquisition organization, commonly known as a land trust, or a similar governmental organization, called a land bank. It also discusses two other approaches -- greenways and the use of land exchanges -- to structuring and implementing an acquisition strategy.

Land Trusts[13]

A land trust is a nonprofit, private organization formed for the sole purpose of protecting ecologically valuable lands, and as such falls under Section 501(c)3 of the tax code. The strongest advantage of a land trust is that donations made to it, in the form of either land or money, are tax-deductible.

For several reasons, a local land trust can move more quickly than a government to acquire or protect critical areas. As a small and local body, trusts may have better access to citizens and local information. Landowners may tend to trust a local conservation group more than a government agency, and it is easier for a land trust to negotiate with a landowner discreetly, while a government agency generally must make its negotiations public. Most important, a land trust is independently funded, and has ready access to its funds. A government body, on the other hand, often must wait a year or more to receive adequate funding for an acquisition. Finally, the acquisitions of a land trust are unquestionably permanent.

There are approximately 750 land trusts operating throughout the U.S., nearly half formed in the last ten years. They protect nearly two million acres of land.[14]

Number of Land Trusts by Region

New England	336
Mid-Atlantic	117
Great Lakes	84
Far West	83
South	65
Plains	21
Rocky Mountains	20
Southwest	15
Puerto Rico/ Virgin Islands	2

Source: EXCHANGE, Spring 1989.

- **Steps to Create a Land Trust**

1. Establish a small base of community support.

2. Present the idea to the community through a public meeting. Discussing it with the city council, planning board, and other community institutions will publicize the land trust proposal and may lead to donations and funding. An outside expert, from another land trust in the area or a national land trust, should be at this meeting to answer questions and promote the idea to the public. The support of certain groups should also be enlisted at this point. These include lawyers, bankers, real estate brokers, certified public accountants, and developers. Any mistrust or hostility between these people and a new land trust can thwart the most carefully planned acquisitions.

[13]Contact the Land Trust Alliance (see Appendix E) for more information.

[14] "Land Trusts: The Nation's Fastest-Growing Conservation Movement," Exchange, Volume 8, No. 2, Spring 1989.

3. File articles of incorporation.

4. Draft the bylaws of the land trust.

5. Assemble a board of directors.

6. Seek advice from an existing land trust. Consulting with the members of an existing trust may be the most helpful step of the process.

7. Appoint one or two of the most motivated people in the trust as the core of the group. They should research the goals, activities, and success record of existing trusts to help determine what the priorities of the new trust should be.

- **Financing a Land Trust**

Once the trust is formed, it must be funded. The people originally involved usually spearhead efforts to secure initial funding. Existing land trusts often contribute to new efforts, as do national conservation organizations such as the Nature Conservancy, the Trust for Public Land, and the Izaak Walton League. New land trusts can also apply to foundations for startup grants. A typical grant may cover 100 percent of costs during the first year of the new trust, 67 percent during the second year, and 33 percent during the third. Finally, a new land trust should go straight to the public to solicit funds.

During this process, it is important to have a definite strategy planned to answer all donor questions. For example, new land trusts are often asked whether or not they will be working with government organizations and where they plan to focus their efforts. Having a set idea of the tactics of the new land trust can help to answer these questions effectively and will assist the funding effort.

Some land trusts wait until they are adequately funded before they negotiate for the first acquisition of land. Others begin negotiating immediately after writing the bylaws, focusing on a tract of land that will be easy to obtain and politically popular to acquire. The publicity gained often increases funding and leads to a new acquisition.

The decision of whether to form a local land trust to protect endangered and valuable wetlands or coastal areas depends on the existence of other land trusts and conservation groups in the area. If the funding for a local land trust will be inadequate, a national land trust such as the Land Trust Alliance can be just as effective at acquiring and protecting wetlands and coastal areas.

The Chesapeake Bay Foundation (CBF) and the Maryland Environmental Trust (MET) have joined together to encourage the formation of local land trust organizations. Local groups, both public and private, receive technical, legal, and practical assistance from the larger and more established program offices. In turn, local groups are in a much better position to assess local resources to determine suitable acquisition sites, to raise funds and local support, and to monitor sites following acquisition. The cooperative arrangement leverages the experience and expertise of MET and CBF, while promoting acquisition and easements on smaller parcels of land throughout the region.

Source: Christopher Rigby, "The Chesapeake Bay Foundation - Maryland Environmental Trust Local Land Trust Program," Exchange, Volume 8, No. 2, Spring 1988.

Land Banks[15]

A land bank operates in much the same way as a land trust. It channels development by acquiring tracts of land and preserving them in their natural state. Unlike a land trust, which is incorporated as a private nonprofit organization, a land bank is a public agency, typically requiring approval by the state legislature. The process of creating a land bank is demonstrated in an example from Nantucket Island.

THE NANTUCKET LAND BANK

Nantucket is a beautiful and historic 25-square-mile island off the coast of Massachusetts. Famous for its small-town charm, Nantucket appeals to many who wish to escape the heat of city summers. In recent years, however, the pressure to develop vacation homes has skyrocketed. In the face of this pressure, Nantucket has taken steps to preserve undeveloped land, direct development, provide for adequate affordable housing, and protect the island's fragile resources.

The Nantucket Land Bank is a critical component of these protection efforts. Conceived at a 1982 conference on "Nantucket in the Year 2002," the land bank was formally proposed by Nantucket's town meeting in 1983 and approved by the Massachusetts legislature in 1984. Funded by a two percent real estate transfer tax, town appropriations, and donations, the bank's five-member commission purchases property in fee simple and preserves it in its natural condition. Through a two-thirds vote of town meeting, the Land Bank Commission also has the power to acquire property via eminent domain. All lands purchased by the Land Bank Commission must be managed "in the interest of conservation."

Nantucket projects that the Land Bank Commission eventually will acquire 15 percent of the island, contributing significantly to preservation of the island's unique character.

Source: Jean O. Melious, "Land Banking Revisited: Massachusetts Breaks the Mold," Lincoln Institute of Land Policy, pp.15-28.

Greenways

- **What is a Greenway?**

Greenways are linear parks and open spaces, often along river systems, that preserve environmentally critical areas for flood management, open and recreational space, water quality protection, and wildlife habitat. For example, when a river floods, the open vegetated space preserved by a greenway program provides water storage and sheetflow, eliminating a municipality's need for ditches, pumps, or dikes. Vegetation also filters out much of the pollutants in runoff, enhancing water quality in the river.

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[15]Information for this section was taken from "Land Banking Revisited: Massachusetts Breaks the Mold," by Jean O. Melious.

Finally, by connecting wetlands to upland habitats, greenway programs provide a corridor for wildlife. The various types of acquisition discussed above can be used to form a greenway.

An important lesson of the past few years is that wetlands and coastal areas should not be managed in isolated fragments. The water, the adjacent uplands, and the water regime of the river must be considered as a whole. By planning and managing an entire river corridor, greenway programs can address the comprehensive needs of wetlands and adjacent uplands. Greenway planning is a political process that involves both public and private interests and considers all available techniques to shape long-term land use decisions.

- **Who Initiates the Greenway Program in a Community?**[16]

Typically, a local government or a private nonprofit group, such as a land trust or conservation commission, begins the discussion about a community's greenway program. Steps in this process include:

- Define greenway goals and function. The organization that initiates the greenway effort should bring different parts of the community together to discuss the future use of the greenway corridor, the needs of the community, available funding sources, and the strategy of the management plan.

- Initiate the greenway project. After enlisting the cooperation of units of local government and interested agencies, the project sponsor should send a general proposal to each. This proposal should outline the roles of each in the project, time schedules, products, and funding arrangements.

- Involve the public. To enlist support, analyze the issues, and get new ideas for the greenway, the initiating organization should publish a newsletter or hold public meetings. Building local support is extremely important.

- Assess the resources. By examining the vegetation, soil, historic uses, and wildlife habitat areas, the organization can set priorities for conservation, establish the boundaries of the greenway, provide the basis for regulations, and influence state and local land-use decisions.

- Explore regulations and laws. By understanding some of the laws and techniques that can be used to establish a greenway, the organization can implement the greenway program effectively. No one law, program, or regulation will alone conserve the area; rather, a mixture of both new and existing approaches that specifically address the unique attributes of the area will be most effective.

- Identify allies in support of the greenway program. The more diverse the group the better. Supporters may be found in local or state officials, landowners, congressional representatives, conservation groups, and others.

- Develop implementation strategy. The organization must combine all of the gathered information to set forth a detailed set of recommendations and specific plans. Implementation involves the acquisition of land or land-use rights, the design and construction of necessary capital improvements, and the operation, monitoring, and maintenance of the greenway.

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[16]J. Glenn Eugster, Steps in State and Local Greenway Planning, prepared for the seminar on Multi-Objective Greenways and Coordination of Wetland and Floodplain Programs, Washington, DC, February 24–25, 1988.

Local efforts to protect the South Platte River's flood protection capabilities and public access resulted in a substantial **greenway** project extending throughout the city of **Denver, Colorado**. A case study of this effort is included in Appendix A.

Land Exchanges

Land exchanges are another effective way for public and private agencies to combine efforts in acquisition. Land with high conservation value, usually privately owned, is exchanged for economically productive land with little conservation value, often owned by the federal government. Exchanges work best in the western United States, where much of the land is federally owned. This land can be traded for the easement rights to private lands. A drawback of exchanges in some states can be real estate transfer fees. An amendment is presently before the Pennsylvania State Legislature to exempt government or nonprofit parties from the two percent fee when the purpose of the exchange is conservation.

SUCCESSFUL LAND EXCHANGES

The Western Pennsylvania Conservancy has sponsored several innovative land exchanges to protect environmentally sensitive watersheds and other wetland areas. The Conservancy owns several tracts of land that contain marketable timber. In the recent past, the Conservancy has traded some of its timber cutting rights to lumber companies in exchange for surface easement rights or options to buy ecologically valuable lands owned by the companies, such as the watershed of the Clarion River. The lumber companies often receive substantial tax benefits from granting the options and donating lands to a nonprofit organization.

The Conservancy has also acquired subsurface rights to areas in the Hickory Creek Wilderness Area and the Tionesta Research Natural Area. Formerly owned by a Nevada-based oil, gas, and mining company, these rights were traded to the Conservancy for less environmentally sensitive lands that the Conservancy owned in other parts of the Allegheny National Forest. The Conservancy then sold the newly acquired subsurface rights to the Forest, where they will remain protected from any development pressures.

Source: Personal communication with Tony Suppa, Land Acquisition Director of the Western Pennsylvania Conservancy, August 15, 1989.

Other Techniques for Facilitating Acquisition

There are several other strategies that private organizations and local or state governments can employ to work together in an acquisition-based conservation or management effort. Some of these include:

- Brokering. A private organization serves as a broker between a landowner and a government agency interested in purchasing property from a landowner.

- Option sales. A private organization buys an option to purchase property from a landowner. It then sells the option to the government, or exercises the option and simultaneously sells the full fee title to the property to the government agency.

- Trade negotiation. The private organization negotiates transactions between landowners selling their lands and the government agency interested in trading the private property for expendable federal land.

By working together and combining some or all of the acquisition techniques that have been discussed briefly in this chapter, local governments, land trusts, land banks, and other organizations with different goals can combine their expertise and funds to better preserve and manage the nation's wetlands and coastal areas.

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USING TAXES, FEES, AND OTHER ECONOMIC TOOLS TO FINANCE AND ENCOURAGE THE PROTECTION OF COASTAL AND WETLANDS RESOURCES

CHAPTER 5

Protecting coastal and wetlands resources costs money. Successful protection efforts therefore require adequate attention to financial needs, constraints, and resources.

A variety of financial techniques can be used at the local level for the restoration and protection of coastal and wetlands resources. They include taxes, fees, fines and penalties, debt, and private voluntary support. In choosing among these mechanisms, communities must consider how much funding is needed, the relationship between the beneficiaries of environmental protection efforts and those who bear the cost, and institutional and legal constraints that affect equity and efficiency. Factors such as timing and the type of revenue mechanism selected may affect the cost of financing the protection effort as well.

In addition to funding public-sector environmental protection efforts, many of the financial tools noted above can be used to create economic incentives that encourage private entities to change their behavior in beneficial ways. For example, local tax policies can be used to discourage the development of wetlands.[1]

This chapter addresses how to finance efforts to protect coastal areas and wetlands. It discusses how economic incentives affect development, and how altering incentives can be part of a overall strategy for protection of these resources.

CHAPTER SUMMARY

- Various financing mechanisms -- from taxes to fees -- can generate revenues and create economic incentives for proper management of coastal and wetlands resources.
- Property taxes in particular can be structured to encourage the preservation of natural resources.
- Many state and local governments impose user or impact fees to raise revenues and allocate costs to those who directly benefit from public services.
- For pollution control projects with broad benefits, debt financing is a proven mechanism of raising capital and equitably allocating repayment costs.
- Where government resources are constrained, the private sector can be a key source of funding.

[1]There are many government programs at the federal, state, and local levels that affect land-use decisions -- too many to list. Community activists should educate themselves as to which programs in their area may provide incentives or disincentives to protecting wetlands and coastal areas.

TAXES

Revenue Sources

Taxes generate the bulk of government revenues, and can be successfully used to finance efforts to protect wetlands and coastal resources. There are three broad categories of taxes: income, property, and sales. Other types of taxes include commodity taxes and tax surcharges. The application of each category to the protection of sensitive environments is discussed below.

- Income taxes are levied primarily at the federal and state level, though a few municipalities do collect income taxes. These revenues are applied to environmental programs through the general appropriation process. Legislatures can choose to earmark a certain amount of general revenue funds for a specific program, such as wetland or coastal protection. Few communities, however, have the authority to levy local income taxes.

- Property and sales taxes, levied at the state and local levels, provide a viable means to raise money for projects to protect wetlands and coastal areas. States usually depend heavily on sales taxes, whereas local governments are more likely to rely on property taxes to finance their operations.

  Typically, revenues from property and sales taxes are applied to environmental programs through the general appropriation process. In some cases, however, such taxes may be earmarked for programs that directly link the tax to the beneficiaries of a service. For example, a tax paid by beachfront property owners may finance a beach erosion control program.

  A variation on property and sales taxes is a **real estate transfer tax**. Such taxes have raised significant revenues for resource conservation programs in many states. The ability of communities to levy such taxes, however, is constitutionally prohibited by some states.

- Commodity taxes are those imposed on certain items such as cigarettes, gasoline, and liquor. The services funded by these taxes are often directly linked to the source of revenues. For example, the federal gasoline tax funds highway improvements, while a tax on diesel fuel consumed by tugboats helps to finance the maintenance dredging of the nation's inland waterways. In other cases, there is no link. In Washington, for example, revenues from a tax on cigarettes contributes to the state's water quality protection plan.

- Tax surcharges are additional fees attached to an established tax rate, usually temporarily. They often fund reparations for sudden and unforeseen events, such as hurricane or fire, and might be used, for example, to counteract erosion caused by a storm.

> The Nantucket Island land bank is funded primarily by a two percent real estate transfer fee. Certain land transfers are exempt from the fee, which is applied to the purchase price of property and paid by the purchaser at the time of transfer of ownership. Revenues are used to purchase open space.

Tax Incentives

Tax policy plays a role in both the preservation and destruction of sensitive environmental areas by encouraging activities and/or land uses with the lowest tax liability. Governments can encourage the conservation of sensitive areas by giving preferential tax treatment to landowners who keep their land in preferred uses. For example, federal tax policies reward wetland preservation by providing deductions for donations of wetlands, and by providing favorable tax treatment for not-for-profit organizations that act to preserve environmentally important areas. Federal tax policy may also encourage wetland conversion, however, by providing tax write-offs for general development activities (see box below). Like many policy instruments a tax can be a double-edged sword.

On the local level, differential property tax assessments may be used to ease development pressures. High taxes on undeveloped land accelerate movement of land into higher use categories. Providing preferential tax treatment for certain land uses provides an economic incentive to landowners to keep property in those preferred uses. Maryland, for example, taxes agricultural land at agricultural rather than market value, thus providing an incentive to keep such land in farm use. New Hampshire offers a current use assessment for various desirable land uses, allowing a reduction in property taxes for wetlands, agricultural land, forest land, natural preserves, and wild lands. There are stiff penalties for changing the use of these lands, providing a considerable incentive for keeping them in current use.

There are a number of drawbacks to preferential tax assessments and other subsidies, however. State and local governments are often reluctant to use subsidies to encourage efforts to protect wetlands and coastal areas because they translate into lost tax revenues for the community. Assessment and bookkeeping requirements can be cumbersome, and administrative costs can be high. Moreover, if the financial windfalls from selling for development exceed the benefits of tax reduction or tax deferral, landowners may sell despite favorable tax treatment. When development pressures are high, it is unlikely that tax incentives alone will preserve conservation uses.

FEDERAL TAX TREATMENT

The federal tax code allows income and estate tax deductions for gifts of conservation lands and partial interests, bargain sales, transfers of "like-kind" property, and involuntary conversions. (Private conservation groups like the Nature Conservancy are excellent sources of further information about preferential tax treatment of conservation measures.) Many states allow reduced tax assessments for wetland and other environmentally sensitive property. Other tax benefits can accrue to landowners who donate wetlands or sell conservation easements to government agencies or private conservation groups.

Historically, the U.S. tax code has encouraged farmers to drain wetlands by providing tax deductions and credits for some general agricultural activities. Parts of the tax code also encourage development by providing accelerated depreciation and investment tax credits to development interests. A recent report recommended cessation of federal subsidies for construction of flood-control and drainage projects because of their detrimental effects on wetlands and coastal areas.

The Tax Reform Act of 1986 reduced or removed many incentives for development of wetlands for agricultural and other uses by limiting deductions against income. Other initiatives at the federal level include the Federal Water Bank program, which, to maintain waterfowl habitat, pays farmers to keep wetlands out of crop production. Certain management costs are paid by the federal government as well.

FEES

Fees for public services establish a direct link between the provision of that service and its beneficiary, or user. Fees also finance pollution control programs by charging polluters for the costs that they impose on society, and can sometimes function as powerful incentives or disincentives. For example, a community that will be charged for additional storm water control facilities will probably approve the project only if it perceives the benefits to outweigh the costs. Similarly, an industry would be less inclined to pour toxic wastes into an estuary if it were charged a fee for each gallon that it discharged. Three types of fees -- user fees, impact fees, and capacity credits -- are discussed below.

User Fees

User fees are especially attractive at the local level, because numerous services are provided by local governments to easily identifiable user groups. User fees can be designed so that users of public services or a facility pay according to their individual use. These fees are usually imposed for the life of the project, or for any use of a resource or facility. For example, to finance the periodic inspection of septic systems that pollute near coastal waters, communities often collect fees from homeowners with septic tanks. If properly structured, fees can ensure a long-term source of capital to finance day-to-day operations, strengthen a municipality's ability to issue low-cost bonds, and contribute to a fund for future repairs or renovation.

> Maryland has initiated a Sport Fishing Licensing plan to help support the Chesapeake Bay Fisheries Research and Development Fund. Fees on sport fishing licenses are a common source of revenue for wetland and coastal management efforts.

Impact Fees

Impact fees have been designed in many localities to help local governments collect compensation from developers for the new capacity requirements that their projects impose on public facilities.[2] They are typically imposed in one lump sum at the beginning of a project, and are particularly popular for funding the expansion of sewer and wastewater treatment services. For example, if a development necessitates the expansion of a wastewater treatment plant, the community charges the developer for the cost of the expansion. When used in this fashion, impact fees relieve the up-front financing pressure on local governments, and avoid the political controversy associated with tax increases. Impact fees can also be applied to require developers to contribute to an open space or wetlands acquisition fund.

Several issues have arisen with the growth in popularity of impact fees. One of these is equity. Major developments tend to be singled out for exactions, while smaller projects often escape assessment, despite the fact that the smaller projects may actually place greater demand on infrastructure than a single large project. Moreover, developers are likely to pass along the cost of fees to home buyers or renters in the form of higher housing prices. Impact fees also may lead to suburban sprawl and development of rural

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[2]See, for example, James C. Nicholas, The Calculation of Proportionate-Share Impact Fees, Chicago: American Planning Association, 1988, and James C. Nicholas and Arthur C. Nelson, "Determining the Appropriate Impact Fee Using the National Nexus Text," Journal of the American Planning Association, Vol. 54, p. 1, 1988.

lands, because the higher impact fees associated with a densely populated area may encourage developers to seek development opportunities elsewhere.

> The City of Houston, Texas, has levied fees on new customers to finance the expansion of wastewater treatment capacity. Houston selected this method because traditional revenue sources, including revenue bonds and federal grants, were insufficient to finance expansion, and because the city wanted neither to raise sewer rates for existing customers nor to limit development. Houston's "capital recovery charge" is paid by new or growing users in exchange for access to the municipal sewage treatment system. The amount of the fee depends on the characteristics of proposed development and the type of capacity required. Similar programs exist in Escondido, California, and Upper Merion Township, Pennsylvania.

Capacity Credits

Capacity credits are a relatively new way to finance pollution control projects. Unlike impact fees, users pay voluntarily. For example, individual developers buy or reserve for future use a certain amount of capacity in a prospective water treatment plant. When enough advance capacity is sold, the project is built. Some localities may require full pre-purchase; others may supplement capacity credits with local financing. Earlier purchasers often buy capacity at lower rates than latecomers.

Consider a city that faces demands for new sewage treatment capacity caused by a growing population. The sale of sewage treatment credits to private developers finances the incremental expansion of the existing facilities. Nonparticipants have no guarantee of sewage treatment capacity for their developments. Capacity credits impose the costs of services on the population that causes the increase in demand. By incrementally increasing the capacity of facilities, localities avoid the high and unnecessary costs associated with excess capacity.

As indicated above, fees are not only a source of revenue, but also may be effective in changing behavior. Well designed impact fees, for example, can be used to encourage land uses that preserve and protect environmentally sensitive areas. Local government must rigorously administer and enforce fees, however, for them to have any incentive effect. Local governments should also recognize that inappropriately low fees may have detrimental effects on wetlands or coastal areas. For example, low water charges may encourage excessive water demand. Similarly, low fees for sewer service may encourage development in previously undeveloped areas, increasing growth pressure on sensitive ecosystems.

Throughout the nation, the use of storm water utilities has proven to be effective in encouraging the control of storm water runoff. Storm water utilities assess fees proportional to the amount of impervious surface area on a property, reflecting the role that impervious surfaces play in increasing storm water runoff. By imposing a fee in proportion to a property's contribution to storm water volume, the approach more equitably allocates storm water control costs and gives property owners an incentive to reduce impervious surfaces. This incentive is sometimes heightened by giving property owners who install storm water controls a credit against utility fees imposed. The credit does not generally cover the entire amount of the fee, however, since 100 percent control of storm water runoff onsite is virtually impossible. Fees generated from storm water utilities are generally used for planning, retrofit, and maintenance of storm water management facilities.

Storm water utilities currently operate in more than 150 communities throughout the country. Maryland's use of this approach is particularly promising. For more information on the Maryland program, contact the Maryland Department of the Environment, Sediment, and Storm Water Administration, Baltimore, Maryland: (410) 631-3553.

FINES AND PENALTIES

Fines and penalties, including damage assessments, liability charges, and charges levied on those who violate zoning and other ordinances governing growth, are not only potential sources of revenue, but also are essential to the credibility of protection efforts. Like fees, the main impediment to successful use of fines and penalties as a deterrent to violating the requirements of land-use policy is administration and enforcement.

DEBT FINANCING

Debt financing can be a viable way to raise up-front capital and distribute the burden of repayment for a facility to all individuals who benefit from it. Essentially, government borrows money from investors by issuing debt in the form of bonds. The bonds, and therefore the investors, are then repaid through either tax revenues or user fees. Bonds are best suited to finance capital improvements such as wastewater treatment or municipal waste resource recovery plants.

The cost of public borrowing depends primarily on the term and source of funds for the repayment of bonds. Short-term bonds are payable within one year or less, whereas long-term bonds bear a maturity of more than one year.

- Short-term bonds are often used to provide interim funding for projects that are waiting to receive long-term financing. The dedication of taxes or grants guarantees their repayment.

- Long-term bonds match the term of financing with the life of the project. For example, if a wastewater treatment plant is expected to function for 30 years, the community will most likely issue a 30-year bond, which can be repaid in one of two ways. Either the entire principal matures and is repaid on the final maturity date, or the principal is repaid in periodic installments over the life of the bond. The two types of long-term bonds, general obligation and revenue, are discussed below.

- General obligation (GO) bonds are backed with the full faith and credit of the issuing entity. That is, the government pledges to use its full powers of taxation and other revenue-raising capacities to repay bond holders. This is a stronger repayment guarantee than applies to revenue bonds. However, a high accumulated level of outstanding general obligation debt can prevent the issuance of new debt. Approximately 40 states require voter approval of all local general obligation debt.

- Revenue bonds carry fewer constraints than do general obligation bonds, and therefore are the primary form of municipal tax-exempt financing. These bonds are guaranteed by the dedication of project revenues, rather than the full taxing capacity of the municipality, and therefore do not carry as great a value as do general obligation bonds. Revenue bonds are issued at higher rates of interest than GO bonds.

PRIVATE SECTOR SUPPORT

Private sources of support for programs that protect wetlands and coastal areas increase in importance as available government resources become more constrained. Private participants have helped to finance, maintain, or operate many public facilities, such as roads, wastewater treatment plants, and jails. Private organizations also often act as intermediaries in land acquisition attempts, organize public education campaigns, provide technical assistance, and serve as stewards of wetlands and coastal areas.

The ability to attract private capital is limited by local development pressure, the amount of financing required, and the limitations of the 1986 Tax Reform Act. Public/private partnerships must include assurance to the private partner of a reasonable return on investment, which can include actual cash dividends (such as from sewer fees to operate a wastewater treatment plant), enhanced private operations (such as higher fishery yields because of cleaner water), or intangible factors (such as increased community well-being).

In general, private landowners will respond to the economic forces of the market place, but charitable motives can also affect landowner actions. By educating the public and creating programs to protect sensitive environments, local governments can encourage the private sector to join in actions driven by concern for ecological values rather than private profit. To preserve environmental resources and encourage restoration efforts, citizens and planners should think about how to encourage charitable donations, and should develop mechanisms to encourage private stewardship. They also should identify private organizations that might manage resource protection programs, sponsor public education campaigns, provide technical assistance, or offer financing. Creative local decisionmakers will recognize the value of involving private organizations in efforts to protect wetlands and coastal areas, and will explore ways to join forces with the private sector to help protect these resources.

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MANAGEMENT TECHNIQUES COMPARED

How do the management tools introduced in previous chapters compare? Exhibit 1 evaluates the tools discussed above according to several criteria: effectiveness, political acceptability, cost, and complexity.

- Technical effectiveness measures the degree to which a tool protects the resource it is intended to protect.
- Public and political acceptability reflects the degree to which the general public and political leaders are likely to subscribe to, and support, the tool in question.
- Cost measures whether selection of this tool will result in substantial government expense.
- Complexity concerns the sophistication of the tool's design, administration, and implementation.

Note that the political acceptance or effectiveness of a tool may vary from one region to another. With this in mind, the matrix in Exhibit 1 (pages 90–91) presents a rough idea of the general strengths and weaknesses of the tools discussed in this guidebook.

CHAPTER SUMMARY

- Land-use management tools vary in effectiveness, political acceptability, cost, and complexity. Some techniques, like acquisition, are highly protective but costly; others are less expensive, but may be less effective, difficult to implement, or politically unpopular.
- When choosing land-use management techniques, communities must evaluate (1) the natural resources to be preserved and the threats facing them; (2) the effectiveness and legal, economic, and administrative feasibility of the alternatives available; and (3) local support for each alternative.
- It is at the local level that tradeoffs among competing land-use interests are most effectively and appropriately made. By identifying and reconciling local needs and concerns, a community can formulate an approach to resource management that both protects significant resources and promotes sound development.

As Exhibit 1 suggests, acquisition-related tools generally are highly effective for protecting a carefully bounded resource, but are limited by high cost. Regulatory measures typically extend land-use controls to a broader area and do not require the purchase of land or development rights, but may be fraught with political complications and enforcement difficulties. The most effective and politically acceptable management solution is likely to be a package -- a creative combination of numerous tools and techniques. Shaping that package is an inherently political and highly local process.

EXHIBIT 1

Comparison of Management Techniques
For Protection of Coastal and Wetlands Resources

Tool	Technical Effectiveness	Acceptability to General Public	Cost to Local Government	Administrative Complexity	Comments
Review and leverage existing federal, state & local programs	L/M	H	L	L/M	
Integrated Planning	H	M	M	H	Prerequisite of viable protection efforts.
Regulatory Measures:					
Sensitive Area Protection Ordinance	M/H	M	L	L/M	Applies only within boundaries of delined area.
Buffer Zones:					
Fixed	M/H	M	L	L	Variable preferred, but requires more information and technical expertise.
Variable	H	M	M	M	
Overlay Zones	M	M/H	L	L/M	
Large-Lot Zoning	L/M	M	L	L	Opposite of clustering, may strain infrastructure.
Cluster Zoning, Density Regulations, PUD's, Set-Asides	M/H	L/M	L/M	M	Allows developers and government to determine specifics.
Bonus & Incentive Zoning	L/M	H	L	M	Voluntary and sometimes ineffective.
Downzoning	M	L	L	L	
Interim Development Controls	L	L/M	L	L	
Subdivision Controls	M	M	M	M	Applies to undeveloped areas.
Performance Standards	H	M/H	M	M/H	Extensive information and technical expertise required.
Building Codes	M	H	L	M	Generally accepted. Need credible enforcement.
Site Plan and Design Review	M	H	H	H	Flexible, requires impartial technical oversight.

EXHIBIT 1

Comparison of Management Techniques For Protection of Coastal and Wetlands Resources

Tool	Technical Effectiveness	Acceptability to General Public	Cost to Local Government	Administrative Complexity	Comments
Acquisition:					
Fee simple (full)	H	H	H	L/M	High protection for limited area.
Conservation Easements	M/H	M/H	M/H	M/H	
Deed Restrictions	M/H	M	M/H	H	
Post Acquisition Disposal	M/H	M	M	H	
Land Trusts	H	H	L	M	
Land Banks	H	M	M/H	H	
Greenways	H	H	M/H	M/H	
Economic Incentives:					
TDR's	M	M	M	H	
Tax Policy	L/M	M	M	M/H	
Public/Private Partnerships	M	H	L	L	

L = Low
M = Medium
H = High

Source: Industrial Economics, Incorporated.

HOW TO CHOOSE AMONG MANAGEMENT TECHNIQUES

A variety of actions at the local level can be used to protect coastal and wetlands resources. A community might choose simply to provide information regarding the importance of these resources, or it could focus available state and federal funds on threatened areas, appropriating local funds for technical assistance and cost-sharing conservation practices. A community might take more direct action by enacting regulations or by outright acquisition of threatened resources. A community has a myriad of tools, each with different strengths and weaknesses, at its disposal. How can local leaders choose among them?

Whatever level of action a community decides to pursue, policymakers must consider numerous criteria when shaping an integrated program to protect coastal and wetlands resources. Broadly defined, these criteria include need, feasibility, and support. In developing its overall approach, the community should use these three criteria to carefully evaluate proposed measures to protect coastal and wetlands resources.

Need

First, a community must assess the need for protection: where, why, when, and to what extent protection is needed, and how well the measures under consideration address these needs. The need for a community to pursue measures to protect coastal and wetlands resources is best determined by a careful inventory of local resources and assessment of the pressures upon them. Compiling this information is a main component of the planning process, and will direct efforts to identify appropriate alternatives.

Timing -- whether the need for action is immediate or can be postponed -- is an important component of the need determination. Determining where, when, and why action is most needed will make a major contribution to a community's understanding of what measures to take to protect coastal and wetlands resources.

Feasibility

Second, a community must determine the feasible bounds of protective action. Given our needs, what can we do? Feasibility can be broken down into three components or criteria that, when combined, should give a locality a sense of the cost-effectiveness of various proposals.

- Cost criteria. What resources (staff, financial, other) can the community devote to the effort and to implementation of the measures under consideration?

- Regulatory criteria. Does the approach fit within the federal, state, and/or local governments' legal authority and regulatory framework? How effectively do the options leverage local resources?

- Administrative criteria. Does the community have the ability to implement and enforce the program once it has been adopted?

Support

Third, a community must assess whether its citizens -- both leaders and the general public -- are likely to endorse the coastal and wetlands resources protection mechanisms in question. Support will depend on the consistency of the approach with broader public values and interests.

INTEGRATED MANAGEMENT AND OTHER EFFORTS TO PROTECT COASTAL AND WETLANDS RESOURCES

Local land-use management policy must serve many competing objectives. These include recreation, economic development, affordable housing, resource protection, reduction of traffic and congestion, preservation of agriculture and open space, reduction of natural hazards, and others. Local decisionmakers must make tradeoffs among these objectives, using a collaborative planning process to determine the appropriate balance between competing land-use interests.

While the management tools discussed in this handbook can help preserve coastal and wetlands environments, they are only part of an integrated approach to resource protection, an approach that has many dimensions. Activities throughout a watershed -- and sometimes beyond it -- can affect wetlands and coastal areas. Infrastructure and facility siting decisions, for example, can have profound impacts far beyond their immediate location. Similarly, practices that reduce pollutants at their source may have far-reaching implications for the preservation of environmentally sensitive areas.

In light of these complexities, protecting wetlands and coastal areas is often a difficult task. Approaches to accomplishing this task are as varied as the resources they are intended to protect. No single approach is perfect, and no approach is right for every community. If this handbook has served its purpose, it has provided the reader with some concrete ideas about how to forge effective and realistic land-use and growth-management policies. The implementation of these policies, in a manner that reflects local values and local decisions, is critical to the protection and preservation of our coastal and wetlands resources.

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HEDGES CREEK, OREGON: A CASE HISTORY OF HOW A CITY ORDINANCE WAS USED TO PROTECT A WETLAND

The Problem

Hedges Creek is an 80-acre wetland located in the rapidly growing city of Tualatin, 10 miles south of Portland, Oregon. The entire wetland, owned by 11 landowners, was zoned for heavy industry. Because it is located in the floodplain of the Tualatin River, the U.S. Army Corps of Engineers exercised its authority to assume jurisdiction over Hedges Creek (under Section 404 of the Clean Water Act) and stopped all wetland filling. The landowners challenged the Corps in 1978.

The situation rapidly became polarized and hostile, with the landowners on one side and environmental groups on the other. There were four major problems:

1. The wetland was zoned for heavy industry, and the landowners believed that they had the right to develop the area.

2. Several influential landowners were involved.

3. The land under debate was highly valued.

4. The city was rapidly growing and pressure to develop the land was high.

The Solution

In December 1978, the city of Tualatin initiated a series of meetings between the landowners and environmental groups to discuss the issues. The city manager acted as negotiator. The major source of debate concerned the amount of land that should be included in a protected area. Landowners argued for minimal protection, while environmental groups held that development should be prohibited for the majority of the wetland. In March, 1979, an agreement was reached that was acceptable to both sides, and a city ordinance was drafted. The ordinance essentially allowed some development to occur, while maintaining protected wetland acreage. It was passed in October 1979, amended in 1982, and now covers 400 acres, involves 13 landowners, and designates the area as a Wetlands Protection District. Fifty-eight acres are specified as wetlands protected area (WPA), 17 more acres serve as a buffer zone, and the rest of the area is designated as wetlands fringe area (WFA), which may be developed, subject to numerous performance standards.

Hedges Creek Wetland is also protected by federal and state regulation. In 1982, the Corps issued a regional removal and fill permit requirement; the Oregon Division of State Lands also has a removal and fill law.

The wetland's greatest protection, however, is the city ordinance. Its provisions include:

- All permanent surface structures must be located at least 40 feet from the boundary of the WPA, comprising a 17-acre buffer.
- Dredging/filling may occur in the WFA, but shall not significantly change the volume of surface water that flows into the WPA.
- All sources of storm drainage and surface runoff contamination located in the WFA must pass through a treatment system to ensure that no contaminated water reaches the protected wetlands.
- No pesticides can be used in the WPA or WFA without approval by the Oregon Department of Environmental Quality.
- Vegetation in the WPA cannot be cut or otherwise degraded.
- No destruction of wildlife (by firearms, trapping, poisoning, etc.) is permitted in the entire Wetlands Protection District.
- Lands that are more than 40 feet from the WPA, are in the WFA, and are not committed to development must remain in their natural state, but can be utilized by public agencies or environmental interest groups.
- The WPA can only be used for passive nature study and protection of wildlife.
- The Oregon Department of Fish and Wildlife may annually monitor, or supervise the monitoring of, the numbers of plants and species within the WPA or the additional 40-foot buffer zone.

FOR FURTHER INFORMATION

Gene A. Herb, Hedges Creek: A Case History of How a City Ordinance Was Used to Protect a Wetland. Oregon Department of Fish and Wildlife: (503) 229-5403.[1]

[1]This case study was also based on personal communication with Mr. Herb, 20 July 1989.

WETLANDS PROTECTION IN URBAN AREAS: THE EXAMPLE OF FORT COLLINS, COLORADO

The Problem

Although wetland protection measures were incorporated into the Fort Collins Comprehensive Plan in the late 1970s, city residents later became concerned that many wetland areas were not adequately protected from the incursions of development. Public sentiment favoring action on this and other environmental issues spurred the City Council in 1984 to create a Natural Resources Division (NRD), which would address city concerns over recycling, air quality, hazardous waste management, and protection of wetlands and wildlife habitats.

The Solution

To establish a comprehensive planning approach to conservation, the NRD first mapped and then classified all wildlife habitats and wetlands within the urban area of Fort Collins. From 1984 to 1986, the Colorado State Forest Service used aerial photography to map the entire 66-mile urban area. The area was then classified according to ortho-photo pairs and the Wetlands Classification System of the U.S. Fish and Wildlife Service. When completed, the study area was found to comprise 22 land-use classifications. Most wetlands were located along riparian corridors associated with reservoirs, ditches, or abandoned gravel mining operations. All were within the 100-year floodplain. A relative value was assigned to the habitat areas, based on six criteria: structural diversity; connection with other cover types; the use of the area by rare, threatened, or endangered species; association with a corridor; other functional values; and species of local interest or concern. The lands were then categorized into classes of high, moderate, or low environmental sensitivity for wildlife habitat.

The map was then added to the provisions of the City Comprehensive Plan. Two components of this plan, the Goals and Objectives and Land Use Policy sections, provide policy guidance but carry no regulatory authority. The third component of the plan, the Land Use Guidance System, is a performance-oriented regulatory document that is used, along with the newly created map, to review development proposals. This system specifies 44 requirements that must be met for any development to be recommended for approval to the Planning and Zoning Board. For example, a project must:

- Preserve existing vegetation to the extent practical.
- Implement precautions to avoid adverse impacts to areas that serve as habitat, natural food sources, nesting places, wintering places, or a water source.
- Design and arrange the site plan to favorably relate to the existing natural topography, water sources, and trees.
- Conform to the water quality standards of local, state, and federal agencies.

The NRD advises the Planning Division of the City of Fort Collins on the application of these regulations. The regulations and map have thus far succeeded in protecting wetlands. Recently, for example, a proposed project that had been approved by the Army Corps of Engineers was denied by the Planning and Zoning Board. The project was subsequently shifted to another site that was more suitable for development. Some problems remain, however, and efforts are underway to strengthen the Land Use Guidance System. A citizen's guidebook -- a manual that outlines project design and mitigation techniques -- is also being written to educate the Fort Collins public.

FOR FURTHER INFORMATION

Robert Wilkinson, "Protection of Wetlands and Riparian Habitats in an Urbanizing Environment: A Comprehensive Planning Approach." Natural Resources Division of the City of Fort Collins, Colorado: (303) 221-6500.[2]

[2]This case study was also based on personal communication with Mr. Wilkinson, 24 July 1989.

HARFORD COUNTY, MARYLAND: USE OF OVERLAY AND BUFFER ZONES TO PROTECT WETLANDS

The Problem

In 1973, Deer Creek in Harford County, Maryland, was designated a wild and scenic river. To protect this and other highly-valued resources -- including wetlands, stream valleys, and the Chesapeake Bay shoreline -- Harford County in 1982 adopted an overlay zone called the Natural Resources District (NRD), which restricted land-use activities within designated areas. The NRD was ineffective in regulating logging operations, however, because it contained no forestry provisions. In 1984, a 121-acre forest along Deer Creek was clear-cut, exposing the river to increased runoff and nonpoint source pollution.

The Solution

In response to the unexpected damage to the resource base, the Harford County Department of Planning and Zoning began to prepare revisions to the provisions of the NRD and circulated them for suggestions to the Maryland Department of Natural Resources, the County Forestry Board, the Soil Conservation Service, the Farm Bureau, Watershed Associations, Harford County Homebuilders, and environmental and conservation organizations. The amendments to the NRD were passed and signed into law by the County Council in May of 1985. They included the following specifications:

- The NRD shall be a minimum distance of 150 feet on either side of the stream or 50 feet beyond the 100-year floodplain, whichever is greater.
- The NRD shall extend 75 feet on either side of tributaries that drain an area of 400 acres or more.
- Within the NRD, streams shall be provided with a buffer zone having a width of at least 50 feet plus 4 feet for each 1 percent increase in slope measured from the water's edge.
- Trees located within the buffer may be harvested only to remove diseased, insect-damaged, or fire-damaged trees, to salvage trees, or to reduce potential stream blockage caused by fallen timber.

The NRD also protects natural wetlands features, including tidal and nontidal wetlands, by prohibiting development activities and requiring a natural buffer of 75 feet surrounding the wetland. Development is defined as any activity that requires a building permit. Residential, commercial, or industrial development is therefore prohibited. The effectiveness of the NRD legislation stems from the fact that the integrity of wetland systems is protected by conservation measures not only within the wetland itself, but also within buffer zones surrounding the wetland.

A buffer zone can be established by specifying a fixed distance from a stream or wetland, or the boundary may vary or "float" depending on specific natural features in the environmentally sensitive areas. A fixed buffer is easy to administer, but may not encompass all critical areas in a watershed, whereas a floating buffer must be extensively mapped and evaluated to determine a viable boundary. The NRD regulations established a fixed buffer zone around streams, shorelines, and wetlands, then extended the buffer to include steep slopes near but outside the normal protection zone. The protection of these zones will reduce surface runoff, trap sediments, and reduce nutrient loading.

The new NRD legislation also requires that specific restrictions be met by any forestry, agriculture, or development operations located within the NRD. Recently, even more provisions have been added to the NRD, creating extremely effective protection for rivers, streams, the wetlands, and shoreland in Harford County.

FOR FURTHER INFORMATION

Robert S. Lynch, esq., and Pieter de Jong, A Local Government Approach to Wetland Protection. Harford County Department of Planning and Zoning: (410) 838-6000, Ext. 103.[3]

[3]This case study was also based on personal communication with Mr. Lynch, 25 July 1989.

THE CHESAPEAKE BAY CRITICAL AREA ACT: MARYLAND WORKS TO IDENTIFY AND PROTECT SENSITIVE AREAS[4]

The Problem

The Chesapeake Bay, the largest estuarine system in North America, is one of the most biologically productive estuaries in the world. Its watershed covers 64,000 square miles, extending from New York to West Virginia. Over 425,000 acres of marshland adjoin the Bay, which is subject to intense development pressure from several sides. Increased upland agricultural activity and population growth in suburban Washington and Baltimore have strained the Bay's ecosystem. This pressure, along with major development projects along the shore of the Bay, has triggered local citizen and state government action.

The Solution

In 1984, Maryland adopted the Chesapeake Bay Critical Area Act, which governs land-use practices on land within 1,000 feet of mean high tide of the Bay or the landward boundary of neighboring wetlands. The State legislature authorized local governments to develop their own strategies for estuary protection, but required them to satisfy several state criteria. These criteria, as established by a 25-member Critical Areas Commission, address three major concerns: development activities, resource utilization, and resource protection.

The Commission's development criteria first require local governments to divide critical areas into three land-use categories, based on current housing density and use. The criteria specify that future waterfront development be confined to current growth centers and that housing densities be seriously limited in the rest of the critical area. "Intensely developed areas," which currently contain dense concentrations of residential or industrial development, and "limited development areas," with moderate to low concentrations of residential development, will be the sites of any new development. Within these areas, regulations encourage clustered development, protection and replacement of forest cover, and limited impervious surfaces. In "resource conservation areas," new marinas are prohibited, and only one residential unit per 20 acres may be constructed. Only five percent of the resource conservation areas are permitted to eventually become intensely developed or limited development areas.

The state's resource utilization criteria require local governments to promulgate specific policies for forest management; to specify setbacks from water bodies for harvesting, clear-cutting, and soil/water management; and to control the feeding and watering of livestock near the water's edge. Resource protection criteria require local governments to set up 100-foot buffers along tidal waters and 25-foot buffers around non-tidal wetlands. The strategies developed by the local governments are subject to the approval of the Critical Areas Commission. If they are not acceptable, the Commission can authorize a plan for the locality.

Virginia adopted a similar approach under the Chesapeake Bay Preservation Act of 1988, incorporating many of the ideas implemented by Maryland's Critical Areas Commission. Local governments

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[4]Based partly on the National Wetlands Newsletter, various issues, 1986-1988. Published by the Environmental Law Institute: (202) 328-5150.

in the Bay area were required to add water quality protection into their comprehensive plans and zoning and subdivision ordinances. The purpose of the Virginia act was twofold:

- To establish preservation areas, including wetlands, beaches, steep waterfront slopes, highly erodible soils, aquifer recharge areas, and floodplains.

- To specify land-use controls, such as performance standards, setbacks, density limitations, and storm water management.

In addition to government action, numerous citizens programs have formed over the last 20 years to help protect and preserve the Chesapeake Bay environment. The Citizens Program for Chesapeake Bay, a coalition of public interest groups, businesses, and trade associations established in 1971, organized the Chesapeake Bay Conference of 1983. The primary result of the conference was the Chesapeake Bay Agreement, which created the Citizens Advisory Committee to foster citizen communication with government agencies involved in the cleanup of the bay. The conference also sparked the aforementioned acts in Maryland and Virginia.

Whether these actions will effectively address the Bay's problems remains to be seen. Maryland's program has already made progress, but has been slowed by delays in the drafting and implementation of specific local strategies. Nonetheless, the Maryland and Virginia approaches clearly have promise. The programs have heightened awareness at the local level of the adverse effects of development on environmental quality, and offer a valuable example of an integrated approach to the protection of a fragile ecosystem.

FOR FURTHER INFORMATION

Luther L. Propst, Creating Successful Communities: A Guidebook to Growth Management Strategies. The Conservation Foundation, Washington, DC: Island Press, forthcoming.

Chesapeake Bay Nonpoint Source Programs. U.S. Environmental Protection Agency, Region III, Chesapeake Bay Liaison Office. January 1988.

DENVER'S PLATTE RIVER:
USE OF A GREENWAY TO PROTECT A RIVER

The Problem

The population of metropolitan Denver increased by more than 60 percent in the 1960s and 1970s. These growth pressures took a toll on the South Platte River, a 10-mile stretch of which runs through the middle of the city. Development along its banks increased pollution in the river and reduced the river's flood protection capacity. Two floods in 1973, which claimed lives and millions of dollars of property, finally precipitated public demands for action.

The Solution

In response to the public outcry, the mayor appointed a task force of nine members and allocated $1.9 million of city funds to devise and implement a strategy that would protect the river. As part of this effort, the task force hired four local firms to design projects that would make the river accessible to the public from the shore and by boat.

The resulting plan proposed a series of parks along the river which would be connected by hiking and biking trails. The system extended 10 miles, from city limit to city limit. Debris also was removed from the river to improve boat access and transportation. After partial completion of the greenways, the sponsoring committee scheduled events at the new open space sites, to encourage more funding and support. A nonprofit tax-exempt fund was ultimately created and raised $7 million from public and private sources.

Because of the additional funding, the greenway was expanded into the core city. Structures in the core city were modified in order to mesh the industrial sector with the recreational goals of the greenway program. Four park rangers, now funded by an endowment program, are responsible for the maintenance of the parks and trails.

The river, once filled with debris, now provides whitewater rapids for recreational use. The downtown Denver greenway offers 15 miles of interconnected trails and 450 acres of open space. Thirteen parks have been developed along the 10-mile stretch. The greenway annually serves approximately 150,000 people for hiking, biking, and boating activities. These results have encouraged neighboring counties to embark on similar programs, which ultimately will extend the South Platte River greenway to a length of 120 miles.

FOR FURTHER INFORMATION

Luther L. Propst, Creating Successful Communities: A Guidebook to Growth Management Strategies. The Conservation Foundation, Washington, DC: Island Press, forthcoming.

FLOODPLAIN ZONING IN LYCOMING COUNTY, PENNSYLVANIA

The Problem

Fifty-eight percent of Lycoming County, located in north-central Pennsylvania, lies in the basin of streams the state considers to be of exceptionally high quality or value. As a result of inadequate growth management, however, waterfront development had proceeded largely unchecked, endangering sensitive wetland and water resources. In 1972, a flood prompted the County Planning Commission to act on floodplain management.

The Solution

The County Planning Commission worked intensively with local governments to ensure that flood-prone areas would have floodplain zoning. In 1972, only 3 of the 42 townships with high-quality streams had zoning ordinances. Today, every town has adopted an ordinance. The ordinances meet the requirements of the National Flood Insurance Program and establish additional requirements to protect water quality and streamfront open space. Building permit ordinances have also been established in most of the townships.

In Plunketts Creek Township, for example, the Planning Commission was concerned that the town's zoning ordinance was outdated and would fail to protect streams from the adverse effects of growth. The township contracted with the county to draw up a new ordinance. This new ordinance added more zoning districts, including a General Floodplain District, an Open Space Conservation District, and an Agricultural District. It also recommended larger lot sizes for all of the districts. The minimum lot size in the Open Space Conservation District was set at 10 acres. A trained zoning permit officer enforces the requirements laid out by the commission.

In another case, the planning commission in Susquehanna Township wanted to avoid contamination of ground water, aesthetic blight due to cut slopes, mountain roads which would cause erosion and stream sedimentation, and tree cutting which would increase storm water runoff. The township contracted with the County Planning Commission to prepare a revised ordinance. A steep slope district was established with a minimum lot size of 325 acres. This district covers over 20 percent of the township. Floodplain zones, with flood-proofing requirements and minimum lot sizes of 5 and 10 acres, were also incorporated into the new ordinance.

FOR FURTHER INFORMATION

"Local Protection of High Quality Streams," Environmental Planning Information Series Report #6, 1981, pp. 42-45. Published by the Office of Policy, Pennsylvania Department of Environmental Resources: (717) 541-7802.

PENNYPACK CREEK, PENNSYLVANIA: A CITIZENS' WATERSHED PROTECTION ASSOCIATION

The Problem

Pennypack Creek flows southeast through Montgomery County, Pennsylvania, and enters the Delaware River in Philadelphia. During the 1960s, population growth and urban development pressures in the Philadelphia area began to threaten the natural beauty, ecology, and open spaces of the Pennypack watershed.

The Solution

In 1970, concerned citizens and organizations formed the Pennypack Watershed Association, the goal of which is to conserve the natural resources of the watershed, protect ecologically fragile areas, and develop the watershed harmoniously with nature. Specifically, the Association seeks to:

- Manage floodplains
- Provide adequate water supplies
- Retain open space for conservation and recreation
- Minimize soil erosion
- Protect fish and wildlife
- Maintain water quality
- Develop environmentally sound land-use plans.

Since its formation, the Association has reviewed development proposals, comprehensive plans, and land-use ordinances that affect Pennypack Creek to ensure that all development proceeds in an environmentally sound manner. All communities in the area have enacted floodplain development ordinances.

The Association has focused much of its attention on a 1,650-acre tract located in Bryn Athyn Borough, Upper Moreland Township, and Lower Moreland Township in Montgomery County. This floodplain, containing large amounts of open space, has a broad floor bordered by steep slopes. It is primarily wooded, composed of virgin poplar. The soils are susceptible to periodic flooding and pose limitations to residential and industrial development. However, intensifying development pressures prompted landowners to seek the Association's cooperation in protecting the area.

First, the Association sponsored environmental studies to assess the tract's soils, hydrology, geology, wildlife, land use, and vegetation, and legal studies to evaluate existing local plans for the area. The Association then proposed a plan for the tract, which divided the area into two districts: an 850-acre Wilderness Park and an 800-acre development area.

Wilderness Park was to be retained as a stream corridor and open space, consisting of floodplains, steep slopes, woodlands, unique natural features, and tributaries to Pennypack Creek. It would provide environmental benefits such as fish and wildlife habitat, flood protection, passive recreational opportunities, open space, and watershed protection. It would have limited vehicle access and could be used for

environmental education, with an Environmental Management Center as its focal point. The Association also planned to protect the park by acquisitions and easements. Easements would enable the Association to install improvements such as trails, wildlife conservation, scenic overlooks, and vegetation management. Private landowners would not be able to carry out activities on their lands that would degrade the environmental quality of the park. The Association expects to acquire 300 to 350 acres and to obtain easements for the rest of the acreage, eventually linking the park with other parks along the Pennypack to form a trail system.

The development area would be located in the upland areas of the watershed that contain deep, well-drained soils and gentle slopes. Housing, light industry, spray irrigation of waste water, farming, and managed forestry would be allowed in this area. Townhouses and apartments may be constructed in clusters to maintain open space.

In general, the Association's plans coincide with local and county plans for the area, advocating the preservation of floodplains and steep slopes while permitting low density residential and industrial development in other areas. The Association's plans for sewage treatment differ from local and county plans, however. The Association plan calls for spray irrigation to dispose of treated wastewater, both to help recharge ground water resources and increase base flow in Pennypack Creek during low flood periods. Localities want the sewage pumped out of the watershed to the Northeast Philadelphia Treatment Plant.

The property owners of about 500 acres in the area designated for Wilderness Park have committed to supporting its establishment. The Association has purchased about 65 acres and obtained easements for 52 acres. The Environmental Management Center has been used for environmental education programs, and the Association has been working with local governments to reconcile the differences among the plans for the area.

FOR FURTHER INFORMATION

"Environmental Concerns in Local Floodplain Management," Environmental Planning Information Series Report #4, 1988, pp. 40-41. Published by the Office of Policy, Pennsylvania Department of Environmental Resources: (717) 541-7802.

WISSAHICKON CREEK, PENNSYLVANIA: A LOCAL GOVERNMENT WATERSHED PROTECTION ORDINANCE

The Problem

Wissahickon Creek, located in eastern Pennsylvania, flows from Montgomery County to the Schuylkill River in Philadelphia. About 11 square miles of the creek's watershed lie in Philadelphia. This segment of the Wissahickon consists of a stream valley with steep slopes and great aesthetic appeal. Interested citizens groups recognized the value and beauty of the watershed, and the City of Philadelphia designated the valley as a 2,000-acre public natural park, protecting the stream corridor from development.

Development and growth in the upland areas immediately outside the park were not controlled, however, creating environmental problems for the watershed and Wissahickon Creek. Construction added to the amount of impervious ground cover, accelerating surface runoff. This increased the amount and frequency of flooding along Wissahickon Creek and its tributaries. Stream banks, hillsides, and trails began to erode. The water quality of the streams decreased due to greater sedimentation and urban runoff. Wildlife habitat in the park was degraded by encroaching development.

The Solution

In 1972, state and city officials began working with the Regional Science Research Institute and interested citizens to address the environmental degradation of the park and stream corridor. The city bought 200 additional acres for the park, corrected some deteriorating park conditions, and in 1975 passed the Wissahickon Watershed Ordinance to control the impact of urban development on the creek and watershed.

The ordinance was designed to prevent increased surface runoff, soil erosion, and degradation of the area's natural features. Specifically, the ordinance regulated development by establishing earth-moving plan requirements, limiting impervious ground cover, restricting development on steep slopes, and defining requirements for distance from the stream. For example:

- Earth-moving plans must be submitted for sites larger than one-half acre or where earth moving exceeds 500 square feet. The ordinance also contains criteria for reducing soil erosion and establishes design criteria for diversion terraces, conveyance channels, and sedimentation basins.

- Impervious ground cover is limited to a fixed percentage of the total lot area, thereby controlling surface runoff. If engineering and landscaping countermeasures are included to reduce runoff, the amount of impervious cover can exceed the restrictions of the ordinance.

- Development on steep slopes is prohibited if the slope exceeds 25 percent. Slopes between 15 percent and 25 percent can be developed if earth-moving plans are approved by the City of Philadelphia.

- Setback requirements are established to prevent flood damages and protect streamside vegetation. Impervious ground cover must be 200 feet from the creek and 50 feet from swales.

Philadelphia also adopted policy guidelines to protect aesthetic quality along Wissahickon Creek -- a large portion of which is located within Fairmount Park -- and in the watershed, providing general policies for developers to follow.

A Wissahickon Valley Watershed Association was formed by citizens to work with municipalities to retain the floodplain as open space. The Association has purchased floodplain land, and has resold some to local governments when state and federal grants became available. The Association has also helped local governments to develop floodplain and storm water management ordinances and to review development proposals.

As a result of these efforts, approximately 80 percent of the Wissahickon Creek floodplain remains in a natural or seminatural state, and public hiking trails have been established along the stream.

FOR FURTHER INFORMATION

"Environmental Concerns in Local Floodplain Management," Environmental Planning Information Series Report #4, 1988, pp. 38-40. Published by the Office of Policy, Pennsylvania Department of Environmental Resources: (717) 541-7802.

ANNE ARUNDEL COUNTY, MARYLAND: THE USE OF WETLANDS IN WASTEWATER TREATMENT

The Problem

Since 1980, Anne Arundel County, Maryland, has been under state order to correct wastewater/public health problems in the Mayo Peninsula, located 5 miles south of Annapolis. Residents have reported septic system failure, poor drainage, flooding, and poor well-water quality. At the same time, citizens are concerned about the degraded water quality of Chesapeake Bay and would like a wastewater treatment plan that is environmentally sound.

The Solution

Recently, wetlands have received attention as potential aids to wastewater treatment. Because the cost of conventional treatment facilities is rapidly rising, artificial wetlands are being increasingly recognized as a viable wastewater treatment alternative.[5] Constructed wetlands meet wastewater treatment needs better than natural wetlands because they can be designed so they will not pose a risk to human health, wildlife, and ground water supplies, and because plant species can be selected and managed to provide the greatest amount of treatment possible. These wetlands also provide many environmental benefits to a community, including flood control, open and recreational space, wildlife habitat, and water quality maintenance.

In 1986, an engineering firm proposed an innovative wastewater management program for the Mayo Peninsula. The proposed approach calls for:

- Onsite septic systems located throughout the peninsula where there are suitable soil conditions.
- Cluster soil adsorption systems to treat effluent from individual septic tanks in common leaching areas.
- A communal treatment system that will serve most of the peninsula by transporting effluent from individual septic tanks to a central system that uses recirculating sand filters, constructed freshwater emergent wetlands, peat wetlands, and UV disinfection to treat the waste. The treated effluent will then be pumped to an offshore wetland constructed at the southern tip of the peninsula and planted with aquatic vegetation.

The constructed wetlands will remove pollutants in an extremely efficient and thorough manner. Some aspects of the design include:

- Cattails and bulrushes in the freshwater emergent wetland to remove nitrogen and phosphorus. The large root mass of these plants will provide extensive surfaces for bacterial growth and attachment, which will treat more effluent pollutants.
- A gravel media to firmly anchor the vegetation and provide more surfaces for bacterial attachment.

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[5]EPA policy strongly discourages using nontidal wetlands for secondary treatment, although they may be used for tertiary treatment and/or polishing.

- An impermeable polyvinyl chloride liner around each basin to prevent percolation of wastewater into the soil and ground water.

- Peat to remove phosphorus in the peat wetlands.

The offshore wetland, located approximately 170 feet off Dutchman Point, will disperse the treated effluent as it is discharged from the large communal facility into the Rhode River. The effluent will meet all regulatory discharge standards before reaching the offshore wetland. Any treatment that occurs in the offshore wetland by plants or bacteria will purify the effluent beyond regulatory requirements.

These constructed wetlands not only will meet the wastewater treatment needs of the community, but also will contribute to the improved water quality of Chesapeake Bay.

FOR FURTHER INFORMATION

Pio Lombardo and Thomas Neel, "Wetlands and Wastewater Treatment: The Mayo Peninsula Water Reclamation Facilities Plan," The National Wetlands Newsletter, March-April 1987, Vol. 9, No. 2, pp. 18-19. Published by the Environmental Law Institute: (202) 328-5150.

ATTEAN, MAINE:
WHEN THE TERMS OF AN EASEMENT ARE VIOLATED

The Problem

Attean Township, a 27,000-acre semiwilderness in northeastern Maine, encompasses two major lakes, mountain ridges, many small ponds, extensive forests, and a section of the Moose River. Since the mid-1800s it has been owned by the Coburn family. By the 1980s, the family was dispersed throughout the United States, and decided to sell most of the township. Hoping to keep the area in its pristine state while allowing the land to remain in private ownership, the Coburns elected to use permanent conservation easements to protect the unique natural qualities of the area. The easement varies for different parts of the township. For example, it protects the shoreline of Attean Pond with a 300-foot "no-human-alteration" zone.

In 1987, as the land was being sold to new owners, the terms of the easement were violated by the unauthorized actions of a third party who, in attempting to improve his pontoon boat guide service, built campsites, cleared trees, built docks, and installed concrete fireplaces along the shoreline. Despite warnings that he was violating the easement, the party persisted in his actions.

The Solution

The violation of the easement set in motion a lengthy court case, resolved in favor of the plaintiff landowners. Briefly, the litigation included the following actions:

- Violations were reported to the Forest Society of Maine and were thoroughly documented by photographs and written records.
- Motions for a temporary restraining order to stop the violations were filed by the plaintiffs and granted by the court.
- Permanent injunctions and reparations were ordered by the court, but the violator failed to make the repairs. The landowner subsequently repaired the area as much as possible.
- A motion for determination of damages was filed. A court hearing determined that the violator owed full cost for the grantee's and landowner's expenses and tree damage. (The damages have yet to be recovered.)

This case points to a number of important lessons to keep in mind when drafting an easement:

- Draft the easement as clearly and specifically as possible. This will be helpful if it is actually necessary to take a case to court.
- Ensure that the owners of the land thoroughly understand the provisions of the easement and the responsibilities of the grantee.
- Arrange with local officials to report any violations of the easement to a responsible conservation organization.

- Try to avoid the expense and delay inherent in going to court. If the violator is cooperative, arbitration or an out-of-court settlement is preferable.

- Carefully document the details of events as they happen.

FOR FURTHER INFORMATION

Sarah Thorne, "Dealing with Violations: Lessons from a Case Study," Journal of the Land Trust Exchange, Spring 1989, Vol. 8, No. 2, pp. 1-9. Published by the Land Trust Exchange: (703) 683-7778.

LOUISIANA: THE ROLE OF CITIZEN INITIATIVES

The Problem

Coastal Louisiana contains nearly 4 million acres of saltwater, brackish, and freshwater wetlands -- 40 percent of the nation's total wetland area. The area supports the largest fin-fishery and shell-fishery in the country, and also provides one-sixth of the total national oil and gas supply.

For the past 10,000 years, the Mississippi Deltaic Plain has experienced net annual growth of 1 to 2 square miles due to continual inflows of sediment. Around 1900, however, the growth of the Mississippi Deltaic Plain halted, and the area subsequently began to experience severe wetlands losses. In 1987, the rate of wetland loss equalled nearly 60 square miles per year. The two main reasons for these losses are:

- Construction of flood control and navigation levees, which extend through the mouth of the river into the Gulf of Mexico and confine the river's waters and sediment to the river channel. The coastal wetlands are therefore deprived of littoral sediment nourishment.

- Construction of channels and canals for navigation and oil and gas production equipment and pipelines. These have directly destroyed wetlands by compacting soils, and indirectly destroyed them by altering the natural flow of water and nutrients.

While the Army Corps of Engineers and the state Department of Natural Resources have attempted to regulate the construction of canals and levees, these activities continue to threaten the coastal wetlands system.

The Solution

A group of concerned citizens and scientists prepared a report in 1986 to outline a comprehensive citizen strategy to confront the major causes of Louisiana coastal land loss. Forming the Coalition to Restore Coastal Louisiana, the group solicited public comments on the first draft, called "Coastal Louisiana: Here Today and Gone Tomorrow?" The strategy outlined in the report contained three major components:

- A series of freshwater and sediment diversion projects so that most sediments of the Atchafalaya and Mississippi Rivers will be used for delta building and wetland nourishment. The project would create a massive diversion structure above the mouth of the Mississippi that would separate the navigational channel of the river from its delta building function.

- A comprehensive wetland restoration program, such as dismantling dredge spoil piles, backfilling and plugging abandoned man-made canals, and restoring natural water flows, among other proposals. The report proposed that this be financed by pipeline and navigation fees, since oil and gas production has significantly contributed to coastal loss.

- Stricter regulatory controls on construction of new and expansion of existing navigation channels and oil and gas canals, with a goal of eventual phase-out of most canals.

As a result of the Coalition's efforts, members of the Louisiana congressional delegation introduced two bills in Congress to place Louisiana's land-use problem on the national agenda. The Coastal Wetlands Planning, Protection, and Restoration Act, a combination of the two bills, was passed by Congress in October of 1990. Major provisions of the Act are as follows:

- The Secretary of the Army will convene a task force to prepare and transmit to Congress a priority list of wetland restoration projects for the Louisiana coast.

- The task force will also prepare a comprehensive coastal wetlands restoration plan for Louisiana by November of 1993.

- The Army Corps of Engineers, the EPA, and the U.S. Fish and Wildlife Service will work with the Governor of Louisiana to develop and implement the plan.

- The Army Corps of Engineers was authorized to carry out projects to protect, restore, and enhance wetlands and aquatic/coastal ecosystems.

- The U.S. Fish and Wildlife Service will provide grants to any coastal state to implement wetlands conservation projects (i.e., projects to acquire, restore, manage, and enhance real property interest in coastal lands and waters), with a 50 percent cost sharing requirement.

Congress authorized up to $100 million for implementing the Act, and thus far $43 million has actually been appropriated in the FY 1991 and FY 1992 budgets.

FOR FURTHER INFORMATION

James T.B. Tripp, Robert Gorman, and Ross Vincent, "Restoring Coastal Louisiana: A Citizen's Initiative," The National Wetlands Newsletter, May-June 1987, Vol. 9, No. 3, pp. 13-15. Published by the Environmental Law Institute: (202) 328-5150.

MANAGING DEVELOPMENT AND MAINTAINING AFFORDABLE HOUSING IN OREGON

The Problem

Although noted for its beautiful and rugged coast, Oregon has lost a significant portion of its inland and coastal wetlands. Since the state was first settled, 43 percent of the tidal marshes along the lower Columbia River and more than one-third of the marshes near Coos Bay have been filled or drained. Growth pressures became particularly severe during the 1960s and 1970s, causing development to spread from urban districts to rural and environmentally sensitive areas.

By the early 1970s, Oregon recognized the need for a coordinated statewide growth management strategy. Advocates of a statewide approach believed such steps were necessary to protect rural and environmentally sensitive areas. At the same time, however, planners were concerned with the potential effect of growth restrictions on housing prices. The state would not accept a growth management plan that failed to consider housing needs for lower income residents.

The Solution

The state legislature, nonprofit organizations, and the general public joined forces to respond to Oregon's development and environmental concerns. In 1973, the legislature passed Senate Bill 100, which defined the state's land-use management policy. The bill was created by an ad hoc committee assisted by city and county representatives, businesses, and concerned citizens, and resulted in the establishment of 19 statewide planning and conservation goals. Four of these goals pertain specifically to the protection and controlled development of beaches, dunes, estuaries, and wetlands.

Under the state law, each local government must describe its long-range protection and development policies in a comprehensive land-use plan that is consistent with state goals. These plans must be approved by the state Land Conservation and Development Commission (LCDC). The LCDC periodically reviews the local plans to ensure that they continue to comply with statewide goals and to transmit to the local level any changes in state policies. The LCDC retains regulatory authority over statewide activities, including transportation, public schools, and sewage treatment and water supply facilities.

To maintain an inventory of affordable housing, the state included in its 19 goals a requirement that each local government prepare a "buildable lands inventory" and include in its comprehensive plan a residential zoning ordinance for persons of all incomes. Applications for development are reviewed on the basis of a fair allocation of needed housing. 1000 Friends of Oregon, a nonprofit organization, has helped to enforce these zoning requirements. By zoning efficiently in urban areas, Oregon has been able to establish urban growth boundaries around its cities. These allow space for residential, commercial, and industrial growth over the next 20 years, while at the same time preserving the open spaces, farms, and recreational areas beyond the boundaries.

FOR FURTHER INFORMATION

"Oregon's Coastal Management Program: A Citizens' Guide," Oregon Department of Land Conservation and Development, Salem, Oregon.

"Responding to the Marketplace: How Oregon's Land Use Planning Program has Benefitted Housing Consumers in the Portland Metropolitan Region," 1000 Friends of Oregon, October 25, 1982.

CALIFORNIA'S COASTAL PLAN: THE USE OF PLANNING AND ACQUISITION TO PROTECT COASTAL RESOURCES

The Problem

Seventy-five percent of California's 28 million people now live along the coast. This large population has placed a severe demand on the state's coastal resources, leading to a loss of open space, farms, and wetlands, restricted visual and physical access to the coast, and degradation of estuaries and near coastal waters. The California coast once included 300,000 acres of wetlands; today, fewer than 79,000 acres remain. In southern California alone, over 90 percent of the wetlands have been filled; the rest are significantly degraded.

The Solution

Recognizing the long-term problems associated with unmanaged growth, California in 1972 passed a "Save the Coast" initiative, which eventually led to the California Coastal Act of 1976. Under this act, every coastal city and county must prepare a local coastal plan (LCP) that describes its specific policies for protecting coastal resources and managing future development. The LCP must be approved by the California Coastal Commission (CCC) before it goes into effect. If the LCP is approved, responsibility for implementation is delegated to local authorities. The CCC directly plans and regulates development in coastal cities and counties that do not submit acceptable LCPs.

The Commission has extensive regulatory authority over land-use issues in the state. Its specific responsibilities include (1) ensuring that new development along the coast adheres to zoning regulations, (2) protecting marine and land resources and scenic views along the coast, (3) ensuring maximum public access to the coast, (4) maintaining productive coastal agricultural lands, and (5) locating industrial facilities to have minimal adverse environmental impact on the coast.

Two other state agencies are also charged with preserving the California coast. The State Coastal Conservancy is concerned with acquisition and restoration of environmentally sensitive areas, including wetlands and urban and rural waterfronts. It was established separately from the Commission because of its nonregulatory function. The other state agency, the San Francisco Bay Conservation and Development Commission (BCDC), regulates and controls development in the sensitive Bay region. Established in 1969, it predates the other state agencies and is one of the oldest coastal management agencies in the nation. By issuing permits for development within 100 feet of San Francisco Bay, San Pablo Bay, and Suisun Bay, the BCDC strives to provide public access to the coast and to control fills along shorelines or within wetlands or saltponds.

FOR FURTHER INFORMATION

"California's Coastal Plan: Larger-than-Local Interests Built into Local Plans," Journal of the American Planning Association, Summer 1985, Vol. 51, No. 3.

"A Comparison of California's Coastal Programs," "Changes in Development Design Along California's Coast as a Result of California's Coastal Program, 1973-1987," and "California's Fourteen Years of Coastal Zone Management," in Coastal Zone '87, Volume 4.

DOOR COUNTY, WISCONSIN, REVISES ITS ZONING ORDINANCE

The Problem

Door County, Wisconsin, the pristine peninsula that separates Green Bay from Lake Michigan, faces strong development pressure from tourism. Known as "Chicago's playground," the area's population of 26,000 grows to 41,000 during the peak months of July and August. The growth in population during the tourist season brings summer traffic jams and over-burdened septic systems. Pressure for further development has given rise to concerns that the existing zoning plan for the county allows unacceptable housing density, threatening the quality of life. Furthermore, the development community is concerned that existing county ordinances are unclear. Developers are willing to accept more stringent zoning standards if the new standards would enable them to more easily predict county approval of development projects.

The Solution

In response to these growth pressures, Door County is revising its zoning and land-use standards. Citizens of the peninsula have gathered in workshops to develop a new zoning plan that will (1) allow little or no development on environmentally sensitive lands, and (2) preserve open landscapes with rigid landscaping and buffering requirements.

Funding for the planning effort has been a major factor in its success. Of the total $180,000 appropriated for the project, $30,000 has come from a private source, which helped convince the County Board of Commissioners to support the initiative. This financial backing, along with the unanimous support and interest of local citizens and interest groups, has given Door County the opportunity to regulate development in ways that will ensure the peninsula's attractiveness to tourists in years to come.

FOR FURTHER INFORMATION

Kari Dolan and Heidi Bly Hendrickson, "Protecting the Coastal Zone Through Growth Management: The Experience of Five Coastal States," prepared for the National Network for Environmental Management Studies, U.S. Environmental Protection Agency.

PROTECTING FLORIDA'S COASTAL WATERS: COMPREHENSIVE PLANNING FOR THE FUTURE

The Problem

Florida's population boom poses a severe threat to the state's shore. In addition to new residents -- who typically flock to coastal areas -- 40 million tourists visit Florida each year, placing considerable stress on the shoreline environment. Development has already led to significant losses of wildlife habitat, and point and nonpoint source pollution, particularly from large-scale developments, threatens coastal water quality. In addition, many developments have restricted public access to the shore, limiting recreational opportunities for residents and tourists alike.

The Solution

Florida is now attempting to manage growth in coastal areas through land-use legislation that requires state, regional, and local comprehensive planning.

Under the County and Municipal Planning and Land Development Act of 1985, also known as the Growth Management Act (GMA), all of the state's local governments must by July 1991 submit comprehensive plans for state review. This Act strengthened the previous Local Government Comprehensive Planning Act by requiring local governments to develop and adopt local comprehensive plans that are consistent with the State Comprehensive Plan. The GMA also introduced incentives for completing plans and mandated penalties for noncompliance.[6]

Under the GMA, Florida's Department of Community Affairs oversees the state's growth management policies. It reviews and approves initial local and regional plans, delegates planning to local and regional governments, and subsequently serves as the land-use appeals board. The Department used its authority under the Florida Administrative Code to develop and adopt a rule, 9J-5, outlining minimum criteria for the review of local plans.

Florida's Regional Planning Councils also play an important role in implementing the GMA. Regional Planning Councils act as liaisons between local and state governments, review and approve of proposed developments that will have impacts outside county boundaries, provide technical guidance to local

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[6]Problems with the earlier planning act (the Local Government Comprehensive Planning Act of 1975) included:

- The lack of a binding State Comprehensive Plan to provide consistency across local plans
- Frequent amendments to local plans to accommodate development
- Inadequate funding for both the preparation and implementation of local plans
- The lack of minimum quality standards across local plans, resulting in some local plans with vague and ineffective language and guidelines.

Passage of the 1984 State and Regional Planning Act required the preparation of state and regional comprehensive plans, providing the basis lacking in the earlier Act for consistent local plans.

jurisdictions, and act as mediators between counties. Furthermore, the GMA stipulates that if a local government does not develop its own plan, the Regional Planning Council will develop a plan for it.

The GMA has attracted national recognition for its success at integrating state, regional, and local land-use planning. The Act requires that regional and local government comprehensive plans contain a coastal element that is consistent with state goals. These goals address coastal protection, fair housing, and energy and transportation concerns. The GMA also requires that service infrastructure -- for example, transportation, water, and sewer -- be in place while development is occurring, not afterwards.

In addition to complying with plans developed under the GMA, large-scale developments in Florida must be reviewed and approved by the Department of Community Affairs and a regional planning council. This process, mandated by the Developments of Regional Impact (DRI) provision of the Environmental Land and Water Management Act of 1972, forces local governments to assess the regional impacts of large-scale developments, which are usually major contributors to point and nonpoint source pollution. A DRI review is required for projects such as shopping centers, airports, and hospitals.

Some of Florida's other growth management efforts include:

- The Coastal Zone Protection Act of 1985, which established a coastal construction control line 50 feet above the shoreline and a stringent coastal building zone. Although intended to prevent erosion, this act also helps to protect near coastal water quality.

- The Florida Coastal Management Plan, mandated under the federal Coastal Zone Management Act of 1972 and federally approved in 1981, which designates the entire state as a coastal zone. It sets policy goals and acts as a guide to coastal protection.

- Five regional water management districts, which were established in 1972. These districts receive federal, state, and local funding, and have the authority to levy taxes on property in their districts.

- Two land acquisition programs, Conservation and Recreational Lands and Save Our Coast, which are administered by the Department of Natural Resources. These programs purchase lands to act as buffers between development areas and near coastal waters. Typically comprised of wetlands and grassy areas, the buffers filter pollutants and runoff before they reach the water.

- The Areas of Critical State Concern (ACSC) program, which was established by the Environmental Land and Water Management Act of 1972. ACSCs are protected through stringent development restrictions. Once an area is designated as an ACSC by the Governor (and approved by the Legislature), planning in the area must comply with special land-use and development regulations. The four current ACSCs are:

  - Big Cypress ACSC, an area of more than 800,000 acres, which was the first region to be designated by the program in 1973. Comprised of estuaries and a freshwater aquifer, the area is ecologically linked to Everglades National Park. Development restrictions have also been placed on urbanizing areas in the region.

  - The Green Swamp ACSC, an area of 323,000 acres designated in 1974, which includes important wetlands and is a critical water recharge area for the Floridian Aquifer. When designated, it was threatened by the rapid development in and around the Disney World entertainment complex.

- The Florida Keys ACSC, which was designated in 1974 and includes a chain of 97 environmentally fragile islands off the lower tip of Florida. Unlike other ACSCs, the Keys were already highly developed, and the ACSC designation faced some local opposition. Key West, which faced strong development pressure, was removed from the ACSC list from 1981 to 1984.

- The Appalachicola Bay area, which was designated as an ACSC in 1985. This area supports the harvest of four to six million pounds of oyster meat annually, supplying 90 percent of the state's and 10 percent of the nation's annual harvest. Controls on development within this ACSC include prohibiting septic tanks and alternative wastewater treatment systems within 75 feet of wetlands. This prohibition prevents degradation of the bay, its watershed, and its economic resources.

FOR FURTHER INFORMATION

"Florida's Growth Management System: A Blueprint for the Future," Florida Environmental and Urban Issues, Volume 14, October 1986.

Robert D. Yaro, et al., State and Regional Growth Management Initiatives: Lessons for Massachusetts, Center for Rural Massachusetts, December 1987, pp. 13-21.

Tom Lewis, Jr., "Florida's Growth Management Program: Leading the Nation," Florida Department of Community Affairs, August 1986 (unpublished paper).

Nancy Stroud and Daniel O'Connell, "Florida Toughens Up its Land-Use Laws," Planning, January 1986, 52(1): 12-14.

TRANSFER OF DEVELOPMENT RIGHTS IN HOLLYWOOD, FLORIDA

The Problem

As elsewhere in the state, the influx of tourists and new residents to Hollywood, Florida, threatened its coastal resources. The city was particularly concerned with preserving North Beach Park, a 1,400-acre coastal area. This land was the last substantial strip of undisturbed dune-shoreline left in Broward County, but was owned by Hollywood, Inc., a development company.

The Solution

In 1982, the city of Hollywood initiated a mandatory transfer of development rights program for North Beach Park. As described elsewhere in this guide, a TDR program encourages or requires developers to forego development of sensitive areas in exchange for the right to more fully develop other sites.

Hollywood, Inc. took the city to court, and won a ruling that the mandatory TDR program constituted a "taking" of private property by the city.[7] The state Superior Court, however, overturned the ruling, upholding the TDR as constitutional. Partially influenced by the listing of North Beach Park as a priority of Save Our Coasts (a state Department of Natural Resources acquisition program), the court said that, under its police powers, a city could establish certain natural preserve areas. In addition, the court found that the case was not a taking because no development had taken place.

The TDR subsequently negotiated for the property allowed extra-density development on the landward side of Highway A1A in order to prevent development on the coastal side of the highway. The developer was allowed a permit for one structure and given substantial monetary compensation. The city-owned coastal area is now used as open and recreational space. To minimize damage to undisturbed dunes, parking areas have been restricted to previously disturbed sites, and walkways have been constructed over pristine areas.

FOR FURTHER INFORMATION

Kari Dolan and Heidi Bly Hendrickson, "Protecting the Coastal Zone Through Growth Management: The Experience of Five Coastal States." Prepared for the National Network for Environmental Management Studies, U.S. Environmental Protection Agency.

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[7]The taking issue is discussed in detail in Appendix D.

WISCONSIN'S SHORELAND AND FLOODPLAIN ZONING PROGRAM

The Problem

Wisconsin has recently undergone a transformation along its Great Lakes waterfronts. The traditionally important industrial sector has declined, while tourism and recreation have become major contributors to the coastal economy. These factors have led to a need to restructure ports and waterfronts. At the same time, the replacement of septic systems with wastewater treatment plants has encouraged denser development in coastal areas.

Because tourism and recreation rely on a clean environment, public concern for preservation of Wisconsin's shorelands has increased. Rising lake levels in 1986 led to erosion problems along the Great Lakes shores, emphasizing the importance of controlled near-coastal development. The state is also concerned with the effect of nonpoint source pollution on water quality. The pesticides and other pollutants associated with nonpoint sources may contaminate recreational waters and threaten the Great Lakes fishing industry.

The Solution

Wisconsin manages growth along its Great Lake shores under the provisions of the state's Water Resources Act, which requires communities to adopt shoreland and floodplain zoning. Development within a specified distance of any lake, river, or wetland is regulated by the Wisconsin Department of Natural Resources (DNR). The DNR provides mapping and technical training, oversees the adoption of zoning ordinances by local governments, and creates ordinances for communities that fail to develop their own. The DNR is also responsible for the Nonpoint Source Water Pollution Abatement Program, which was designed to reduce pollution of the Great Lakes by pesticides, herbicides, sediments, and nutrients carried in urban and agricultural runoff. The program selects critical drainage areas as priority watersheds for intensive evaluation.

The state also has nine regional planning commissions (RPCs) that advise local governments during the development and preparation of their zoning ordinances and land-use plans. The RPCs have been instrumental in initiating and implementing the Environmental Corridor System (discussed in the following case). RPCs are funded by state and federal grants and from taxes collected by the counties within their regions.

In addition to the initiatives described above, Wisconsin also operates the Wisconsin Coastal Management Program, a federally approved coastal management effort that supports port revitalization and waterfront redevelopment projects. It assists and provides funding for local and regional efforts in coastline mapping, development of comprehensive shoreline/floodplain management plans, economic development, and technical training.

FOR FURTHER INFORMATION

"Wisconsin State Land Use Policies and Programs," Office of State Planning and Energy, Wisconsin Department of Administration, April 1978.

PROTECTION THROUGH LAND ACQUISITION: SHEBOYGAN, WISCONSIN'S PIGEON RIVER CORRIDOR

The Problem

In the 1960s, population growth and development pressures in the city of Sheboygan were leading to the loss of open space and decreased access to recreational waters. These factors were also contributing to pollution of the Pigeon River, which flows through Sheboygan before entering Lake Michigan.

The Solution

To protect water quality and preserve open space, Sheboygan created the Pigeon River Environmental Corridor, an area that provides a buffer between development and the river.

By gradually acquiring property along the river over the last 25 years, the city has assembled a publicly owned corridor of several hundred acres. Land has been acquired through direct city purchase and contributions received from private land owners and developers. One such donation led to the creation of a 135-acre environmental park.

The Pigeon River Environmental Corridor has succeeded in both preserving open space and protecting water quality. The success of the effort is due to several factors:

- The Pigeon River area offers a highly visible natural environment to the residents of Sheboygan.
- Direct acquisition and state-mandated zoning requirements give the city a high degree of control over development.
- Federal and state funds have supplemented local acquisition efforts.
- The perseverance of city officials and public interest groups has maintained strong community interest and support.

FOR FURTHER INFORMATION

Kari Dolan and Heidi Bly Hendrickson, "Protecting the Coastal Zone Through Growth Management: The Experience of Five Coastal States." Prepared for the National Network for Environmental Management Studies, U.S. Environmental Protection Agency.

USING COMPREHENSIVE PLANNING AND TRANSFERS OF DEVELOPMENT RIGHTS (TDRs) TO PROTECT THE NEW JERSEY PINE BARRENS

The Problem

The New Jersey Pine Barrens is a unique landscape comprised of bogs, cedar swamps, sandy flats, and forests of oak and pine. The area is home to 850 species of plants and more than 350 species of birds, mammals, reptiles, and amphibians. Among its more unusual inhabitants are the rare curly grass fern, forests of "pygmy" pine trees that grow only four to six feet tall, and the Pine Barrens tree frog.

The increase in New Jersey's population after World War II, in combination with accelerated migration to suburban and rural areas, resulted in rapid growth and development in some parts of the Pine Barrens. Although conservation of the Pine Barrens had been a subject of public interest since the 1950s and '60s, the large size of the area hindered efforts of concerned citizens. When the arrival of casino gambling in Atlantic City triggered a round of real estate speculation in the late 1970s, further development posed an even greater threat to the region.

The Solution

Congress passed the Pinelands National Reserve Act in 1978, creating a 1-million-acre reserve for which a federal, state, and local partnership would prepare a comprehensive management plan. To aid in the acquisition of especially sensitive lands within the area, the federal legislation also provided up to $26 million for land purchases. The State of New Jersey then established the Pinelands Planning Commission and imposed temporary controls on development. The 15-member commission was, and is today, comprised of seven members appointed by the Governor, one member representing each of the seven reserve counties, and one designated by the Secretary of the Interior.

The Pinelands Planning Commission ultimately adopted a plan that would preserve the environmentally sensitive core of the Pine Barrens and redirect development to designated growth areas. Under the comprehensive management plan (CMP) issued in 1980, all land and water resources within the Pinelands Area fall into one of eight basic land-use categories. The Pinelands plan sets limits on the type and amount of development activity that can take place within each of these categories. For example, a 300-foot buffer zone is required around most wetlands, and development for nonagricultural purposes is strictly limited.

State and federal funds were used to acquire the most sensitive lands (based on criteria established by the CMP), and by May 1989 more than 56,000 acres had been purchased. Much of the most heavily restricted land was not slated for acquisition, however, and landowners prohibited from developing their property faced potential losses in property value. Landowners in growth regions, by contrast, could expect to see a rise in the value of their property. To address this inequity and allow owners of land with restricted uses to share in the rise in land values expected elsewhere, the CMP laid out a system of transferable development rights (TDRs). This system enables landowners with property in the three most restrictive land-use categories to sell development credits to those wishing to build housing in specified growth areas. When they redeem the credits that they have purchased in this manner, developers are permitted increases in the baseline housing densities specified in zoning ordinances that apply to the growth areas. Typically, municipalities establish ranges for their growth areas, specifying both the base number of housing units per acre and the maximum number of housing units that may be obtained through the use of purchased development credits (this increase in units is referred to as "bonus density").

Upon application to the Pinelands Commission, property owners with vacant land in protected areas may be assigned Pineland development credits (PDCs). The allocation of PDCs is intended to reflect general differences in property values, recognizing a distinction between uplands and wetlands and between unfarmed lands and agricultural lands. Once a landowner obtains PDCs, a deed restriction limits future uses of the property in perpetuity. Among the foregone uses, which depend on the land-use category, are new residential or commercial development, resource extraction, and intensive recreation. Landowners may then sell the PDC's to developers or to a credit bank, or may leave the PDCs attached to the property and sell both together.

Developers building new homes in regional growth areas can use PDCs to increase the number of dwelling units per acre in specified zones. The local zoning map identifies PDC "receiving areas;" the density ranges and requirements for using PDCs in particular zoning districts are found in municipal land use ordinances.

One cause for concern as the plan has been implemented has been the relatively low rate at which PDCs are being used in relation to the total amount of development taking place in the region. Developers do not appear to be sufficiently constrained by the base zoning densities to seek density increases through the use of PDCs. Two causes for the low demand have been suggested. The first is the availability of sewer systems in the regional growth areas. Most municipal zoning ordinances require sewer service for development at PDC densities, but many designated growth areas are not yet served by municipal wastewater facilities. The second is relatively low growth pressure in the regional growth areas, possibly due to inaccurate estimates of the amount of business generated by Atlantic City, insufficient downzoning of the growth areas, or the fact that people may not view living closer to developed areas as a desirable alternative to living in the remote areas being protected.

Although federal seed money was an important component of the project, the Pinelands offers a good example of the delegation to local jurisdictions of responsibility for the implementation of a regional land-use plan. Given the large area addressed by this plan, the number of counties and municipalities involved, and the diverse and locally distinct interests of affected individuals, regional oversight of local decisionmaking is a logical division of authority. Not all plans involving transferable development rights will necessarily be of this scope, however. Redirecting growth away from wetlands or coastal areas could be achieved with development rights allocated and redeemable within a single county or municipality.

FOR FURTHER INFORMATION

"The Pinelands of New Jersey," The Pinelands Commission, 1985: (609) 894-9344.

B.R. Collins and Emily W.B. Russell, eds., Protecting the New Jersey Pinelands, New Brunswick, NJ: Rutgers University Press, 1988.

John Ross, Pinelands Development Credit Bank: (609) 588-3450.[8]

[8]This case study was also based on personal communication with Mr. Ross, 17 May 1989.

While land-use policy is generally determined at the local level, numerous federal efforts, both regulatory and nonregulatory, play a role in the protection of coastal and wetlands resources. Some of these programs prohibit certain activities in coastal and wetlands areas, and regulate or require permits for other activities. Other programs establish funds for federal acquisition of sensitive areas or provide funds to assist the states with their wetland or coastal protection efforts. Still others seek to direct development through the use of financial incentives or penalties.

Federal legislation, programs and initiatives help to shape the ways in which local governments can act to protect critical environmental areas. Local policy should be developed in concert with federal programs to avoid duplication, to prevent contradiction, and to take advantage of complementary relationships, potential funding, or technical assistance. This appendix briefly examines legislation, programs, and policies that are among the more important federal efforts to protect coastal and wetlands resources.

WETLANDS PROTECTION

Clean Water Act Section 404

- **Overview**

The U.S. Congress enacted the Clean Water Act to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Section 404 of the Clean Water Act regulates the discharge of dredged and fill material into waters of the United States, and establishes a permit program to ensure that such discharges comply with environmental requirements.[1] The Section 404 program is administered at the federal level by the U.S. Army Corps of Engineers (the Corps) and EPA. The U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) have important advisory roles. The Corps has the primary responsibility for the permit program and is authorized, after notice and opportunity for a public hearing, to issue permits for the discharge of dredged or fill material. States can assume a portion of the permitting program from the federal government (for some waters only), but there has been limited interest by the states. EPA has the primary role in several aspects of the Section 404 program, including development of the environmental guidelines by which permit applications must be evaluated; review of proposed permits; prohibition of discharges with unacceptable adverse impacts; approval and oversight of State assumption of the program; establishment of the jurisdictional scope of waters of the United States; and interpretation of Section 404 exemptions. Enforcement authority is shared between EPA and the Corps.

[1]"Dredged material" is that which is excavated from the bottom of a waterbody.

The Section 404 program is broadly recognized as the most significant federal regulatory program affecting wetlands. However, Section 404 is not a comprehensive wetlands protection program; it does not regulate all activities that harm or affect wetlands.

- **Geographic Scope of Section 404**

Like other Clean Water Act programs, the jurisdiction of Section 404 extends to all waters of the United States. This phrase includes waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including:

- All waters that are subject to the ebb and flow of the tide
- The territorial sea
- Interstate waters and wetlands
- All other waters (such as intrastate lakes, rivers, streams, and wetlands), if their use, degradation, or destruction could affect interstate or foreign commerce
- Tributaries to waters or wetlands identified above
- Wetlands adjacent to waters identified above.

In determining waters that are within the scope of the Clean Water Act, Congress intended to assert federal jurisdiction to the broadest extent permissible under the commerce clause of the Constitution. One factor that establishes a commerce connection is the use or potential use of waters for navigation. Other factors include (but are not limited to) use of a wetland (or other water) as habitat by migratory birds, including waterfowl, use by federally listed endangered species, or recreational use by interstate visitors.

Section 404 program regulations define wetlands as "those areas that are inundated or saturated with surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." In applying this definition in the field, government scientists use indicators of vegetation, soils, and hydrology to identify wetlands and to establish their boundaries. Wetlands can be coastal or inland, saltwater or freshwater. Around the country, wetlands may be known by a variety of names, including swamps, marshes, bogs, potholes, sloughs, fens, mangroves, pocosins, wet meadows, savannahs, wet tundra, playa lakes, and vernal pools.

- **Activities Regulated by Section 404**

Discharges of dredged and fill material are commonly associated with activities such as port development, channel construction and maintenance, filling wetlands to create development sites, transportation improvements, and water resource projects (such as dams, jetties, and levees). Other kinds of activities, such as landclearing, are regulated as Section 404 discharges if they involve discharges of dredged or fill material into waters of the United States. However, some activities that can adversely affect and even destroy wetlands, such as drainage and ground water pumping, are often conducted without discharging dredged or fill material into waters of the United States and, therefore, are not regulated under Section 404.

The federal Clean Water Act also includes specific exemptions from permitting requirements for certain activities (§404(f)(1)). These activities include:

- Normal farming, silviculture, and ranching practices

- Maintenance, including emergency reconstruction of recently damaged parts of currently serviceable structures such as dikes, dams, levees, groins, rip rap, breakwaters, causeways, bridge abutments or approaches, and transportation structures

- Construction or maintenance of farm or stock ponds or irrigation ditches, or the maintenance (but not construction) of drainage ditches

- Construction of temporary sedimentation basins on a construction site that does not include placement of fill material into waters of the United States

- Construction or maintenance of farm or forest roads or temporary roads for moving mining equipment if best management practices are followed.

Section 404(f)(1) is applied narrowly and is not intended to exempt activities with more than minor impacts on aquatic resources. Under the recapture provision at Section 404(f)(2), the exemptions do not apply if the discharge is part of, or incidental to, an activity whose purpose is to convert an area of the waters of the United States into a use to which it was not previously subject, where the flow or circulation of waters of the United States may be impaired or the reach of such waters reduced. This limitation on the Section 404(f) exemptions would, for example, require a farmer to obtain a permit for a discharge to convert a wetland area to produce upland crops.

The Clean Water Act provides another limited exemption under Section 404(r) for projects specifically authorized by Congress. To be covered under this exemption, an environmental impact statement under the National Environmental Policy Act must be prepared on the project and submitted to Congress. The statement must contain information on the effects of the discharge on environmental values protected by Section 404, including consideration of the Section 404(b)(1) Guidelines.

- **Introduction to the Permit Process**

Discharges can be authorized by either individual or general permits. If an individual permit is required, an application form describing the proposed activity is submitted to the Corps (or to a state agency if the program has been assumed from the federal government). Once a complete application is received, the permitting agency issues a public notice containing the information needed to evaluate the likely impact of the proposed activity. Notice is sent to all interested parties, including adjacent property owners, appropriate government agencies at the federal, state, and local level, and others as requested. Any person may request that a public hearing be held to consider the application.

General permits, authorized by Section 404(e), eliminate the need for individual permits for certain similar activities that are believed to cause minimal adverse environmental effects, either individually or cumulatively. General permits may be issued on a state, regional, or nationwide basis, and are developed using the same public notice and public hearing process that is used for an individual permit. Once issued, a general permit may be modified or revoked if the permitted activities are found to have an adverse environmental impact. In some instances, the discharger must notify the Corps prior to discharging under the authority of the general permit. On a case-by-case basis, the permitting agency may invoke discretionary authority and require a discharger that would otherwise be covered by a general permit to apply for an individual permit.

- **Making the Permit Decision**

The Corps' evaluation of a Section 404 permit application is a two-part test that involves (1) determining whether the project complies with the Section 404(b)(1) Guidelines (the Guidelines) and (2) a public interest review. A permit must be denied if the project fails to comply with the Guidelines or is found to be contrary to the public interest.

The Corps' public interest review is a balancing test in which the public and private benefits of a project are weighed against its adverse impacts to the environment. It includes such considerations as

aesthetics, recreation, historic values, economics, water supply, water quality, energy needs and flood damage prevention. The Corps also considers all comments received in the permit process, whether in response to a public notice or a public hearing, in arriving at a final permit decision. As part of this evaluation, the Corps conducts an environmental assessment under the National Environmental Policy Act (NEPA) to determine whether the project has significant environmental impacts.

The Section 404(b)(1) Guidelines, published by EPA in conjunction with the Corps, contain substantive environmental criteria used in evaluating discharges of dredged or fill material. Reflecting the goals of the Clean Water Act, the Guidelines establish key policies for the Section 404 Program:

- Dredged or fill material should not be discharged into waters of the United States unless it can be demonstrated that such a discharge will not have an unacceptable adverse impact (individually or cumulatively) on the aquatic ecosystem.

- From a national perspective, the degradation or destruction of special aquatic sites, such as filling operations in wetlands, is considered to be among the most severe environmental impacts addressed by Section 404.

To implement these policies, the Guidelines include a number of key requirements. One states that no discharge can be permitted if there is a practicable alternative with less adverse impact on the aquatic environment (unless the identified alternative poses other significant environmental problems). This alternatives test is applied more rigorously (i.e., alternatives are presumed to exist) when the project is not water-dependent and involves special aquatic sites. For example, boat docks in a marina require water access and are water-dependent; a restaurant is not. Special aquatic sites include wetlands, coral reefs, mud flats, riffle and pool complexes in streams, vegetated shallows, and sanctuaries and refuges. However, the Guidelines require a demonstration that no practicable alternatives exist (as discussed above) for both water-dependent and non-water-dependent projects.

The Guidelines prohibit discharges that would violate other applicable laws, such as state water quality standards, toxic effluent standards, or the Endangered Species Act. The Guidelines also prohibit any discharge that would cause or contribute to significant degradation of waters of the United States. In addition, discharges are permitted only if all appropriate and practicable steps are taken to minimize any adverse impacts of the discharge on the aquatic ecosystem, including compensating for unavoidable impacts (see Chapter 4 under Performance Standards for a further discussion of mitigation).

Finally, compliance with Section 401 of the Clean Water Act is also required prior to issuance of a permit to discharge. Section 401 requires certification from the state in which an activity occurs that the activity proposed will meet the state's water quality standards. States effectively waive the right to certify by not taking action within a specified time period. Similarly, a coastal state must concur that the activity meets the requirements of its coastal zone management program (CZMP) or waive its right to concur by not taking action within a specified time. States develop CZMPs under the Coastal Zone Management Act (1972).

ADVANCE IDENTIFICATION OF DISPOSAL SITES

The individual permit process under Section 404 is sometimes an intensive, time-consuming and controversial case-by-case evaluation process. Section 230.80 of the Section 404(b)(1) Guidelines provides for a planning process that can streamline decisionmaking by generating information in advance that can be used by the regulated and general public to plan and prepare for potential wetlands projects. Such information can include general locations and values of U.S. waters and potential threats and impacts to those values. This process usually results in maps that indicate where discharges to U.S. waters, including wetlands, may be generally suitable or unsuitable.

The advance identification (ADID) process is conducted by the EPA and the Corps of Engineers (or any state that has assumed the Section 404 permitting responsibilities). Consultation with appropriate state and local governments typically results in a much better outcome and is encouraged by both EPA and the Corps.

Since the ADID process can require a substantial amount of staff time and funds, it is usually conducted for areas that have important resource value and are under development pressure. Because attempts are made to limit the geographic extent of the ADID to a manageable size, the area that is studied and mapped is typically a small portion of a watershed.

At minimum, the ADID process results in designation of areas as generally suitable or unsuitable for use as a discharge site. For the most valuable areas, additional actions may include state or local land-use or regulatory restrictions, or the use of EPA's Section 404(c) authority to restrict or prohibit discharges to a defined area. For areas judged suitable for disposal, the Corps may issue general permits for certain activities.

- **Addressing Unacceptable Adverse Impacts**

Under the authority of Section 404(c), EPA may prohibit, withdraw, or restrict the discharge of dredged or fill material into waters of the United States if the discharge would have unacceptable adverse effects on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas. EPA typically exercises its veto authority following the issuance of Corps permits, though it may also do so in the absence of a specified permit application or Corps regulatory action. In this instance, EPA may conduct a Section 404(c) action in conjunction with an advance identification action, during formulation of a special area management plan, or where otherwise appropriate.

In recent years, EPA has taken an increasingly active role in the Section 404 program. One area of stepped-up activity has been under Section 404(c) veto authority. Between 1983 and early 1988, EPA initiated 13 actions to veto or restrict a proposed project. This represents an important increase in activity, as EPA had used Section 404(c) only once between 1972 and 1983.

EPA works with the Corps during the permit decision process whenever possible to ensure that unacceptable adverse impacts are avoided, and most concerns are resolved through this interagency consultation. The Corps and EPA have developed a process through a memorandum of agreement (MOA) to quickly resolve any differences over permit decisions. In instances where there has been insufficient interagency coordination, significant new information has been developed, or the proposed project raises environmental issues of national importance, this MOA allows EPA's Assistant Administrator for Water to request that the Army's Assistant Secretary for Civil Works elevate the proposed permit decision to higher authority for review. The FWS and the NMFS have similar agreements with the Corps.

- **Enforcement**

In jointly administering the program, the Corps and EPA share responsibility for enforcing the Section 404 program. The Corps, as the permitting agency, has primary responsibility for monitoring and enforcement of compliance with authorized Section 404 permit conditions. EPA can also enforce against noncompliance with permit conditions; however, EPA generally focuses its resources towards enforcing unpermitted (unauthorized) discharges. Anyone in violation of the Section 404 program, either by conducting an unauthorized activity or by violating permit conditions, is subject to civil and/or criminal action. Penalties can be imposed by the agencies administratively (i.e., without use of judicial procedures). When judicial action is pursued, the violator may be required to restore the site and may be subject to payment of fines, imprisonment, or both. The agencies and the courts also frequently require restoration of the site and/or mitigation at the expense of the violator, often in addition to other penalties.

ENFORCEMENT

Enforcement is a necessary component of an effective regulatory program. EPA and the Corps share Section 404 enforcement authority. Section 309 of the Clean Water Act gives EPA the authority to act against persons who discharge without a permit and also to enforce against violations of Section 404 permit conditions. Section 309 also provides EPA with a variety of enforcement mechanisms. For example, an administrative compliance order issued pursuant to Section 309(a) generally requires a violator to stop all illegal discharges and, where appropriate, to remove the fill and/or restore the site. Section 309(g) authorizes EPA to assess administrative civil penalties for, among other things, violations of Section 404. A third enforcement mechanism allows EPA to seek monetary penalties, injunctive relief, and even prison sentences through judicial action pursuant to Sections 309(b) and (c). Under these Sections, EPA may refer cases to the Department of Justice for criminal and/or civil litigation.

A Section 404 enforcement case frequently begins with EPA receiving information regarding a potential violator from a citizen or local official. Violations are also discovered by state, EPA or Corps staff, or other federal personnel while in the field on other routine business. Thus, state and local officials/residents can serve as the "eyes and ears" of EPA in recognizing and reporting potential Section 404 violations. States may also assume the Section 404 program, including enforcement; however, even where states assume the program, the Corps maintains permitting authority in traditionally navigable waters.

- **The Citizen's Role**

The concerned and informed citizen can play an important role in the protection of wetlands. Once familiar with nearby wetlands and other aquatic resources, citizens can provide comments during public notices for Section 404 permit applications, or on proposed regulations implementing environmental programs at the federal, state, or local level. In addition, citizens can provide an essential service by notifying either the Corps or EPA when unpermitted wetland filling is seen, or when it is believed that permit conditions are being violated.

- **Additional Information**

Because the Section 404 program is complex, and application of regulations and policies to specific cases is often site-specific, the reader may want to contact local offices of EPA or the Corps for additional information. See Appendix E for appropriate contacts.

Rivers and Harbors Act (1899)

The Rivers and Harbors Act of 1899 regulates all construction in or modification of traditionally navigable waters. In many respects, its provisions are similar to those of Section 404 of the Clean Water Act. For example, Section 10 of the Rivers and Harbors Act requires permits issued by the Army Corps of Engineers for any dredging, filling, or obstruction of navigable waters. Sections 9, 11, and 13 are also relevant to some activities in coastal and wetlands areas. When a project requires applications for permits under both the Clean Water and River and Harbors Acts, the Corps often conducts the two permit reviews concurrently.

Despite its similarity to Section 404, the Rivers and Harbors Act differs from Section 404 in two important ways. First, the activities it covers are much broader than those regulated under Section 404. Second, its jurisdiction extends only to the high water line. As a result, the Rivers and Harbors Act offers the federal government potentially greater regulatory authority within areas covered, but does not apply to all areas regulated under Section 404.

The National Wetlands Policy Forum

Through the Conservation Foundation, EPA in 1987 convened the National Wetlands Policy Forum, organized to discuss major policy concerns about how the United States should protect and manage its wetlands. The Action Agenda developed by the Forum includes three general categories of recommendations:

1. Protecting the resource. The achievement of no net overall loss of wetland acreage, and, over the long term, the increased quantity and quality of overall wetland acreage, should be national goals. This will require both reduced losses and greater restoration.

2. Improving the protection and management process. The wetlands protection process should become more effective and efficient, to reduce delay, frustration, and cost. Implementation might include a Wetlands Conservation Plan tailored for each state that would provide a basis for all subsequent regulation, acquisition, or other activities, more public education and improved regulatory programs.

3. Implementing the Forum's recommended program. Any delays in implementation of more effective and efficient wetlands protection measures will result in unnecessary costs -- both in lost wetlands and in inefficient regulations.

National Environmental Policy Act (NEPA)

The National Environmental Policy Act of 1969 requires consideration of the adverse impacts on environmental resources caused by any federal action, including federally funded or permitted projects. It also requires examination of alternatives to minimize those impacts. Compliance with NEPA is an additional requirement to regulatory programs such as Section 404 of the Clean Water Act when federal agencies or federal monies are involved in a proposed project. Environmental investigations carried out in accordance with NEPA are documented in an environmental assessment or an environmental impact statement.

Food Security Act (1985)

The "swampbuster" provision of the Food Security Act of 1985 discourages the conversion of wetlands to farmland by making any person who produces crops on wetlands converted after December 23, 1985, ineligible for most federal farm benefits. These benefits include price-support payments, farm storage facility loans, crop insurance, disaster payments, and insured and guaranteed loans.

A second provision of the Food Security Act is the Conservation Reserve Program (CRP). This program is designed to remove highly erodible croplands from production. Landowners wishing to enter any of their land in the CRP sign 10-year agreements with the Department of Agriculture. Participants receive annual payments, as well as 50 percent federal cost-sharing for the establishment of vegetative cover. While CRP was not initially designed for wetlands protection, wetlands have been added to the program; approximately 500,000 acres of wetlands had been enrolled by 1989.[2]

Another provision of the Act that may aid in the protection of wetlands is the Farm Debt Restructure and Conservation Set-Aside. This provision allows the Secretary of Agriculture to grant partial debt relief to Farmers Home Administration (FmHA) borrowers in exchange for 50-year conservation easements on selected acres.

A related provision pertains to the resale of land in the Farmers Home Administration inventory. The inventory consists of lands whose owners defaulted on their loans to the FmHA. Section 1314 of the Act allows the Secretary to grant or sell easements, deed restrictions, or development rights to inventory lands to local governments or nonprofit organizations prior to offering sale of the properties to other parties. Actual implementation of this provision has not yet occurred. However, since there are currently approximately 1.7 million acres of property (a number expected to expand significantly) in the FmHA inventory, this provision could have sizeable impact.

Department of Agriculture ASCS Water Bank Program

Since 1972, the U.S. Department of Agriculture's Agricultural Stabilization and Conservation Service (ASCS) has offered landowners payments in exchange for agreements to maintain wetlands on their property. The participating landowners sign 10-year easement contracts to keep wetlands and other wildlife habitats in their natural state. Most of the lands in this "water bank" are in areas important to waterfowl in the central flyway and parts of the Mississippi River flyway.

Congress appropriated $8.3 million to the Water Bank program in each of fiscal years 1986 through 1988, and $9 million in FY 1989.[3] The money is allocated to the states, who distribute it to the counties. Lands eligible for the program are determined by ASCS county personnel.

Emergency Wetlands Resources Act (1986)

The 1986 Emergency Wetlands Resources Act expands and enhances the sources of funds for wetlands acquisition. The law also directs the Secretary of the Interior to develop, in consultation with EPA

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[2]Frank Dunkle and Bob Misso, "Farm Bill-Related Wetland Protection and Restoration Opportunities," National Wetlands Newsletter, January-February 1988, Vol. 10, No. 1, p.3.

[3]Millie Crabtree, Water Bank Program, Agricultural Stabilization and Conservation Service, U.S. Department of Agriculture. Personal communication, 22 June 1989.

and other federal and state agencies, a National Wetlands Priority Conservation Plan that identifies the type of wetlands and wetland interests to be given priority for federal and state acquisition.[4] To implement the Act, the Fish and Wildlife Service developed the National Wetlands Priority Plan, which uses several threshold criteria to identify wetlands that should be given priority for federal and state acquisitions.

The evaluation of wetland areas is delegated to the 10 EPA Regions. Each Region considers criteria such as the immediacy of the threat to the wetland, the function and value of the wetland to wildlife, and whether the wetland is contiguous with other valuable habitat areas. A wetland area adjacent to other protected wildlife refuges, for example, may be given funding priority over an isolated prairie pothole. Whether the wetland area is fully acquired or partially restricted with easements or other protective devices depends on the available funding, the likelihood of development, and the value of the wetland to wildlife and public recreational use.

Executive Orders 11988 and 11990

In 1977, President Carter signed two Executive Orders affecting federal agency actions with respect to wetlands. Executive Order 11988 requires "a written justification for a project proposed to be located in a floodplain; a statement indicating whether the action conforms to applicable state or local floodplain protection standards; and a list of alternatives considered."[5] Executive Order 11990 directs federal agencies to take active measures to protect wetlands and requires that they avoid activities that have adverse impacts on wetlands. It does not apply to private work done under a federal permit but without federal funding or other assistance.[6]

LAND ACQUISITION PROGRAMS

Fish and Wildlife Service Programs

The Fish and Wildlife Service administers a number of wetland acquisition programs. The Migratory Bird Hunting and Conservation Stamp Act of 1934 requires all waterfowl hunters to buy "duck stamps," the proceeds of which are used by FWS to acquire migratory waterfowl habitat. The Small Wetlands Acquisition Program, also administered by FWS, offers a landowner the opportunity to sell a wetland and surrounding upland area outright, or to enter into a perpetual easement agreement that places a restriction on the wetland. Lease and purchase prices under this program reflect current market conditions.[7] Additional monies for the purchase of wetlands are available through the Fish and Wildlife Service's Land and Water Conservation Fund, described in greater detail below.

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[4]Environmental Progress and Challenges: EPA's Update, p. 61.

[5]Gregor McGregor and Alexandra Dawson, "Wetlands and Floodplain Protection," Massachusetts Law Review, April 1979.

[6]Ibid.

[7]The Impact of Federal Programs on Wetlands, p. 12.

FWS cooperates with other federal and state agencies to consolidate information and funding for the protection and acquisition of wetlands. For example, the criteria used by the National Park Service to evaluate wetlands in Statewide Comprehensive Outdoor Recreation Plans (SCORPs) are the same as those used by FWS, resulting in protection of the same wetland areas.

Land and Water Conservation Fund

The Land and Water Conservation Fund (LWCF) was established in the early 1960s to allocate money to the states for acquisition and development projects. The majority of the Fund is distributed among four federal conservation and land-use agencies -- the National Park Service, the Fish and Wildlife Service, the Forest Service, and the Bureau of Land Management -- for specified projects. The remainder of the Fund is distributed directly to the states in the form of matching grants. Forty percent of the total available for state grants is divided evenly among the 50 states; the remaining 60 percent is allocated in proportion to state population.

As discussed in Chapter 4, states qualify for the Fund by completing a Statewide Comprehensive Outdoor Recreation Plan (SCORP) at least once every 5 years. The SCORP identifies state wildlife protection and recreation area needs, and establishes priorities for proposed acquisition and development projects. States with SCORPs approved by the National Park Service may use their LWCF money to help fund their most urgent conservation projects.

Unlike private trust funds, funds from the Land and Water Conservation Fund must be appropriated by Congress, and are thus vulnerable to political and economic circumstances. Since 1980, appropriations for the Land and Water Conservation Fund have been cut nearly in half. Most of the reductions have been in appropriations to states; federal agencies have continued to receive a substantial amount of LCWF monies. Some have attributed this disparity to less than adequate presentations or documentation of requests submitted by states to Congress, and to the lack of sufficient public support engendered by states. While Federal agencies submit extensive documentation for proposed acquisition and development projects, the list for all 50 states combined is only several pages long.[8]

HABITAT PROTECTION

North American Waterfowl Management Plan

The North American Waterfowl Management Plan was formulated in 1986 as a general strategy for cooperation among Canada, the United States, and Mexico in the maintenance and enhancement of waterfowl populations and habitats. The Plan outlines work to be accomplished by the year 2000 and provides broad guidelines for habitat protection and management action. The Plan emphasizes that wetland habitats cannot be preserved through acquisition or easements alone, and urges the use of subsidies, other financial incentives, and tax adjustments favorable to landowners and farmers to promote wetland conservation. Responsibility for developing specific action plans is delegated to the national, province, state, and regional levels.

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[8] Charles C. Morrison, "Funding Land Resource Acquisition, Recreation Facility Development and Stewardship in New York State - The Next Step." Office of Land and Resource Planning, New York State Environmental Conservation, June 1989, pp. 3-4.

Under the U.S. plan, 40 private conservation organizations and state agencies work with the U.S. Fish and Wildlife Service to assess wetland and waterfowl conservation needs and submit proposed projects to the recently formed North American Wetlands Conservation Council. Supervised by the Cabinet-level Migratory Bird Conservation Commission, the Council evaluates projects and establishes priorities for funding. Funds for selected projects will come from authorized appropriations, proceeds from fines and penalties under the Migratory Bird Treaty Act, and the Aid in Wildlife Restoration Act.

National Wild and Scenic Rivers Act (1968)

The Wild and Scenic Rivers Act of 1968 protects outstanding natural free-flowing rivers from damming and other forms of development. Under the Act, the Nationwide Rivers Inventory identifies natural and undeveloped rivers and river segments that meet the minimum criteria for further study and/or inclusion in the National Rivers System. As of 1987, approximately 7,400 river-miles had been designated by the Department of the Interior as eligible for inclusion in this system.[9] The National Park Service is responsible for managing all designated river segments, except those managed by states, the Forest Service, or the Bureau of Land Management. An Executive Order protects these areas from the potentially adverse impacts of federal activities.

The Wild and Scenic Rivers Act also encourages river protection by authorizing the Secretary of the Interior to provide technical assistance to state and local governments and to private interests in support of the law's objectives. Through the National Park Service's Rivers and Trails Assistance Program, the federal government provides technical assistance to states and local governments in developing conservation plans for rivers and river segments. This assistance has aided the development of many state programs.

Endangered Species Act

As habitats for a great variety of plants and animals, some wetlands are offered protection under the Endangered Species Act. The principal purposes of the Act are the conservation of threatened and endangered species and the ecosystems on which they depend. Among its provisions, Section 7 of the Act requires federal agencies to ensure that any actions they authorize, fund, or carry out will not jeopardize the continued existence of any listed species, or result in the destruction or adverse modification of its designated critical habitat.[10]

GROUND WATER PROTECTION

Generally, ground water and surface water are thought of as separate entities. However, they are interconnected through the hydrologic cycle. Within this cycle, water evaporates from surface waters, rises into the atmosphere and is redeposited as precipitation. Once it reaches the surface, rain can infiltrate into the soil profile or run off to surface waters. Water entering the soil profile can percolate to the ground water system or move to surface waters as subsurface flow. Water in ground water aquifers can also discharge to wetlands, streams, lakes, or estuaries.

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[9]Charles C. Morrison, "Protecting Rivers and their Environs: The New York State River Program," National Wetlands Newsletter, Vol. 9, No. 6 (November-December 1987), p. 2.

[10]Impact, p.35.

Ground water enters surface waters as springs or as recharge to bank storage. If this ground water is contaminated, it can severely affect the quality of the surface waters it is entering. Therefore, when developing a management plan for coastal and wetlands areas, it is necessary to consider potential impacts from contaminated ground water.

EPA's 1984 Ground Water Protection Strategy is the major federal initiative addressing ground water protection. The goals of this strategy are to (1) strengthen state ground water programs, (2) deal with significant, poorly addressed ground water problems, (3) create a policy framework within EPA for guidance of ground water policy, and (4) strengthen the ground water organization within EPA.

Several laws have been enacted that address different issues related to ground water. The Safe Drinking Water Act (SDWA) regulates the injection of wastes into deep wells, and established the Sole Source Aquifer (SSA) and the Wellhead Protection (WHP) programs. The Resource Conservation and Recovery Act (RCRA) regulates the disposal of hazardous and nonhazardous solid waste and includes provisions addressing leaking underground storage tanks. The 1980 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or Superfund) provides a federal program for the cleanup of abandoned waste disposal sites and contaminated ground water. Also, the 1987 amendments to the CWA provide state grants for ground water protection activities.

EPA's Office of Ground Water and Drinking Water (OGWDW) is responsible for the administration of the WHP and SSA programs. The WHP program requires states to develop systematic and comprehensive programs to protect public water supplies. As part of a WHP program, states must delineate wellhead protection areas for each well or wellfield used for public water supply. Contaminant sources within the wellhead protection area must be identified, and a management plan developed to protect from contamination of the water supply in that area. Contingency plans for each public water supply system must be constructed in the event contamination occurs, and standards must be established for locating new wells so as to minimize the potential for contamination of the water supply. The SSA program provides a means for individuals or organizations to petition EPA for designation of an aquifer as a sole or principal source of drinking water for an area. This allows EPA to review federally financed projects planned for that area in order to determine the potential for aquifer contamination. Even though these initiatives primarily focus on protecting ground water, they may also be used to prevent nonpoint source contamination of near coastal waters by ground water.

OGWDW is currently implementing Comprehensive State Ground Water Protection Programs. These comprehensive programs are intended to provide frameworks for cross-program implementation of all relevant state and federal statutes that address ground water protection. Coastal water and wetlands protection are components of a state's comprehensive ground water program. These components should characterize the relationship between existing ground water programs and federal and state surface water protection programs. An example program might contain an identification of potential program areas, applicable criteria, goals, policies, technical controls, and institutional roles and responsibilities.

OGWDW is also developing a technical assistance document to aid the states in characterizing the interrelationships between ground water and surface water. This document is meant to be a handbook of methods available for the identification and assessment of nonpoint source (NPS) contaminated ground water discharges to surface waters. Analytical methods used to measure or estimate NPS contaminated ground water discharges are summarized with a description of the assumptions and limitations of each method. Also discussed are the contaminants and environmental settings each method has been used for, and an evaluation of the general suitability of each method. A second section presents a discussion of the determination of Total Maximum Daily Loads (TMDLs) and Waste Load Allocations (WLAs) for NPS-contaminated ground water discharges.

OGWDW is also helping to develop best management practice guidelines for the control of NPS pollution contributions to coastal water degradation. These guidelines are required by the 1990 amendments to the Coastal Zone Management Act (CZMA). They address identification of ground water pathways contributing to coastal pollution, and describe practices best suited to control nonpoint ground water discharges.

COASTAL LAND MANAGEMENT AND MARINE AND ESTUARINE PROTECTION

Coastal Zone Management Act (1972) and Amendments

The Coastal Zone Management Act was designed to help coastal states develop their own plans to manage and protect coastal zone resources, including those affected by offshore energy development projects. As an incentive to states, the Act provides financial and technical assistance during the planning and administration of programs that meet minimum federal standards. Approval of state plans is the responsibility of the Secretary of Commerce, acting through the National Oceanic and Atmospheric Administration (NOAA). Currently, 29 of the 35 potentially eligible states and territories have taken advantage of the Coastal Zone Management Act and have federally approved plans.[11] The federal government, however, is not authorized by the Act to develop plans for states that do not choose to develop their own.

Congress recently reaffirmed its commitment to improved management of coastal resources in a set of amendments to enhance and expand the resources and provisions of the Coastal Zone Management Act. Recognizing the tremendous economic and environmental importance of our coastal resources, and the decline of these resources due to unmanaged development and other human activities, Congress introduced a number of significant amendments, the most important of which are summarized below. Perhaps most significant are provisions mandating coastal states to develop a coastal nonpoint source pollution program, and the reinstatement of grants to coastal states who have not yet developed coastal zone management programs.

The Coastal Zone Management Act Reauthorization Amendments of 1990 made the following major changes to the Coastal Zone Management Act of 1972:

- Federal consistency provisions are amended to clarify that all federal agency activities, whether in or outside of the coastal zone, are subject to consistency with state coastal zone management plans if they affect natural resources, land-uses, or water uses in the coastal zone.

- Program development grants, issued to coastal states that develop coastal zone management programs, are reinstated.

- Enhancement grants are provided for coastal states with approved coastal zone management programs to continually improve their programs in one or more of the following areas: coastal wetlands management and protection; natural hazards management (including potential sea level and Great Lakes level rise); public access improvements; reductions in marine

[11]Department of Commerce, 13 June 1989.

debris; assessment of cumulative and secondary impacts of coastal growth and development; and siting of coastal energy and government facilities.

- Appropriations are authorized for 5 years at increased levels.

- A Coastal Nonpoint Pollution Control Program is established, wherein each coastal state is required to develop a management program to address coastal nonpoint pollution. States are given a maximum of 4 years to develop a program, and financial sanctions are provided for state noncompliance. These state programs are expected to coordinate with existing nonpoint pollution control efforts under Section 319 of the Clean Water Act. Finally, EPA, NOAA, and the U.S. Fish and Wildlife Service are required to develop national guidance within 6 to 18 months to provide consistency across coastal nonpoint pollution control programs.

With these amendments, the Coastal Zone Management Act strengthens the abilities of states with coastal programs to implement effective land-use controls and other environmental improvements. Financial assistance available to approved state programs can be extended to local groups on a cost-share basis. To qualify for CZMA financial assistance, however, states must first develop and have approved a coastal zone management program.

Coastal Barriers Resources Act (1982)

The Coastal Barriers Resources Act (CBRA) of 1982 provides an extremely effective growth management tool by reversing several previous federal policies that encouraged development along coastal barriers. Expanding on the Omnibus Budget Reconciliation Act of 1981, which prohibited federal flood insurance for development in pristine coastal areas, CBRA prohibits any federal program -- including the National Flood Insurance Program -- from supporting construction in areas within the Coastal Barrier Resources System.[12] Exceptions to CBRA include development associated with conservation, public recreation, research, and national security.

National Flood Insurance Program

For property owners to be eligible for federally subsidized flood insurance under the National Flood Insurance Program, their communities must adopt floodplain management regulations that will minimize future flood damage. Adoption is typically accomplished by incorporating floodplain management regulations into local zoning ordinances and building codes. The National Flood Insurance Program requires that inland residential structures be elevated above the 100-year floodplain and that nonresidential structures be elevated above or floodproofed in the 100-year floodplain. A structure may be built in a floodplain if its design conforms to specifications that assure it will not aggravate flood problems either upstream or downstream.[13] In coastal areas, the lowest floor (including basement) of residential structures must be elevated or above the one percent annual chance flood level, which is the estimated wave crest elevation.

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[12]Interagency Task Force on Floodplain Management, A Status Report on the Nation's Floodplain Management Activity -- An Interim Report, 1989.

[13]"Environmental Concerns in Local Floodplain Management," Environmental Planning Information Series Report #4, 1988, pp. 11-12. Office of Policy, Department of Environmental Resources, Pennsylvania: (717) 541-7802.

The lowest floor of nonresidential structures must either be at the one percent annual flood level or be substantially resistant to flood damage.

EPA's Coastal Protection Activities[14]

EPA's Office of Wetlands, Oceans, and Watersheds (OWOW) Oceans and Coastal Protection Division (OCPD) is responsible for addressing growing coastal and ocean problems through pollution prevention efforts, geographic-based approaches, and enforcement. OCPD's central mission is to protect, restore, and maintain the nation's coastal and marine waters to protect human health and sustain living resources.

In that spirit, the operating goals of the Oceans and Coastal Protection Division for FY 92 are to:

1. Develop and implement geographically targeted protection to estuaries and coastal areas through federal, state, and local cooperation

2. Provide or arrange for transfer of coastal and marine science technology to key constituencies

3. Support habitat and other restoration and remediation of significant coastal resources through implementation of Coastal America and other efforts

4. Develop and support implementation of pollution control programs, including regulatory programs, to protect marine and coastal waters from inappropriate dumping and disposal

5. Provide or arrange for the delivery of technical assistance and information on marine and coastal issues to key constituency groups.

EPA's programs to protect ocean and coastal waters and the Great Lakes from nutrient and toxic pollutants emanating from point and nonpoint sources are implemented under two major laws -- the Clean Water Act and the Marine Protection, Research, and Sanctuaries Act as amended by the Ocean Dumping Ban Act. Other statutory authorities include the Marine Plastic Pollution Research and Control Act, the Shore Protection Act, and the Medical Waste Tracking Act. Major OCPD programs include the Near Coastal Waters Program, National Estuary Program, Point Source Controls (the 301(h) and 403 programs), and the Ocean Dumping Program.

EPA also participates in several important international program initiatives, including Annex V of the MARPOL Convention Protocol on marine debris, the London Dumping Convention provisions which address ocean dumping, and the Great Lakes Water Quality Agreement between the United States and Canada.

- **Regulatory Programs for Control of Point Source Discharges**

OWOW shares responsibility with numerous other EPA offices, federal agencies, and states for implementing the basic requirements of the Clean Water Act. For example, EPA helps to develop water quality criteria and standards that are protective of human health and aquatic life. It then strives to ensure

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[14]This section is based in part upon: Tetra Tech, Inc., and American Management Systems, Inc., Office of Water Coastal Water Programs Handbook, U.S. Environmental Protection Agency, January 1991, pp. 9-17 and 65-66.

that these standards are met by regulating the discharge of pollutants. Point source discharges to marine and estuarine waters (i.e., discharges from industry and sewage treatment plants) are regulated through National Pollutant Discharge Elimination System (NPDES) permits, which set limits on effluents and define monitoring and reporting requirements.[15] Through its pretreatment program, EPA also regulates industrial discharges to municipal sewage systems that in turn discharge to the nation's waters.

Most NPDES permits impose limits based upon an assessment of the capabilities of available technologies, but more stringent limits may be imposed if technology-based requirements are insufficient to protect the receiving water. Under limited conditions, waivers from technology-based requirements may also be granted. Of particular relevance in this regard are two sections of the Clean Water Act, 301(h) and 403, which concern the control of point source discharges to marine waters. The programs implementing these provisions of the Act are described below.

1. **301(h) Program.** The 301(h) program provides for waivers from secondary treatment requirements for publicly owned treatment works discharging to marine waters. To receive a waiver, the applicant must demonstrate that the discharge will not degrade water quality from levels that protect public water supplies, assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife; and allow recreational activities in and on the water. The applicant must also conduct a rigorous monitoring program to monitor the impact of the discharge.

   Responsibility for reviewing 301(h) waiver applications has been delegated to the EPA Regions. Once all waiver decisions are made, the Regions will be responsible for monitoring all compliance waivers granted, as well as enforcing against unauthorized discharges where a waiver has been denied. The deadline for entrance into the 301(h) program has passed. OCPD is also developing new regulations to respond to the amendments in the Water Quality Act of 1987.

2. **403 Program.** Section 403 of the CWA requires that all NPDES permitted discharges from point sources into certain waters (the territorial seas, the contiguous zone, and the oceans) must cause no unreasonable degradation to the marine environment. A decision on "no unreasonable degradation" can only be made after consideration of the effects of the discharge stream on human health and welfare, marine life, and aesthetic, recreational, and commercial values; the persistence and permanence of these effects; the effects of varying disposal rates; the alternative disposal or recycling options available; and the effect on alternate uses of the oceans.

   The 403 program is a decisionmaking process that authorizes more stringent control of pollutants known to be persistent and harmful to the marine environment and public health. It is not restricted by engineering attainability, and has no rigorous cost or economic restrictions. It also includes consideration of sediment as well as water column effects, and is intended to protect most aquatic species, placing special emphasis on unique, sensitive, or ecologically critical species.

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[15]The Water Quality Act of 1987 brought many storm water discharges under the authority of NPDES. All storm water point source discharges will be required to obtain permits by October 1, 1992, with certain discharges subject to earlier deadlines (EPA has recently developed the final rule for storm water discharges from industrial sources and for municipal separate sewer systems serving a population greater than 250,000). Discharges from certain mining areas will also be required to have NPDES permits.

- **Nonpoint Source Management**

The major federal tool for protecting surface waters from nonpoint source (NPS) pollution is Section 319 of the Clean Water Act, which requires each state to identify and assess waters impaired due to nonpoint source pollution and to develop a management program for these waters. EPA provides technical assistance to the states in developing 319 assessment reports and NPS management programs, reviews and approves state reports and management plans, and awards grants to states to help finance management program implementation.

The 319 assessment report identifies those waters in the state which, without additional action to control nonpoint sources, cannot reasonably be expected to attain or maintain applicable water quality standards or the goals and requirements of the Act. The report also identifies the categories, subcategories, and particular nonpoint sources of pollution which contribute to this impairment. This report is a statewide inventory, and is updated biannually in conjunction with the state's Water Quality Assessment Report required under Section 305(b) of the Act.

The state NPS management programs are based on the assessment reports, and cover NPS management and pollution control actions that the state intends to undertake over the succeeding 4 fiscal years. While there are at present no statutory provisions for updating the initial management programs, EPA is likely to propose statutory changes to authorize periodic updates as states' information, needs, and resources change. Specifically, the state NPS management programs should contain and result in:

- The identification of best management practices (BMPs) for the control and reduction of specifically identified nonpoint sources of pollution and the improvement of water quality

- The achievement and maintenance of state water quality standards, the measure of success of NPS management programs

- The setting of action priorities among watersheds and categories of NPS pollution

- The utilization of a variety of programmatic actions to achieve the implementation of management programs

- A schedule containing annual implementation milestones and provisions for implementing BMPs at the earliest possible date

- The option of identifying those federal programs and projects that the state wants to review for their consistency with the state's management program.

As states begin implementing their state NPS management programs, they will have to assist, encourage, or require individuals and entities to adopt specific BMPs and measures to prevent or control NPS pollution. A major EPA role will be to encourage the sharing of information on new BMPs with demonstrated effectiveness. EPA will maintain a special interest in (1) the prevention and control of animal waste problems not subject to NPDES permits, (2) addressing urban runoff in developed and developing areas not subject to NPDES storm water permits, (3) use of wetlands to provide NPS control, and (4) land conservancy as a BMP.

In addition to these NPS responsibilities under the CWA, EPA was charged under the Coastal Zone Management Act Reauthorization Amendments of 1990 to carry out, jointly with NOAA, new requirements for prevention and control of NPS pollution in coastal areas. Under these amendments, EPA must develop

and issue guidance on specific NPS management measures for coastal wasters; these measures in turn must be incorporated in both state NPS management programs and state CZMA plans.

- **National Estuary Program**

Passage of the Water Quality Act of 1987 signaled national recognition of the need to protect estuaries by formally establishing the National Estuary Program. The Act authorizes EPA to convene management conferences to develop comprehensive conservation and management plans for estuaries of national significance that are threatened by pollution, development, or overuse. Management conferences are expected to focus attention on the entire watershed and all potential sources of pollution to the estuary. Following a phased process of identifying and classifying priority problems, establishing their probable causes, and investigating regulatory and nonregulatory options for addressing priority problems, conferences are expected to coordinate with all relevant federal, state, and local agencies to secure a plan to carry out recommended actions. The watershed planning framework is evidence of EPA's increasingly resource-based approach across its coastal and marine programs.

The EPA, in managing the National Estuary Program, is directed to identify nationally significant estuaries threatened by pollution, development, or overuse, and to promote the preparation of comprehensive management plans to ensure their ecological integrity. Specifically, the National Estuary Program:

- Establishes working partnerships among federal, state, and local governments
- Transfers scientific/management information and expertise to program participants
- Increases public awareness of pollution problems
- Promotes areawide planning to control pollution and manage resources
- Oversees development and implementation of pollution reduction and control programs.

EPA's role in this program is primarily to provide management direction to state and local efforts, develop guidance, and assist in the transfer of information and innovative technology among NEPs and interested groups. The estuaries currently included in the program are Casco Bay in Maine; Massachusetts Bays and Buzzards Bay in Massachusetts; Narragansett Bay in Rhode Island; Long Island Sound in New York and Connecticut; New York-New Jersey Harbor; Delaware Bay in Pennsylvania, New Jersey, and Delaware; Delaware Inland Bays in Delaware; Albemarle-Pamlico Sounds in North Carolina; Sarasota Bay, Tampa Bay, and Indian River Lagoon in Florida; Barataria-Terrbonne Estuary in Louisiana; Galveston Bay in Texas; San Francisco Bay and Santa Monica Bay in California; and Puget Sound in Washington. The National Estuary Program bases much of its pollution control and implementation strategies on an earlier program, the Chesapeake Bay Program.

An excellent source of information on the National Estuary Program, including details on components of and the process used for developing comprehensive conservation management plans, is EPA's A Primer for Establishing and Managing Estuary Projects. Copies of the Primer can be obtained by contacting EPA's Office of Wetlands, Oceans, and Watersheds, WH-556F, 401 M Street S.W., Washington, D.C., 20460. The primer also includes several appendices that provide important technical, scientific, and financial information.

- **Chesapeake Bay Program**

The Chesapeake Bay Program began in 1977, and in 1983 published a 7-year study of the cause of declining productivity in Chesapeake Bay. The study, the first milestone in the ongoing Chesapeake Bay cleanup effort, concluded that the major problems affecting the bay were nutrient enrichment; toxic contamination; substantially increased areas of low dissolved oxygen; declines in striped bass, submerged grasses, and other living resources; and substantial population growth and changes in land uses. Later in 1983, the states of Maryland, Virginia, and Pennsylvania, the District of Columbia, EPA, and the Chesapeake Bay Commission signed the Chesapeake Bay Agreement, a framework for working cooperatively to clean up the bay. Under this agreement, the Chesapeake Bay Restoration and Protection Plan recommends that state and federal programs improve habitat and restore finfish and shellfish populations. It also calls for reducing nutrient and toxic substance contamination, both from industrial and municipal point sources and from agricultural and urban nonpoint sources. Specifically, the program:

- Institutes land-use controls at or near the bay shoreline
- Develops nonpoint source control programs for agricultural and urban sources
- Accelerates tighter controls of point sources, especially municipal treatment plants
- Strengthens wetlands protection laws and programs.

In 1987, two additional milestones for the program were achieved. In February, the program was enacted into law as section 117 of the new Clean Water Act. And in December, Maryland, Virginia, Pennsylvania, the District of Columbia, EPA, and the Chesapeake Bay Commission signed a new, more specific Chesapeake Bay Agreement. This agreement outlines goals for state implementation programs and commits the federal government to a coordinated work plan. The plan will outline all federal activities and resources that will be dedicated to protecting and restoring the Bay.

- **Great Lakes Program**

The Great Lakes Program was initiated in 1972 to combat the overloading of nutrients into the Great Lakes that caused eutrophication, oxygen depletion, and the resulting death of fish and other aquatic organisms. In the same year, the United States signed the first of its Great Lakes Water Quality Agreements with Canada, which focused on nutrient pollution, mainly phosphorus from urban and agricultural sources. When it successfully decreased the nutrient levels and increased oxygen levels, the program began to fund projects with farmers to reduce the runoff of fertilizer-laden topsoil into the lakes. Finally, the program focused on controlling nonpoint sources of toxic pollution. The program is successfully revitalizing the Great Lakes by controlling pollution via a phased process of identifying pollutants and their sources,

developing a plan to control the pollution, and implementing the plan. It also monitors the lakes extensively to assess compliance with program objectives.

The federal government has spent over $6 billion on Great Lakes problems since the passage of the Clean Water Act in 1972. This money paid for the construction and improvement of more than 1,000 municipal sewage treatment facilities in the Great Lakes basin. Today, virtually all U.S. municipal facilities discharging to the Great Lakes basin are in compliance with the 1 mg/liter phosphorus limit set by the Great Lakes agreement.

- **Near Coastal Waters Program**

The Near Coastal Waters Initiative (NCW) arose out of EPA's first strategic planning process in 1986. Through the process, EPA formulated a 10-15 year blueprint for improving the Agency's near coastal water environmental management, and for raising the level of coordination among federal, state, and local NCW program managers.

The strategic plan recognized that the multiple threats to the nation's near coastal waters come from varied sources and require management from a waterbody perspective. Ever increasing coastal development imposes more and more of society's wastes on a natural aquatic system increasingly unable to accommodate such wastes. The NCW program focuses on a waterbody approach that parallels that of the National Estuary Program, but moves beyond the selected estuary orientation to protect all threatened near coastal waters. These may include bays, lagoons, coves, the 1,600-mile-long freshwater Great Lakes, and other coastal water bodies. The program consists of a number of demonstration projects and the development of regional strategies to protect near coastal waters. The NCW program builds upon insights gained in the NEP, Chesapeake Bay, Great Lakes, and other programs; develops new techniques; and offers flexibility to apply this knowledge as needed across the nation's vast coastline.

Since its inception, the NCW program has worked to promote integrated management and to improve coordination among federal, state, and local organizations involved in coastal water management. In addition, efforts have been undertaken to assess the condition of near coastal waters and to help identify those in greatest jeopardy.

- NCW Assessment. EPA's approach for implementing the NCW program is to identify coastal areas requiring additional management attention, encourage federal and state managers to use their existing regulatory tools and resources to solve problems more efficiently, and help federal, state, and local officials implement new management tactics that will achieve measurable environmental improvements in coastal areas. During the development of the NCW program, however, a striking absence of data about near coastal waters was discovered. Consequently, EPA undertook a national assessment of the environmental status and trends of all near coastal waters to identify those in need of management attention.

  Using existing data from federal, state (such as 305(b) biennial state water quality reports), local agencies and academia, EPA has been working with NOAA to address the lack of near coastal water data. Efforts to date have included compiling data on coastal waters in EPA Region I (Northeast Case Study) and preparing susceptibility analyses to screen coastal waters and identify threatened waters. Summary reports on the susceptibility of coastal waters to nutrient discharges have been completed for the Gulf of Mexico, Southeast Coast, and Northeast Coast. NOAA also prepared data atlases of coastal wetlands in the New England Region, and public recreational facilities in coastal areas.

- **Gulf of Mexico Program**

This program presents a good example of the NCW approach in practice. It promotes the development and implementation of a comprehensive management strategy for protecting resources in the Gulf ecosystem, balancing human needs with habitat preservation and enhancement. The initiative supports enhanced communication among all interested federal and state agencies and public and private institutions to establish an action framework involving regulatory controls, public and private participation, and research operations. The Gulf of Mexico program is administered out of EPA's Office of Water, in cooperation with Regions IV and VI.

- **Ocean Dumping**

The Marine Protection, Research, and Sanctuaries Act of 1972 (MPRSA) regulates the ocean dumping of all types of materials. Titles I and II of the Act place responsibility for administering MPRSA permitting programs on EPA and the Army Corps of Engineers; for monitoring the effects of ocean dumping on NOAA; and for surveillance on the U.S. Coast Guard. Title III gives the Secretary of Commerce the authority to establish marine sanctuaries. OCPD carries out all of EPA's responsibilities under MPRSA.[16]

To implement MPRSA and to control dumping in ocean waters, Title I of the Act establishes a permit program, with EPA responsible for non-dredged material permitting and the Corps responsible for issuing dredged material permits. MPRSA authorizes EPA to designate sites for the dumping of material into the ocean. MPRSA specifies nine factors to be considered in developing the permit review criteria: (1) the effect of the dumping on human health and welfare; (2) its effect on fisheries resources and beaches; (3) its effects on marine ecosystems; (4) the permanence of the effect of dumping; (5) the effect of volumes and concentrations; (6) the appropriate locations and methods of disposal; (7) the effect on alternate uses of the ocean; (8) the need for proposed dumping; and (9) the location of the site beyond the continental shelf.

EPA has authority to designate sites for the dumping of dredged material, but the Corps is responsible for issuing permits to dump at those sites (using EPA's permit review criteria, and subject to EPA review). A large number of ocean dumping sites existed in 1972 before MPRSA was enacted. Based on their historical use, EPA designated sites for disposal of nondredged material (for sewage sludge, woodburning, fish waste, and acid waste), and a larger number for disposal of dredged material. Designations were made on an interim basis pending completion of environmental evaluations based on environmental impact statements and site designation of dredged material ocean dumping sites to the seven coastal EPA Regional Offices. Regional delegation has enhanced local coordination and expedited decisions about the designation.

To further enhance coordination and cooperation between EPA, the Corps, and permit applicants, EPA negotiated a national umbrella memorandum of understanding (MOU) in 1987 with the Corps of Engineers. This MOU serves as the basis for all MOUs between the EPA Regional Offices and the Corps District Offices that will cover work and funding for final EIS preparation, designation of the remaining sites, and site management. This agreement establishes priorities for designating sites at the regional level. EPA also works closely with NOAA to promote coordination between CZMA program activities and EPA's site designation process.

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[16] MPRSA applies to waters lying seaward of the territorial sea baseline, and thus does not apply to estuarine waters. Disposal of dredged material in estuarine and inland waters is governed by Section 404 of the CWA.

The site designation process (which requires amendment of existing ocean dumping regulation and preparation of an EIS) is designed to minimize adverse environmental effects and to ensure that dumping interferes as little as possible with other activities in the marine environment.

EPA plays a significant role internationally in efforts to restrict or control ocean dumping. The MPRSA is also the domestic legislation that implements the provisions of the "Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter," often referred to as the London Dumping Convention. This is the only global agreement concerned solely with the dumping of wastes into the marine environment.

In 1988, Congress passed the Ocean Dumping Ban Act (ODBA) to amend MPRSA. The primary purpose of this legislation is to end the ocean dumping of sewage sludge and industrial waste. The last dumper of industrial waste ceased dumping in September 1988. With regard to sewage sludge, as required by ODBA, EPA has entered into enforcement agreements with the dumpers to require the phase-out of sewage sludge dumping. The last remaining sludge dumper is scheduled to cease dumping in June of 1992.

In November 1988, Congress amended the MPRSA and CWA to make it illegal to dispose of medical waste into the navigable waters of the United States, as well as in coastal waters. Based on public reaction to medical wastes washing ashore during the summer of 1988, Congress also enacted the Medical Waste Tracking Act in an effort to further restrict the release of medical waste into the environment.

The transport of wastes by vessels in coastal waters is also subject to regulation. The Shore Protection Act requires vessels transporting municipal or commercial wastes in coastal waters to obtain a Coast Guard-issued permit. In addition, the act directs EPA to issue regulations addressing loading, transport, and off-loading of such wastes in order to prevent accidental loss of the wastes overboard.

- **Marine Debris**

The Marine Plastic Pollution Research and Control Act (MPPRCA) of 1987 requires that the effects of plastic pollution on the marine environment be identified and the release of plastic material be reduced. Under this law, EPA is studying ways to abate plastic pollution, and has prepared a report to Congress that includes the following:

- A listing of improper disposal practices and specific plastic materials that may injure fish and wildlife, degrade or cause economic loss to coastal waterfront areas, or cause other impacts

- A description of EPA's authority and ongoing reduction measures to reduce plastics in the marine environment

- An evaluation of substitutes for some plastic materials, recycling incentives, and use of degradable materials.

EPA is also sponsoring several studies to document the types of debris in the marine environment and the sources of this debris, as well as education efforts to bring marine debris to the attention of the general public and show the public what they can do to help reduce marine debris pollution.

MPPRCA also implements Annex V of the Protocol of 1978 Relating to the International Convention for the Prevention of Pollution from Ships (MARPOL). This international agreement prohibits discharge into the sea of all plastics from vessels, including (but not limited to) synthetic ropes, synthetic fishing nets,

and plastic garbage bags. It also prohibits discharge of food wastes and other floating materials from vessels within specified distances from land. The U.S. Coast Guard issued regulations to implement these requirements in 1989.

In 1988, Congress passed another law dealing with plastic pollution. Commonly called the Degradable Plastic Ring Carrier Act, this legislation directed EPA to require by regulation that plastic ring carriers be made of naturally degradable material that, when discarded, will decompose within a reasonable time.

THE STATE ROLE IN PROTECTING COASTAL AND WETLANDS RESOURCES

APPENDIX C

Like the federal government, state governments play an important role in protecting and maintaining coastal and wetlands resources. State policies and programs, however, vary greatly both in intent and approach. For example, some states have enacted comprehensive regulations mandating action at the state level to protect coastal and wetlands resources, while others have enacted legislation that requires local implementation. Still others delegate nearly all authority for protection of these sensitive areas to communities themselves. Some states stipulate that communities must formulate a local plan, while others emphasize the provision of technical assistance and scientific information. Programs also differ in scope and effectiveness, reflecting the financial or administrative ability of the state to manage protection efforts, and the willingness of local governments to implement state programs.

This appendix outlines a few of the many different approaches to state-level coastal and wetlands protection efforts, and provides several examples. While not every state is profiled, the efforts described below indicate the variety among the 50 states. For the policymaker or concerned citizen at the local level, this means that knowledge of the specific programs and initiatives in that state is crucial to effectively protecting coastal and wetlands resources. Not only is the local role often prescribed by state law -- the degree to which a community may regulate land use, for example, is usually established by state regulations -- but it also may be bolstered by state initiatives, such as state funding for land acquisition and technical assistance.

REGULATORY PROGRAMS

Regulations Administered at the State Level

State wetlands and coastal zone management regulations usually protect areas that meet a predetermined regulatory definition, e.g., wetlands that are a certain size, or that meet a specific definition for vegetation, hydrology, and/or soil. These regulations may include provisions for mapping the state's environmentally sensitive areas, and may delineate permit rules, penalties for noncompliance, time limits for agency responses, procedures for appeals of agency decisions, and exemptions.

One example is Connecticut's Tidal Wetlands Act, the goal of which is to preserve the state's remaining tidal wetlands. Under the provisions of this law, all regulated activities must be permitted by the Department of Environmental Protection (DEP). The DEP considers the impact of the proposed activity on the wetland, adjacent coastal resources, navigation, recreation, water quality, and wildlife. DEP traditionally has adopted a preservationist stance in permitting activities, issuing only a small number of permits. The Connecticut Coastal Management Act supplements the wetlands laws in 41 coastal communities by creating

a mapped area that extends 1,000 feet shoreward of tidal wetlands. To comply with this law, communities must revise their zoning laws and review all major projects proposed for a coastal area.[1]

In Rhode Island, unlike Connecticut, the responsibility for issuing permits that protect freshwater and coastal wetlands belongs to two state agencies. The Department of Environmental Management (DEM) has the power to deny and issue permits for activities in freshwater wetlands. However, if a city or town council rejects the permit application, DEM cannot grant it. In 1981, for example, municipal officials denied nearly half of all permit applications.[2] The second state agency, the Coastal Resources Management Council, must issue a permit for any activity in a coastal wetland, although the DEM is still responsible for issuing water quality certification.

New Jersey's Freshwater Wetlands Protection Act establishes a comprehensive program requiring any person who proposes to undertake certain activities in a freshwater wetland or in an area adjacent to wetlands to apply to the Department of Environmental Protection for a permit. Specifically, the new law includes:[3]

- A definition of wetlands identical to the definition in Section 404 of the Clean Water Act
- Regulation of activities beyond those enumerated in Section 404
- Three classes of wetlands classification
- Provisions for rebutting the presumption of practicable alternatives that are more stringent than those found in Section 404[4]
- Stringent mitigation and enforcement rules.

A fourth example of state regulation is Florida. In 1972, the Florida legislature passed the Environmental Land and Water Management Act. Amended in 1979, the law authorizes the state to designate an area having significant natural resources or environmental value as an Area of Critical state Concern (ACSC). If an area is first nominated as a potential ACSC by the state planning agency (the Department of Community Affairs), a Resource Planning and Management Committee (RPMC) is established by the Governor to analyze the land-use conflicts in the area and develop a resource management plan to address those conflicts. If the plan is not incorporated into local comprehensive plans, the area is designated an ACSC and the state develops its own land-use regulations. In addition to the ACSC program, Florida has several other state regulations that protect environmentally sensitive areas, and requires local governments to submit comprehensive plans. The state also has a comprehensive dredge and fill permit program.[5]

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[1]J. Benjamin Gailey, ed., The 1984 Zoning and Planning Handbook, New York: The Clark Boardman Company, Ltd, 1984. pp. 260-261.

[2]Ibid., p. 261.

[3] "New Jersey Freshwater Wetlands Law," The National Wetlands Newsletter, July-August 1987, p. 7.

[4] See the discussion of the Section 404 program in Appendix B for details on evaluating practicable alternatives.

[5]Some of Florida's state programs are discussed in Appendix A.

The timing of water flow through Everglades National Park is important in allowing certain species of animals, such as the wood stork, to successfully breed. By the early 1980s, the park was receiving an adequate water flow, but at the wrong time. The East Everglades were designated an ACSC and an RPMC was established in 1983 to restore natural sheetflow to the park and provide flood protection for residential and agricultural areas. After long negotiations, the RPMC arrived at a plan that accommodates the needs of water flow, as well as the needs of homeowners and farmers who had feared flooding.

In California, the San Francisco Bay Conservation and Development Commission (BCDC), a state agency, regulates and controls development in the sensitive Bay/Delta region. Established in 1969 to issue permits for development within 100 feet of San Francisco Bay, San Pablo Bay, and Suisun Bay, it is one of the oldest coastal management agencies in the nation. BCDC strives to control the use of fills along shorelines and within the bay area's wetlands and saltponds, and to provide public access to the coast.

State regulation not only applies to the development of wetlands, but also may prescribe minimum mitigation standards. (See Chapter 3 for a discussion of mitigation). For example, Oregon has extensive mitigation legislation, considered by some to be the most detailed mitigation planning requirements in the country. The Oregon Mitigation Statute, enacted in 1984, requires that the natural biological productivity and species diversity of the intertidal removal/fill site be replaced by an appropriate area at another site. The Oregon Division of state Lands (DSL) determines the amount of mitigation that should occur, depending on the size and ecological value of the developed wetland site. The DSL is authorized to implement the mitigation requirement, to partially waive the statute in certain situations, and to require biological monitoring of the mitigation site to ensure that the site is maturing successfully. One potential drawback of the Oregon program is that mitigation acceptable to the state may not be acceptable to federal agencies, which may require in-kind mitigation.[6]

Because restrictions on development can sometimes be at odds with other planning goals, the State of Oregon addressed affordable housing in its 19 statewide planning and conservation goals. As explained in Appendix A, one of these goals requires that local governments prepare a buildable lands inventory, and include zoning ordinances that accommodate persons of all incomes.

State Input into Federal Regulations[7]

States also have opportunities to use two existing federally authorized programs to protect coastal and wetlands resources. The first is authorized by Section 401 of the Clean Water Act, which says that states may grant or deny certification for federally permitted or licensed activities that may result in a discharge to the waters of the United states. Under 401 certification, the state may determine whether a proposed activity will comply with requirements of the Clean Water Act such as effluent limitations for pollutants, water quality standards, and new source performance standards. EPA is encouraging states to

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[6]Philip J. Quarterman. "Oregon's Estuarine Mitigation Policy," National Wetlands Newsletter. November-December 1985, pp. 8-10.

[7]Jeanne Christie Melanson, et al., "Wetlands Protection -- Opportunities for Achieving No Net Loss Under Existing Federal Programs," prepared for the Office of Wetlands Protection, U.S. Environmental Protection Agency.

make 401 certification a more effective tool for wetlands protection by (1) including wetlands in their definitions of waters of the United States; (2) developing or modifying regulations that implement their 401 certification authority; and (3) applying components of water quality standards (such as classification, antidegradation, and narrative criteria) to wetlands protection.

The second federally authorized program is the advance identification process. Under Section 404 of the Clean Water Act, EPA and the Corps (or other permitting authority) can identify sites as suitable or unsuitable for future disposal. The advance identification process produces a report addressing the functions and values of wetlands in the study area and a map identifying wetlands as suitable or unsuitable for dredge and fill activities. Advance identification projects are undertaken by EPA Regional Offices, often at the request of state or local governments. Projects are selected based on the value and vulnerability of wetlands. As of 1989, there were 58 advance identification projects underway nationally.

Regulations Administered at the Local Level

In many states, local governments are given the responsibility of implementing the state's coastal and wetlands protection programs, while tailoring them to their own needs. The success of delegating responsibility for implementation of state statutes to local jurisdictions depends on the willingness of municipalities to create and carry out an effective environmental protection and management plan. Where the municipalities are willing, protection of sensitive areas at the local level can be much more effective than in cases where it is regulated solely by a state agency. Local jurisdictions, for example, can issue ordinances to protect coastal environments that are exempt from state legislation, essentially picking up where the state leaves off. The role of localities varies greatly, however, from merely commenting on proposed development to forming local agencies to plan development.

In New Hampshire, for example, all activity in coastal and inland wetlands is regulated by the state Wetlands Board. Local governments, however, have the authority to review state permits, and approximately 70 percent of the municipalities have conservation commissions to do so.[8] Local review is extensive in New Hampshire largely because the state has very limited staff to review project applications.

Towns in other states can play a more direct role in managing development. For example, Maine has separate coastal and inland wetland legislation. The Alteration of Coastal Wetlands Law regulates activities that take place below the coastal high water line. The Freshwater Wetlands Law protects freshwater wetlands more than 10 acres in size, regulating dredging, filling, and drainage of these wetlands. The laws provide that a municipality may apply to the state to administer the law within its boundaries, and also may adopt stricter ordinances.[9]

In Florida, coastal counties and certain municipal governments must develop a comprehensive plan containing a coastal element. The state must approve local plans' consistency with state goals, including coastal protection, fair housing, and energy and transportation requirements. For large-scale developments, the state also requires local governments to review and assess regional impacts. These reviews, required for projects such as shopping centers, airports, and hospitals, help local governments identify and manage major point and nonpoint sources that may pollute near coastal waters.

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[8]Gailey, op.cit., p. 261.

[9]Donald T. Witherill, "Freshwater Wetlands: New Legislation for Maine," The National Wetlands Newsletter, January-February 1986, pp. 10-11.

Connecticut delegates management of development affecting its inland wetlands to communities through the Inland Wetland and Watercourses Act, which permits limited use and well-planned development of the state's inland wetland acreage. More than 90 percent of Connecticut's 169 municipalities have formed local wetlands agencies to implement the inland wetlands law. The state Department of Environmental Protection administers the law in the municipalities that have not established an agency.

In Wisconsin, communities are required to develop shoreland and floodplain zoning, regulating development within specified distances of any lake, river, or wetland. The state Department of Natural Resources oversees the adoption of these zoning ordinances, provides mapping and technical training, and creates ordinances for communities that fail to develop their own. The state also has nine regional planning commissions, funded by state and federal grants and from taxes collected by the counties within their systems, that advise local governments during the development of their ordinances and land-use plans.

In Maryland, the Critical Area Act of 1984 requires towns to implement strict state development laws designed to protect Chesapeake Bay. The critical areas affected include all land within 1,000 feet of mean high tide in the Maryland portion of the Chesapeake, upon which future development may further degrade water quality and wildlife habitat. The Act requires local jurisdictions to map critical areas and to classify them as intense development areas, limited development areas, or resource conservation areas, according to current housing density. The Act limits the density of all future development and requires stringent management practices for future development activity. Local jurisdictions must also identify and map all significant plant and wildlife habitats within their critical areas, and develop plans for protecting these resources.[10] In addition to the Critical Area Act, Maryland's recently enacted Nontidal Wetlands Act requires a state permit for most activities within a 100-yard buffer of more than 360 nontidal wetlands found to be of special state concern. The Act allows the state to delegate permit authority to counties that enacted nontidal wetlands protection programs by December 31, 1990.

Act 200, recently passed in Vermont, significantly strengthened the process of integrating growth management plans at the local, regional, and state agency levels. Several key components of the act are:[11]

- Thirty-two planning goals that must be followed by state agencies, regional planning commissions, and towns. The goals encompass values traditionally cherished in Vermont: community life, agricultural heritage, environmental quality, and economic opportunity.

- Incentives for town planning. If towns adopt plans that are consistent with the act, they will receive additional funds, technical assistance, and greater influence over state actions.

- Regional planning. Towns are now automatically members of their regional planning commission. Each town appoints representatives to its commission's board of directors. The commission provides technical assistance to communities and reviews town plans to ensure that they are consistent with Vermont planning goals.

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[10]Stephen M. Bunker, "The Maryland Critical Areas Program: A Comprehensive Land Management Approach," The National Wetlands Newsletter, January-February 1987, pp. 10-11.

[11]"Vermont's New Act 200 for Growth Management," pamphlet.

- State agency planning. Agencies of state government, such as the Agency of Transportation, must plan development in accordance with the plans of the regional commissions and local municipalities. Towns in Vermont therefore have more control over where growth occurs. However, towns and regions must have approved plans to influence state agency decisions.

The plans of Vermont towns and regions will be reviewed and approved by a Council of Regional Commissions, to ensure that they are compatible with each other and the 32 Vermont planning goals.

The Commonwealth of Massachusetts also vests most wetland protection authority with local governments.[12] Under the 1972 Wetlands Protection Act, local conservation commissions have the jurisdiction to hold hearings and to issue or deny permits for development or other human activity in wetlands areas.

In Washington state, local governments regulate development and use of their shorelines through the adoption of a local Shoreline Master Program (SMP). SMPs are based on the framework delineated in the state's 1971 Shoreline Management Act (SMA).[13] The state provides guidelines and technical assistance, reviews the local plans, and adopts them as state regulations. All development along Washington state's shorelines, defined as all waters of the state and the lands underlying them, must be consistent with the SMA, the SMP, and any other applicable laws. In addition, under the state's 1990 Wetlands Management Act, municipalities are directed to fill gaps in their SMPs by developing and administering specific wetlands programs to achieve "no net loss" of wetlands. Municipalities must scrutinize activities that might damage wetlands and require permits for any activities within wetlands or their buffers.

In Alaska, a myriad of agencies regulate wetlands. On the federal level, the Alaska District of the Corps of Engineers has extended its jurisdiction to wet and moist tundra, increasing the area of the state subject to Section 404 regulation. The Department of Environmental Conservation approves state water quality certification prior to issuing a Section 404 permit. The state also maintains a Coastal Management Program, under which it determines the consistency of Section 404 permits and other federal or state actions. If such actions are found to be inconsistent, the Corps will not issue a permit.[14] Finally, state programs in Alaska regulate a variety of activities. The Department of Fish and Wildlife grants Anadromous Fish Habitat Protection permits for streambed alteration, and the Division of Minerals and Energy Management of the Department of Natural Resources issues oil and gas lease plans of operation. Local governments, too, regulate wetlands within their jurisdiction, through zoning or coastal planning combined with Corps general permits. If a local government denies a permit, the Corps will not issue it.[15]

Limitations of State Regulations

State regulations may exempt certain coastal or wetlands areas from protection and permit review, thereby limiting the effectiveness of the statute. For example, a wetland is often defined by its vegetation

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[12]Gailey, op.cit., pp. 258-60.

[13]Focus: Shoreline Management Act, Washington State Department of Ecology, January 1989.

[14]Similar programs are administered by numerous other coastal states.

[15]Laurie Marcus, "Alaska Wetlands: An Opportunity for Protection," The National Wetlands Newsletter, November-December 1985, pp. 10-13.

or size, and tracts of land under the specified limit are exempt from any regulatory action.[16] Such is the case in Rhode Island, where the Freshwater Wetlands Act exempts marshes under one acre in size and swamps under three acres from regulation.

Another limitation of state controls is that certain activities may be exempt from regulation altogether, either because they are considered essential or presumed harmless, or because controls would be difficult to apply. For example, Massachusetts exempts maintenance of existing electrical and utility facilities, mosquito control work and normal agriculture or silviculture from wetlands regulations.

Proposed activities that are considered to be minor often are exempted from state regulations. For example, the Freshwater Wetlands Act of Rhode Island only applies in cases of "significant alteration." (An alteration is significant if it reduces the capacity of the wetlands to reduce flooding, to recharge ground water supply, or to provide a wildlife habitat or recreational environment. An alteration is insignificant if it is a dug pond under one-half acre in size, if it involves riverbank wetlands where compensatory storage is provided, or if it involves drainage into wetlands where no known flood problem occurs.) The Rhode Island Department of Environmental Management bases its decisions on a system of wetland assessment, categorizing the wetland from "low" to "outstanding" in terms of habitat value. This system appears to be highly effective in identifying development proposals likely to have significant detrimental impacts.

INDIRECT REGULATION OF COASTAL AND WETLANDS RESOURCES

In many states, coastal and wetlands resources may be indirectly protected by legislation that is not designed specifically to protect these ecosystems. For example, wetlands may be protected by shoreline zoning legislation that applies to lake and stream shore areas, health laws prohibiting waste disposal in areas of high ground water, or regulations on large-scale development. Other potentially protective state laws include power plant siting laws and regulations on strip mining.

NONREGULATORY PROGRAMS

Acquisition Programs

Acquiring coastal and wetlands areas to protect and maintain them, rather than attempting to regulate their development, is often an effective way for a state to preserve them. Most states have at least one program designed to acquire sensitive areas. The intent of the acquiring agency can be varied, ranging from the preservation of endangered migratory species habitat to the saving of open recreational space. A state acquisition program often works in concert with federal programs.

The funding for state acquisition programs can come from such diverse sources as real estate transfer fees, general obligation bonds, waterfowl stamps, or state sales tax revenues. In Florida, for instance, 10 percent of the state's 0.05 percent real estate conveyance tax is set aside for acquisition of land for water management, supply, conservation, and protection. state water management districts have acquired thousands of acres of wetlands with these funds.

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[16]Gailey, op. cit., pp. 262-266.

A bond issue provided the initial funding in 1961 for New Jersey's Green Acres program, which has since assisted in the acquisition of over 264,753 acres of open land for both wildlife preservation and recreational purposes. Subsequent bond issues and the Green Trust revolving fund currently finance the program. Green Acres has acquired lands for state parks, forests, and wildlife management areas; the development of waterfront recreational areas; and development of fish hatcheries. Green Acres also provides matching funds for acquisition initiatives undertaken by local governments. Because the applications for Green Acres funding far exceed the resources available, the state Legislature is considering the establishment of a stable source of funds.

Another example of a creative state acquisition program is Iowa's Natural Heritage Foundation and its offshoot, the Wetlands for Iowa Program. The program's trust fund provides one-to-one matching for funds received from private parties for maintenance and monitoring of a natural area such as a wetland. While providing some funds for research and public education, the Foundation also purchases or accepts donations of wetlands. Often, the wetland is then transferred to another private or public agency for permanent management. For example, the program recently created the Leo Shimon Marsh complex, a statewide project that began with the donation of 100 acres of privately owned marsh to the Wetlands for Iowa Program, and the subsequent purchase of 165 adjacent upland acres. The entire complex will be maintained as a public use area.[17]

Tax Incentives

Another financial incentive technique that state programs employ involves the reduction of property tax, income tax, or inheritance tax owed by a landowner in exchange for the protection of wetlands or shoreland. The landowner may sell some easement rights to his land, or may simply promise to not develop, drain, or otherwise alter the land for a specified period of time. The owner thus receives a reimbursement that offsets the income lost. The state also compensates local governments for their lost tax revenues. Chapter 5 includes a more detailed discussion of a number of financing techniques.

Educational Outreach

Because the effectiveness of state programs, both regulatory and nonregulatory, depends on the willingness and input of state citizens, educational programs are often used by states in conjunction with regulations to improve the protection of coastal and wetlands resources.

For example, the state of Washington does not specifically regulate development of wetlands, but provides technical expertise to local governments, encourages enforcement of existing protection measures, and educates the public about the value of preserving wetlands. This effort, known as the Wetlands Program, supplements Washington's 1971 Shoreline Management Act (described above). Many Washington municipalities protect local wetlands through additional ordinances, affecting grading, erosion, sedimentation, flood damage, and sensitive area protection. Through the Wetlands Program, the state provides such assistance as delineating wetland boundaries, assessing project impacts, and designing wetland inventories, rehabilitation, and creation projects. The program also focuses on education, including a travelling show

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[17]Linda Eucciardo, "Wetlands for Iowa Program," The National Wetlands Newsletter, March-April 1986, pp. 8-9.

about Washington wetlands, a wetlands library, and a public relations campaign. Technical and informational conferences are also included in the program.[18]

The states of Maryland, Virginia, and Nebraska also have utilized educational tools such as guidebooks, films, video and slide presentations, and workshops to inform local officials, developers, conservation organizations, and farmers of the value of coastal and wetlands environments.

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[18]Andrew McMillan, "Washington State's Wetlands Protection Program," The National Wetlands Newsletter, November-December 1985, pp. 6-8.

Managers of sensitive environmental areas need to recognize that land-use regulations may be challenged by landowners on the ground that they constitute a government "taking" of private property for which compensation is constitutionally required. This appendix discusses several aspects of the takings issue. It first presents excerpts from an article written in 1985 by Ann Powers, Vice President and General Counsel of the Chesapeake Bay Foundation, which outlines the concept of a taking, describes when takings problems are most likely to arise, and notes the factors courts consider in evaluating takings challenges. Second, it summarizes three 1987 Supreme Court decisions concerning takings of property. Clearly, this discussion does not offer an exhaustive treatment of all nuances of takings law. Rather, it attempts to give laymen the information they need to understand this issue and to recognize when it may arise. Readers are strongly encouraged to seek qualified legal guidance prior to any action that may concern a taking.

A LAYMAN'S GUIDE TO THE TAKINGS ISSUE[1]

The Fifth Amendment to the United States Constitution provides that a person may not be deprived of his property without due process of law "nor shall private property be taken for public use without just compensation." This latter phrase, commonly known as "the Takings Clause," was intended to ensure that the state could not confiscate an individual's property unless it paid the owner reasonable compensation. It is closely related to the due process concept. Early cases raising takings challenges typically involved government seizure or invasions of property. For instance, citizens sued to recover the cost of commodities seized by the military, or the rental value of buildings taken for a public purpose. In such cases, the Fifth Amendment clearly required that the government compensate the landowner.

As the scope of government activities and regulations increased over the years, takings claims were raised in additional situations. Therefore, when the government constructed a dam which flooded private property, its actions were held to constitute a seizure of the property for public use for which compensation was required. In such cases, the courts emphasized that although the government had not intended to take the property, its actions had that effect. The same logic was extended to other invasions of property which were not necessarily physical in nature. Accordingly, courts have found a taking of property within the meaning of the Fifth Amendment when military overflights from an airport destroyed neighboring landowners' use and enjoyment of their property. Subsequently, property owners sought to apply the takings clause beyond government activities to government regulation. They frequently challenged early zoning efforts by arguing that the zoning deprived them of their property without just compensation.

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[1]Written by Ann Powers, Vice President and General Counsel, Chesapeake Bay Foundation. This article, while written with wetlands in mind, is also relevant to coastal areas. Permission to reprint this article, originally published in Wetlands of the Chesapeake: Protecting the Future of the Bay, 1985, Environmental Law Institute, Washington, DC, was authorized by ELI. All other rights are expressly reserved by ELI.

Land-use regulations generally constitute an exercise of police powers -- the government's inherent right to regulate in order to protect the general welfare of its citizens. Before reaching the takings issue, courts typically ask first whether the regulation serves a legitimate state interest, then whether all proper procedures were followed in its enactment and subsequent administration. If the court finds that the statute is valid and proper procedures were followed, it will then turn to the particular facts of the takings claim. In doing so, it will examine the property owner's "bundle of rights" to determine whether the effect of the government actions is to deprive him of the bundle -- such as the right to develop the property for industrial uses -- without depriving the property owner of its total use. The court will also examine the nature of the restricted activity. In cases where the activity on the property might constitute a threat to public health or welfare, such as a brick yard or gravel pit, the courts have upheld regulations preventing the activity even though it constituted the only economically feasible use of the property.

The takings analysis has presented especially difficult questions for wetland regulation because the activities contemplated by landowners -- construction and development -- do not appear inherently harmful, while the effect of prohibiting these activities may leave the landowner with little alternative use of the property. Unlike a city lot, which may be used for other commercial purposes even if it may not be used for a factory, a wetland has relatively few economically profitable uses if it is not drained or filled. While some courts have held that wetlands in their natural state can have various economic uses, such as producing wild rice or marsh hay, others have been less generous. However, they have often been swayed by the strong public interest in protecting wetlands and the harm resulting from their destruction.

A challenge from a landowner to a wetland regulation will generally take the form of an appeal of a permit denial. The landowner may attempt to convince the court that the regulation in question is unrelated to a public purpose. He may also contend that he was denied due process of law, i.e., that the regulatory procedures provided neither adequate notice nor an opportunity to defend the claim or were otherwise defective. Should those arguments fail, the landowner may claim that the regulatory action has denied him of all reasonable use of the property, and that he should either be allowed to carry out the desired activity or be compensated for the value of the property. Courts generally choose the former course, striking down a regulation or directing that a permit be issued. And while the spectre of a potential money judgment should encourage government managers to cautiously implement their regulatory responsibilities, that caution should not be overdone, since courts rarely uphold takings challenges, much less award monetary judgments.

A manager should, nonetheless, make reasonable efforts to assure that any regulatory action will be as unassailable as possible. Legislation or regulations should be drafted with an eye towards demonstrating their public purpose and the harm to be protected against. Preambles should emphasize the public interest by stating the importance of wetlands and delineating their numerous values and function. Protection of human health should be emphasized, if possible, as well as the economic value of wetlands to society. The preambles can prove very helpful to a court in assessing the reasonableness of a regulatory action and weighing the public interest against the impact on the landowner. Legislation and regulations should contain specific standards and procedures and, if possible, should set forth permitted uses. In addition, they should be non-discriminatory, i.e., they should treat similarly situated landowners equally. Regulators must be careful to avoid actions that could be considered a misuse of power or a subterfuge. For instance, it might generally be proper to designate a wetland area as open space. However, a court would look askance at such regulation if its true purpose was to force the landowner to sell the property to the regulating authority.

When drafting a regulation or an ordinance, managers may wish to consider specifying the remedy if the regulatory action, especially a permit denial, is found to effect a taking. For instance, the regulation could provide that in the event a court determines that a regulation constitutes a taking, the governmental entity shall have a stated period of time, e.g., 90 days, to determine whether to issue the permit or to commence condemnation proceedings. Such a provision might serve to shield the regulating agency from forced compensation of landowners.

In dealing with individual cases, every effort should be made to ensure that decisions are founded on solid scientific evidence, well thought out, and carefully documented. In those few instances where cases of this type get to court, judges generally listen carefully to professional opinions and accord substantial deference to agency expertise.

Provided those general admonitions are kept in mind, wetland managers should be well-positioned to withstand possible landowner challenges. Certainly, the takings issue will not disappear any time soon, and the law will continue to develop.

1987 SUPREME COURT DECISIONS

Three U.S. Supreme Court cases decided in 1987 bear directly on takings and local land-use decisions. While the bottom line remains the same -- local decisions that are technically sound and adequately documented are most likely to endure -- the Court has generally demonstrated a greater willingness to scrutinize land-use decisions and to require compensation when takings are found.

In the first case, First English Evangelical Lutheran Church v. the County of Los Angeles, the Court addressed the question of compensation to landowners victimized by a taking of property. Prior to this decision, it had been customary for local governments to invalidate a land-use regulation following a finding of a taking. With the First English decision, the Court held that the affected property owner is entitled to be compensated for any temporary loss of "all use of property" between the time the regulation resulted in the loss of use until the regulation is invalidated. The issue of whether the County's actions constituted a taking was not taken up by the Court. While the decision increases the remedies available once a taking of "all use" has been determined, the decision has no effect on the issue of whether or not a taking has occurred.

Local land-use regulations were upheld in a second case, Keystone Bituminous Coal Association v. DeBenedictis, where the Court held that the public benefits of a regulation preventing coal miners from removing more than 50 percent of the coal in place, to avoid subsidence under homeowners' property, outweighed the miners' right to mine the coal. The Court also stated that the regulation was valid because it merely restrained harmful uses, and did not prohibit all uses of the property.

Finally, in perhaps the most significant decision, Nollan v. California Coastal Commission, the Court ruled that a state agency's demand that property owners place a public right-of-way across their property as a condition of receiving a building permit constituted a taking. The Court did not find a close enough link between the impact imposed by the shorefront development and the need for a right-of-way, and also found that the land-use regulation did not "substantially" advance a legitimate government purpose. Legal analysts have characterized the Court's decision in Nollan as a strong stand against the use of regulations to avoid proper payment or procedures for acquisition or use of land for public purposes.[2]

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[2]Sources of more information on these cases include: (1) Robert Meltz, "Revisiting the Law of Regulatory Takings: The Supreme Court's Decisions in Keystone, Nollan, and First English," CRS Report for Congress, December 1987; (2) Richard J. Roddewig and Christopher J. Duerksen, "Responding to the Takings Challenge," American Planning Association and the National Trust for Historic Preservation, May 1989; and (3) Peter W. Salsich, Jr., "Keystone Bituminous Coal, First English and Nollan: A Framework for Accommodation?" Saint Louis University School of Law.

There are many sources of information and assistance available to an interested property owner, local official, or any person concerned about protecting or managing critical environments such as coastal and freshwater wetlands. These include the U.S. Environmental Protection Agency, which is divided into ten regions nationwide. The states and territories included in each region are listed below, along with the general information number for each regional office.

Other potential sources of assistance include state environmental agencies, regional U.S. Army Corps of Engineers offices, the U.S. Fish & Wildlife Service, the National Oceanic and Atmospheric Administration, state coastal zone management programs, and national and local nonprofit organizations. Some contact numbers for these organizations are also listed below.

1. EPA Regional Offices - General Information Numbers

U.S. EPA Region I - (617) 565-3478

Water Management Division
John F. Kennedy Federal Building
One Congress Street
Boston, MA 02203

Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
Vermont

U.S. EPA Region II - (212) 264-2513

Water Management Division
26 Federal Plaza
New York, NY 10278

New Jersey
New York
Puerto Rico
Virgin Islands

U.S. EPA Region III - (215) 597-4532

Environmental Services Division
841 Chestnut Building
Philadelphia, PA 19107

Delaware
District of Columbia
Maryland
Pennsylvania
Virginia
West Virginia

U.S. EPA Region IV - (404) 347-4450

Water Management Division
345 Courtland Street, N.E.
Atlanta, GA 30365

Alabama
Florida
Georgia
Kentucky
Mississippi
North Carolina
South Carolina
Tennessee

U.S. EPA Region V - (312) 353-2000

Water Division
77 West Jackson Street
Chicago, IL 60604

Illinois
Indiana
Michigan
Minnesota
Ohio
Wisconsin

U.S. EPA Region VI - (214) 655-6444

Water Management Division
First Interstate Bank Tower at Fountain Place
1445 Ross Avenue, 12th Floor, Suite 1200
Dallas, TX 75202-2733

Arkansas
Louisiana
New Mexico
Oklahoma
Texas

U.S. EPA Region VII - (913) 551-7030

Water Management Division
726 Minnesota Avenue
Kansas City, KS 66101

Kansas
Iowa
Missouri
Nebraska

U.S. EPA Region VIII - (303) 293-1603

Water Management Division
999 18th Street Suite 500
Denver, CO 80202-2405

Colorado
Montana
North Dakota
South Dakota
Utah
Wyoming

U.S. EPA Region IX - (415) 744-2125

Water Management Division
75 Hawthorne Street
San Francisco, CA 94105

American Samoa
Arizona
California
Guam
Hawaii
Nevada

U.S. EPA Region X - (206) 553-4973

Water Division
1220 Sixth Avenue
Seattle, WA 98101

Alaska
Idaho
Oregon
Washington

2. EPA Headquarters

Office of Wetlands, Oceans and Watersheds (202) 260-7166

3. State Agencies

State environmental agencies can provide information about local and state statutes, state-level coastal and wetlands protection techniques, or state-level implementation of federal regulations such as Section 404 of the Clean Water Act.

Alabama Department of Environmental Management	(205) 271-7700
Alaska Department of Environmental Conservation	(907) 465-2600
Arizona Department of Environmental Quality	(602) 257-2318
Arkansas Department of Pollution Control & Ecology Game & Fish Commission	(501) 562-7444 (501) 223-6312
California Department of Fish & Game Coastal Commission	(916) 445-3531 (415) 543-8355
Colorado Natural Areas Program, Department of Natural Resources	(303) 866-3437
Connecticut Water Resources Unit, Department of Environmental Protection	(203) 566-7220
Delaware Department of Natural Resources	(302) 736-3665

3. <u>State Agencies</u> **(continued)**

Florida	
Department of Environmental Regulation	(904) 488-4805
Georgia	
Department of Natural Resources	(404) 656-0772
Hawaii	
Department of Natural Resources	(808) 548-7539
Idaho	
Department of Water Resources	(208) 334-7982
Division of Environment	(208) 334-3823
Illinois	
Department of Conservation	(217) 782-3715
Division of Water Resources	(217) 782-3862
Indiana	
Department of Natural Resources	(812) 837-9536
Iowa	
Department of Natural Resources	(515) 281-5384
Kansas	
Department of Health & Environment	(913) 296-5553
Kentucky	
Natural Resources & Environmental Protection Cabinet	(502) 564-3350
Louisiana	
Coastal Management Division, Department of Natural Resources	(504) 342-7591
Department of Wildlife & Fisheries	(504) 765-2385
Maine	
Land Bureau, Department of Environmental Protection	(207) 289-2111
Maryland	
Wetlands, Department of the Environment	(410) 631-3603
Massachusetts	
Department of Environmental Protection	(617) 292-5500
Michigan	
Land and Water Management, Department of Natural Resources	(517) 373-1170

3. **State Agencies (continued)**

Minnesota Department of Natural Resources	(612) 296-7523
Mississippi Department of Natural Resources	(601) 354-2550
Missouri Water Pollution Division, Department of Natural Resources	(314) 751-1300
Montana Water Quality Bureau	(406) 444-2406
Nebraska Surface Water, Department of Environmental Control	(402) 471-4700
Nevada Department of Conservation and Natural Resources	(702) 885-4670
New Hampshire Wetlands Board, Department of Environmental Services	(603) 271-2147
New Jersey Coastal Section, Freshwater Section, Department of Environmental Protection	(609) 633-2289 (609) 292-0060
New Mexico Department of Game & Fish Environmental Improvement Division	(505) 827-7882 (505) 827-2822
New York Fish & Wildlife Division, Department of Environmental Conservation	(518) 457-5690
North Carolina Division of Environmental Management	(919) 733-2870
North Dakota Department of Game & Fish Division of Water Supply & Pollution Control, Department of Health	(701) 221-6300 (701) 224-2354
Ohio Department of Natural Resources	(614) 265-6717

3. **State Agencies (continued)**

Oklahoma	
Water Resources Board	(405) 271-2541
Department of Wildlife Conservation	(405) 521-3179
Oregon	
Department of Environmental Quality	(503) 229-6046
Environmental Council	(503) 222-1963
Pennsylvania	
Bureau of Water Resources Management, Department of Environmental Resources	(717) 541-7802
Rhode Island	
Department of Environmental Management	(401) 277-2771
South Carolina	
Environmental Quality Control	(803) 734-5360
South Dakota	
Department of Water & Natural Resources	(605) 773-4216
Tennessee	
Department of Health & Environment	(615) 741-3111
Texas	
Water Commission	(512) 463-8202
Utah	
Department of Natural Resources	(801) 538-7200
Vermont	
Water Division, Agency of Natural Resources	(802) 244-6951
Virginia	
Water Supply Engineering, Department of Health	(804) 367-6347
Washington	
Department of Ecology	(206) 867-7000
Environmental Council	(206) 547-2738
West Virginia	
Department of Natural Resources	(304) 348-3614
Wisconsin	
Bureau of Water Regulations, Department of Natural Resources	(608) 266-2621
Wyoming	
Department of Environmental Quality	(307) 777-7938

4. U.S. Army Corps of Engineers -- Regional Offices

The Clean Water Act requires a Corps of Engineers permit to dredge or fill wetlands. The Corps has numerous regional offices to which questions can be directed.

Anchorage, AK	(907) 753-2712
Albuquerque, NM	(505) 766-2776
Baltimore, MD	(410) 962-3670
Buffalo, NY	(716) 876-5454
Charleston, SC	(803) 724-4330
Chicago, IL	(312) 353-6428
Detroit, MI	(313) 226-2218
Ft. Worth, TX	(817) 334-2681
Galveston, TX	(409) 766-3925
Honolulu, HI	(808) 438-9258
Huntington, WV	(304) 529-5487
Jacksonville, FL	(904) 791-1659
Kansas City, MO	(816) 374-3645
Little Rock, AR	(501) 378-5295
Los Angeles, CA	(213) 688-5606
Louisville, KY	(502) 582-5452
Memphis, TN	(901) 521-3471
Mobile, AL	(205) 690-2658
Nashville, TN	(615) 251-5181
New Orleans, LA	(504)838-2255
New York, NY	(212)264-3996
Norfolk, VA	(804)446-3652
Omaha, NE	(402)221-4133
Philadelphia, PA	(215)597-2812
Pittsburgh, PA	(412)644-4204
Portland, OR	(503)221-6995
Rock Island, IL	(309)788-6361
Sacramento, CA	(916)440-2842
St. Louis, MO	(314)263-5703
St. Paul, MN	(612)725-5819
San Francisco, CA	(415)974-0416
Savannah, GA	(912)944-5347
Seattle, WA	(206)764-3495
Tulsa, OK	(918)581-7261
Vicksburg, MS	(601)634-5276
Walla Walla, WA	(509)522-6718
Wilmington, DE	(919)343-4511

5. U.S. Fish & Wildlife Service

Listed below is the national headquarters number in Washington, DC. Each state also has an office to which questions can be directed.

USFWS Headquarters	(202) 343-5634

6. National Oceanic and Atmospheric Administration

Office of Ocean and Coastal Resource Management	(202) 673-5111
Policy Coordination Division	(202) 673-5100
Marine and Estuarine Management Division	(202) 673-5122
Coastal Programs Division	(202) 673-5158
Coastal Zone Information Center	(202) 673-5115

7. State Coastal Zone Management Program Managers

Alabama Department of Economic and Community Affairs	(205) 284-8778
Alaska Coastal Program Coordinator, Division of Governmental Coordination	(907) 465-3562
American Samoa Coastal Program Manager	(684) 633-5155
California Federal Programs Manager	(415) 904-5200
or	
Deputy Director, San Francisco Bay Conservation and Development Commission	(415) 557-3686
Connecticut Director, Coastal Zone Management Program	(203) 566-2110
Delaware Department of Natural Resources and Environmental Control	(302) 736-3091
Florida Coastal Program Manager, Office of Coastal Management, Department of Environmental Regulation	(904) 488-6221

7. **State Coastal Zone Management Program Managers (continued)**

Georgia Chief, Marsh and Beach Section, Coastal Resources Division, Department of Natural Resources	(912) 264-7365
Guam Coastal Program Manager,	(671) 472-4201
Hawaii Manager, Coastal Zone Management Branch, Office of State Planning	(808) 548-3026
Illinois Division of Water Resources, Department of Transportation	(312) 793-3123
Indiana Director, Department of Natural Resources	(317) 232-4020
Louisiana Director, Coastal Management Division, Department of Natural Resources	(504) 342-7591
Maine Coastal Program Manager, State Planning Office	(207) 289-3261
Maryland Director, Coastal Resources Division, Department of Natural Resources	(410) 974-2784
Massachusetts Director, Coastal Management Program, Executive Office of Environmental Affairs	(617) 727-9530, Ext. 400
Michigan Chief, Great Lakes Shorelands Section, Land & Water Management Division, Department of Natural Resources	(517) 373-1950
Minnesota Division of Water, Department of Natural Resources	(218) 327-4416
Mississippi Chief, Coastal Management Division, Mississippi Department of Wildlife Conservation, Bureau of Marine Resources	(601) 385-5860