

THE RHODE ISLAND COMPREHENSIVE PLANNING STANDARDS  
GUIDANCE HANDBOOK SERIES

**GUIDANCE HANDBOOK #2:  
PLANNING FOR NATURAL RESOURCES**

Revised June 2018

---

*Land, water, and air are finite natural resources. Comprehensive planning is needed to provide for protection, development, use, and management of our land and natural resources.*

*The Rhode Island Comprehensive Planning and Land Use Regulation Act, RIGL subsection 45-22.2-3(a)(3)*

---

## ACKNOWLEDGEMENTS

The Rhode Island Comprehensive Planning Guidance Handbook Series is the result of over twenty-four months of cooperation and coordination among state agencies, local planners, and other professionals interested in helping cities and towns craft better comprehensive plans. The guidance development process was overseen by the Comprehensive Planning Advisory Committee, a dedicated group of planning, land use, legal, and community professionals who worked diligently to develop content on the comprehensive planning process and to review topical content as it was developed. Without this group the manual would not have become reality.

Additionally, the topical content for the guidance handbook series was developed in conversation with numerous experts. These knowledgeable individuals are the reason that the manual is helpful, user-friendly, and thorough.

The guidance handbook series was prepared by Chelsea Siefert, Principal Planner. Ms. Siefert was guided by Karen Scott, Assistant Chief and Kevin Nelson, Supervising Planner, and assisted by Caitlin Greeley, Principal Planner.

---

### COMPREHENSIVE PLANNING ADVISORY COMMITTEE

Sheila Brush, former Director of Programs, Grow Smart RI

Bill DePasquale, Director of Planning, City of Warwick

Ann-Marie Ignasher, former Town Planner, Town of Foster

Nancy Letendre, Principal Planner, Mason & Associates, Inc.

Sue Mara, Assistant Director of Planning and Redevelopment, City of Pawtucket

Martha Matchnik, former Director of Healthy Aging, YMCA of Greater Providence

Krista Moravec, Environmental Planner, Horsley Witten Group, Inc.

Bonnie Nickerson, Director of Planning and Development, City of Providence

Fred Presley, City Manager, City of West Warwick

Pam Sherrill, former Town Planner, Town of Johnston

### TOPIC EXPERTS

Angela Ankoma, RI Department of Health

Ken Ayars, RI Department of Environmental Management

Jim Boyd, RI Coastal Resource Management Council

Meredith Brady, RI Department of Transportation

Paige Bronk, Town of North Kingstown

Michelle Burnett, RI Emergency Management Agency

Kathleen Crawley, RI Water Resources Board

Teresa Crean, URI Coastal Resources Center/RI Sea Grant

Steve Devine, RI Department of Transportation

Joe Dias, RI Department of Environmental Management

Lauren Faria, RI State Council on the Arts

John Flaherty, Coalition for Transportation Choices

Elizabeth Francis, RI Council for the Humanities

Rupert Friday, RI Land Trust Council

Grover Fugate, RI Coastal Resources Management Council

Scott Gibbs, Economic Development Foundation of RI

Julia Gold, RI Department of Health

Rick Greenwood, formerly of RI Historical Preservation and Heritage Commission

June House, RI Office of Housing and Community Development

Paul Jordan, RI Department of Environmental Management

Lorraine Joubert, URI Nonpoint Education for Municipal Officials

Nate Kelly, Horsley Witten Group

Meg Kerr, Watershed Counts

Sarah Kite, RI Resource Recovery Corporation

Tom Kravitz, Town of Burrillville

Eliza Lawson, RI Department of Health

Mike McGonagle, RI Resource Recovery Corporation

Danny Musher, RI Office of Energy Resources

Bill Patenaude, RI Department of Environmental Management

Ken Payne, RI Agricultural Partnership

Amy Pettine, RI Public Transit Authority

Nicole Pollock, formerly of RI Department of Environmental Management

Leo Pollock, formerly of Southside Community Land Trust

Dan Porter, RI Airport Corporation

Lisa Primiano, RI Department of Environmental Management

Amy Rainone, Rhode Island Housing

Randy Rosenbaum, RI State Council on the Arts

Pam Rubinoff, URI Coastal Resources Center/RI Sea Grant

Rachel Sholly, RI Office of Energy Resources

Malcolm Spaulding, University of Rhode Island

Jan Reitsma, formerly of Governor Chaffee's Office

Jonathan Stevens, former State Historic Preservation Officer

Jessica Stimson, RI Emergency Management Agency

Elizabeth Stone, RI Department of Environmental Management

Valerie Talmage, Preserve Rhode Island

Michael Tondra, RI Office of Housing and Community Development

David Tremblay, RI Department of Labor and Training

David Vallee, National Oceanic and Atmospheric Administration

Marcel Valois, Commerce RI

Bob Vanderslice, formerly of RI Department of Health

Mike Walker, Commerce RI

Scott Wolf, Grow Smart RI

Art Zeman, RI Department of Environmental Management

# TABLE OF CONTENTS

|   |           |
|---|-----------|
| INTRODUCTION .....  | ii        |
| <b>SECTION 1. GENERAL INFORMATION ON PLANNING FOR NATURAL RESOURCES .....</b> | <b>1</b>  |
| WHAT ARE NATURAL RESOURCES? .....   | 2         |
| WHY INCLUDE NATURAL RESOURCES? .....  | 2         |
| RELEVANT STATE GOALS AND POLICIES .....                                       | 3         |
| OTHER RELEVANT DOCUMENTS .....  | 4         |
| STAKEHOLDERS TO INCLUDE .....   | 5         |
| MAKING CONNECTIONS THROUGHOUT THE PLAN .....                                  | 5         |
| SPECIAL CONSIDERATIONS FOR COASTAL COMMUNITIES .....                          | 6         |
| <b>SECTION 2. FULFILLING THE STANDARDS .....</b>                              | <b>7</b>  |
| STANDARD 2.1 .....  | 8         |
| STANDARD 2.2 .....  | 10        |
| STANDARD 2.3 .....  | 11        |
| STANDARD 2.4 .....  | 13        |
| STANDARD 2.5 .....  | 15        |
| STANDARD 2.6 .....  | 16        |
| STANDARD 2.7 .....  | 17        |
| STANDARD 2.8 .....  | 19        |
| <b>SECTION 3. CRAFT A BETTER PLAN .....</b>                                   | <b>21</b> |
| RECOMMENDATION 2.9 .....  | 22        |
| RECOMMENDATION 2.10 .....   | 23        |

## INTRODUCTION

This guidance handbook is meant to be an accompaniment to the Rhode Island Comprehensive Planning Standards Manual (“the Standards Manual”), providing additional information on the natural resource-related standards contained within the manual, as well as general guidance on planning for natural resources. The Rhode Island Comprehensive Planning Standards Manual and the other guidance handbooks in the series can be found online at [www.planning.ri.gov/statewideplanning/complanning/](http://www.planning.ri.gov/statewideplanning/complanning/).

This manual is split into three sections. [Section 1. General Information on Planning for Natural Resources](#) provides general information, including the purpose of doing so, relevant documents to review and ways to connect natural resources and the other topical areas. [Section 2. Fulfilling the Standards](#) provides information on satisfying the specific requirements presented in the Rhode Island Comprehensive Planning Standards Manual. [Section 3. Craft a Better Plan](#) provides additional recommendations for addressing natural resources within a comprehensive plan that are not required for State approval but would strengthen the plan’s overall efficacy.

## NOTES

In some cases, this guidebook presents “notes” that are relative to the content being discussed. Each note that occurs within the text will be tagged with a symbol to alert the reader to the note’s purpose, as shown below.

|   |   |
|---|---|
|    | This symbol is used to identify references to the Rhode Island General Laws (RIGL). Blue text within this note provides a link to the actual RIGL citation.   |
|  | This symbol alerts the reader to something that is required for State approval.   |
|  | This symbol alerts the reader to potential data sources.  |
|  | The text following this symbol provides additional suggestions to enhance comprehensive plans.  |
|  | This symbol alerts the reader to sample goals, policies and actions that would fulfill the requirements.  |
|  | This symbol indicates general information that is secondary to the main point of the text, but could be helpful to the municipality.  |
|  | This symbol alerts the reader to a cross-reference within the guidebook series. If a concept is mentioned in the text area and more information on the concept is available elsewhere in the guidebook series, this note will point the reader to where to find it. |

This handbook includes standards for complying with the requirements of the Comprehensive Planning Act. A standard may: 1) reiterate a requirement found in the Act; 2) provide specifics to clarify a requirement of the Act; 3) describe processes that if followed will help ensure State approval; or 4) identify information that while not specifically required by the Act, has been identified as vital to supporting the intents of the Act. Those standards that describe processes or information not *required* by the Act are listed as recommendations.

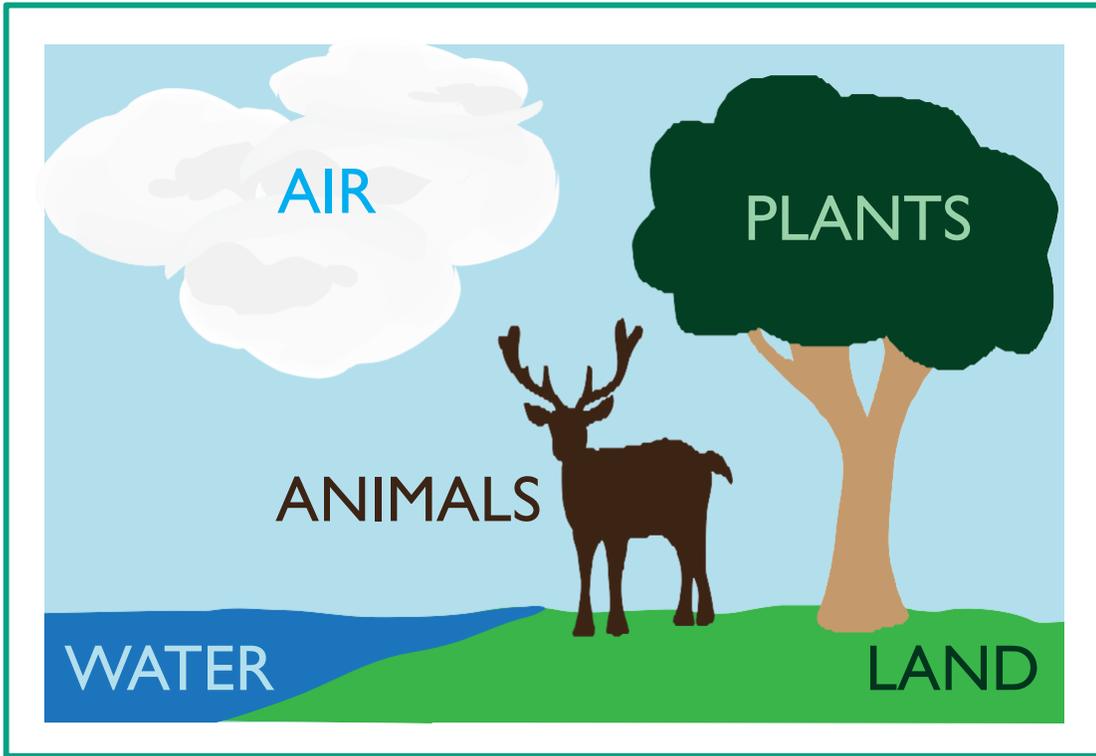
---

**SECTION 1. GENERAL INFORMATION ON PLANNING FOR NATURAL RESOURCES**

---

## WHAT ARE NATURAL RESOURCES?

Natural resources are the state's environmental and ecological assets; the land, water, plants, and animals that sustain us and enhance our quality of life. Planning for natural resources means planning for natural resource protection, including conservation, quality protection measures and improved development practices.



Although fresh water is a natural resource that must be protected, it is also a natural resource that is consumed by the State's population, used by industries and important to economic development. As such, planning for fresh water includes several additional considerations related to ensuring adequate supply, delivering water to consumers and maintaining potable water quality. Due to the extent of the additional considerations, the standards for comprehensive plans related to planning for water supply have been presented in a separate handbook, Handbook #10 - Planning for Water Supply.

## WHY INCLUDE NATURAL RESOURCES?

*In many ways, Rhode Island's prospect depends as much on identifying and securely protecting the essential fabric of greenspace permeating the state, and on guaranteeing the public's right to connect with greenspace, as on any other single factor. Rhode Islanders can have scant hope of living healthy, productive, and rewarding lives, and of having an increasing standard of living in the future if the basic environmental resources that support life and commerce are allowed to erode, or if their time-honored intimacy with the outdoors is severed. The protection and conservation of Rhode Island's natural resources is essential.*

*A Greener Path: Greenspace and Greenways for Rhode Island's Future, page 1.1*

Rhode Island’s natural resources are the state’s premier asset and as such are incredibly valuable. Everyone is connected to and dependent on the state’s beautiful and bountiful ecological assets. While we depend on land, water, plants, and animals for sustenance, they also provide many other benefits to the State and its residents. Natural resources are used for recreation, provide economic value and scenic beauty, enhance quality of life, help to minimize the impacts of natural hazards, and establish rural character. For all of these reasons, it is imperative that communities consider and plan to protect natural resources.



The required content related to natural resources stems from the Rhode Island Comprehensive Planning and Land Use Regulation Act, RIGL subsections [45-22.2-6\(b\)\(2\)](#) and [45-22.2-6\(b\)\(3\)](#).



For an in-depth discussion about the value of Rhode Island’s natural environment, see [A Greener Path: Greenspace and Greenways for Rhode Island’s Future](#), chapter 155-1.

## RELEVANT STATE GOALS AND POLICIES

Every comprehensive plan must be consistent with and embody the State’s goals and policies for natural resources as found in the State Guide Plan and the laws of the State. The goals and policies listed below represent the main themes of the State’s goals and policies for natural resources and are intended to provide focus as to which aspects of the State’s goals and policies are most important for local comprehensive planning.



See the Rhode Island Comprehensive Planning and Land Use Regulation Act, RIGL subsections [45-22.2-6\(b\)\(1\)](#) and [45-22.2-9\(d\)\(3\)](#).

## FROM THE STATE GUIDE PLAN

*A statewide network of greenspaces and greenways that protects and preserves the environment, wildlife habitats, natural resources, scenic landscapes, provides recreation, and shapes urban growth.*

[Land Use 2025: Rhode Island’s State Land Use Policies and Plan, Goal 2, page 5-8](#)

*Permanently protect critical natural resources.*

[Land Use 2025: Rhode Island’s State Land Use Policies and Plan, Objective 2A, page 5-8](#)

*Protect and enhance those values of the coastal region, including scenic values, which contribute to the State’s quality of life. Examine proposals for changes in the coastal region in terms of their importance to the State as a whole.*

[Land Use 2025: Rhode Island’s State Land Use Policies and Plan, LUP 15, page 2-10](#)

*Preserve and enhance wildlife, fish, and plant species diversity and stability through habitat protection, restoration, enhancement, and prevention or mitigation of adverse impacts due to human activities.*

[Land Use 2025: Rhode Island’s State Land Use Policies and Plan, LUP 17, page 2-10](#)

*Protect wetlands and floodplains to maintain their natural functions and to minimize damage from floods.*

[Ocean State Outdoors: Rhode Island’s Comprehensive Outdoor Recreation Plan, Policy RCOS-5, page 4.11](#)

*Conserve and enhance urban and community forests for multiple uses - water supply and water quality, recreation, forest products, wildlife habitat – as fundamental to high quality woodland and urban environments.*

Ocean State Outdoors: Rhode Island’s Comprehensive Outdoor Recreation Plan, Policy RCOS-7, page 4.14

*Direct new growth and development to areas and locations that minimize the potential for negative impacts upon the greenspace system.*

A Greener Path: Greenspace and Greenways for Rhode Island’s Future, Policy G-8, page 7.2

*Utilize infrastructure to avoid or mitigate significant negative environmental impacts from development.*

Land Use 2025: Rhode Island’s State Land Use Policies and Plan, Objective 4C, page 5-15

## FROM THE RHODE ISLAND GENERAL LAWS

*To promote the protection of the natural, historic and cultural resources of each municipality and the state.*

Rhode Island Comprehensive Planning and Land Use Regulation Act, RIGL subsection 45-22.2-3(c)(4))

*In recognition of the ever increasing environmental problems resulting from demands on the land and renewable resources of the state and of the need to preserve, protect and develop these resources of the state at a rate and level of quality to meet the needs of the people of the state, and the need for environmental balance, it is hereby declared to be the policy of the state to provide for the conservation of the land and renewable natural resources using those measures that best meet these objectives, including, but not limited to, the control and prevention of erosion, control of floods, the conservation and development of water resources and the improvement of water quality; assistance in the conservation of coastal land and water resources, the prevention of impairment of dams and reservoirs by sediment, the protection of wildlife, and preservation of natural beauty, and to protect and promote the health, safety and general welfare of the people of this state.[.]*

Soil Conservation, RIGL section 2-4-1



For more information on the goals and policies contained in State law, see the Natural Heritage Preservation Program, RIGL chapter 42-17.5; Taxation of Farm, Forest and Open Space Land, RIGL section 44-27-1; Coastal Resources Management Council RIGL subsection 46-23-1(a); and the Comprehensive Planning and Land Use Regulation Act, subsections 45-22.2-3(a)(3), 45-22.2-3(c)(1), and 45-22.2-3(c)(4).

## OTHER RELEVANT DOCUMENTS

Before beginning an assessment of existing conditions, needs and trends, and before developing new goals, policies and actions, communities should review other state and local plans and other documents that are relevant to planning for natural resources, including:

- Any local open space preservation plans that may be available;
- Any strategic plans or other planning documents of local land conservation organizations;
- The “Forest Resources Management Plan,” State Guide Plan Element 161, available at [http://www.planning.ri.gov/documents/guide\\_plan/forestplan.pdf](http://www.planning.ri.gov/documents/guide_plan/forestplan.pdf);

- The “Urban and Community Forestry Plan,” State Guide Plan Element 156, available at [http://www.planning.ri.gov/documents/guide\\_plan/Forest\\_rpt97 .pdf](http://www.planning.ri.gov/documents/guide_plan/Forest_rpt97.pdf);
- “A Greener Path: Greenspace and Greenways for Rhode Island’s Future,” State Guide Plan Element 155, available at [http://www.planning.ri.gov/documents/guide\\_plan/greenways\\_rpt84.pdf](http://www.planning.ri.gov/documents/guide_plan/greenways_rpt84.pdf);
- The RI Department of Environmental Management’s natural resource management plans, brochures and fact sheets, available at <http://www.dem.ri.gov/documents/publication/index.htm>;
- The RI Coastal Resources Management Commission’s Special Area Management Plans, available at <http://www.crmc.ri.gov/samps.html>;
- The RI Coastal Resources Management Commission’s Water Type Classification maps, available at [http://www.crmc.ri.gov/maps/maps\\_wateruse.html](http://www.crmc.ri.gov/maps/maps_wateruse.html);
- The RI Coastal Resources Management Commission’s Rules Section 210.2, “Barrier Islands and Spits,” located at <http://www.crmc.ri.gov/regulations/RICRMP.pdf>.
- The RI Coastal Resources Management Commission’s “Rhode Island Coastal and Estuarine Land Conservation Plan,” available at <http://www.crmc.ri.gov/regulations/CELCP.pdf>;
- The RI Coastal Resources Management Commission’s “Marine Resources Development Plan,” available at [http://www.crmc.ri.gov/strategicplanning/MRDP\\_Final\\_Jan10.pdf](http://www.crmc.ri.gov/strategicplanning/MRDP_Final_Jan10.pdf);
- The RI Coastal Resources Management Commission’s reports on coastal erosion, available at [http://www.crmc.ri.gov/coastalerosion .html](http://www.crmc.ri.gov/coastalerosion.html);
- The RI Coastal Resources Management Commission’s guides and reports, available at <http://www.crmc.ri.gov>; and
- The RI Coastal Resources Management Commission’s “Guide to Public Access to the RI Coast,” available at [http://www.crmc.ri.gov/publicaccess/ri\\_access\\_guide.pdf](http://www.crmc.ri.gov/publicaccess/ri_access_guide.pdf).

## STAKEHOLDERS TO INCLUDE

In addition to the general public, when discussing how best to plan for natural resources, municipalities may benefit from involving:

- Members of the local Conservation Commission (if applicable);
- Representatives from the local land trust;
- Representatives from State designated Watershed Councils or Associations that include the municipality;
- Representatives from local environmental and/or conservation groups;
- Representatives from statewide environmental and/or conservation advocacy groups, such as the Audubon Society, the Nature Conservancy, etc.; and
- Representatives from the RI Department of Environmental Management.

## MAKING CONNECTIONS THROUGHOUT THE PLAN

Though there are several specific topics that are required to be addressed within a comprehensive plan, it is important that municipalities not consider the topic areas as segregated elements, but rather as pieces of a larger system. Everything within a community is connected in diverse and varied ways, all of which

should be considered when crafting a comprehensive plan. The information provided below is intended to highlight a few of the ways that municipalities should think about the connected nature of the topic areas.

### **RELATIONSHIP TO LAND USE**

The permanent protection of natural resources requires that existing conservation areas remain conserved, or protected from development, into perpetuity. Therefore, close coordination is necessary between the natural resource goals and the discussion of land use within a comprehensive plan. As the Future Land Use Map (FLUM) sets the policy direction for the future use of land within the municipality, it is imperative that existing conservation areas are shown on the FLUM as not appropriate for development. Where development will be permissible, the land use section of the plan, and specifically the Future Land Use Map, must also identify the types and intensities of the development that would be most appropriate given the context of the surrounding natural resources.

### **RELATIONSHIP TO RECREATION**

In many cases, the natural resources of a municipality are also used for outdoor recreation. Rhode Island boasts a multitude of ways to enjoy nature through recreation, such as boating or swimming in lakes, rivers and along the coast, and hiking or cross-country skiing in undeveloped, natural areas. When considering which natural resources are priorities for conservation, municipalities should consider the recreational value of the resources and how use of the resources for recreation could enhance residents' quality of life.

### **RELATIONSHIP TO ECONOMIC DEVELOPMENT**

Many municipalities, especially more rural ones, may identify natural resources as a source of economic development opportunity. In Rhode Island, the primary natural resource based economic activities are agriculture and fisheries, with additional opportunities in tourism, forestry and, to a limited extent, extraction of sand and gravel. Comprehensive plans should consider areas where natural resource based economic activity is feasible and desired, and reflect these considerations on the Future Land Use Map.

### **RELATIONSHIP TO WATER SUPPLY**

Water is a natural resource, so it is no surprise that planning for water availability and planning for natural resources are integrally connected. Any steps that are made to preserve the community's natural resources are also steps that increase potable water quality, since the natural systems within a municipality are all related and connected. When planning for natural resource preservation, communities should consider conserving areas that will also support water quality and water supply goals.

### **SPECIAL CONSIDERATIONS FOR COASTAL COMMUNITIES**

Coastal communities must demonstrate consistency between their Future Land Use Map and the regulations adopted by the Coastal Resources Management Council (CRMC). Particularly, coastal communities must show consistency with CRMC's:

- Water type classifications;
- Rules for designated coastal barrier islands and spits (Rule 210.2); and
- Applicable Special Area Management Plans.

More information on the ways comprehensive plans must demonstrate consistency in these areas can be found in Guidance Handbook #13 - Planning for Land Use.

---

## SECTION 2. FULFILLING THE STANDARDS

---

---

## STANDARD 2.1

### IDENTIFY THE FOLLOWING NATURAL RESOURCES AND NATURAL RESOURCE AREAS ON ONE OR MORE MAPS:

- a. Surface water, including ponds, rivers, and streams, and their watersheds;
- b. Aquifers;
- c. Wetlands and saltwater marshes;
- d. Floodplains;
- e. Forested areas; and
- f. Any existing large, intact or connected blocks of habitat area; and
- g. Any known critical, uncommon, or fragile wildlife habitat areas.

---

Comprehensive plans must include a map of the natural resources and natural resource areas that exist within the municipality. Municipalities may map the natural resources and natural resource areas to best suit their needs, but the map must clearly identify the various types of natural resources that exist within the community. It may be beneficial to show these items on more than one map, depending on how the community intends to use the information in the planning process.



Surface water and aquifers are also required to be mapped as part of the standards for planning for water supply, as outlined under Standard 10.1. Although required for both natural resource and water supply planning, this data only needs to be mapped once.



Valuable agricultural soils are also required to be mapped as part of the requirements for planning for agriculture, as outlined under Standard 7.1. Although required for both natural resource and agricultural planning, this data only needs to be mapped once.



## CRAFT A BETTER PLAN

Additionally, though not required, communities may wish to map any significant coastal features that exist within the municipality.



## DATA SOURCES

For more information on mapping for comprehensive plans, please visit [www.planning.ri.gov/publications/comprehensive-planning-materials.php](http://www.planning.ri.gov/publications/comprehensive-planning-materials.php).

The following RIGIS natural resource data sets are recommended for this standard:

| DATA SET NAME            | DOWNLOAD LINK | ADDITIONAL NOTES           |
|--------------------------|---------------|----------------------------|
| Lakes and Ponds (1:5000) |               | For mapping surface water. |

| DATA SET NAME                            | DOWNLOAD LINK                 | ADDITIONAL NOTES   |
|--|-------------------------------|--|
| Streams (1:5000)                         | <a href="#">Download here</a> | For mapping surface water.   |
| Coastal Waters (2014)                    | <a href="#">Download here</a> | For coastal communities only.  |
| Watershed Boundary Dataset               | <a href="#">Download here</a> | For watersheds. Municipalities have the option to use either the Hydrologic Unit Code Level 10 (HUC 10) or Hydrologic Unit Code Level 12 (HUC 12) data set.  |
| Sole Source Aquifers                     | <a href="#">Download here</a> | For aquifers   |
| Groundwater Recharge Areas               | <a href="#">Download here</a> | For aquifers   |
| Groundwater Reservoirs                   | <a href="#">Download here</a> | For aquifers   |
| Wellhead Protection Areas: Community     | <a href="#">Download here</a> | For aquifers   |
| Wellhead Protection Areas: Non-Community | <a href="#">Download here</a> | For aquifers   |
| Flood Hazard Areas                       | <a href="#">Download here</a> | For floodplains.   |
| Ecological Communities Classification    | <a href="#">Download here</a> | For wetlands and forested areas. Although 'Wetlands' and 'Forested Areas' are available in several RIGIS data sets, RI SPP recommends that only this data set be used for comprehensive plans.                             |
| Conservation Opportunity Areas           | <a href="#">Download here</a> | For habitats with high conservation value to Species of Greatest Conservation Need (SGCN), such as the largest intact and connected blocks of common habitats and uniquely rare, resilient, or productive natural systems. |
| Natural Heritage Areas                   | <a href="#">Download here</a> | For critical, uncommon or fragile wildlife habitats.   |

---

## STANDARD 2.2

### IDENTIFY EXISTING PERMANENTLY PROTECTED CONSERVATION AREAS (BOTH PUBLIC AND PRIVATE) ON A MAP.

---

The comprehensive plan must include a map of existing conservation areas. Municipalities may choose to show the mapping of conservation areas as a single map or multiple maps, depending on the community's needs.



#### CRAFT A BETTER PLAN

To aid in determining the best ways to protect significant natural resources in perpetuity, municipalities may wish to identify which conservation areas are owned by private organizations or land trusts. Municipalities may also wish to map conservation land that does not have permanent, legal protection but where the owners have expressed a "conservation intent" to preserve the land from development. Additionally, municipalities may wish to map the lands enrolled in the Farm, Forest, and Open Space Program that are only temporarily protected. If land that is not permanently protected is mapped, it should be clearly identified as such.



#### DATA SOURCES

The following RIGIS data sets are recommended for this standard:

| DATA SET NAME                              | DOWNLOAD LINK                 |
|--|-------------------------------|
| Conservation Lands: Municipal and NGO*     | <a href="#">Download Link</a> |
| Conservation Lands: State of Rhode Island* | <a href="#">Download Link</a> |

\*Please note: For complete coverage, the SCORP and both Conservation Lands data sets must be used in conjunction.

Additionally, communities may want to use the following data sources:

- Data from the local Tax Assessor.
- Data from local land trusts.

---

## STANDARD 2.3

ILLUSTRATE THE EFFECTS OF SEA LEVEL RISE ON SALTWATER MARSHES, INCLUDING POTENTIAL LOSSES AND MIGRATION AREAS, BY INCLUDING ONE OR MORE MAPS SHOWING:

- a. The marsh areas within the community that are likely to be lost in the event of 1', 3', and 5' of sea level rise; and
  - b. The areas within the community to which marsh is likely to migrate in the event of 1', 3', and 5' of sea level rise.
- 

When planning for natural resources within a comprehensive plan, the effects of sea level rise on marsh migration should be considered. Rhode Island's coastal wetlands provide critical nursery habitat for fisheries, play a key role in absorbing nutrients that would otherwise pollute waters, and provide important economic benefits for fisheries and tourism. In addition, coastal wetlands support recreational activities and help protect nearby areas from the damaging impacts of storm-driven waves and coastal flooding. Over the past 200 years, Rhode Island has lost over 50 percent of its saltwater marshes to human-made alterations, resulting in a loss of approximately 4,000 acres statewide. Today, many of the remaining coastal wetlands are being impacted by more frequent flooding due to sea level rise. These wetlands, especially tidal marshes, are very susceptible to impacts from climate change and accelerated sea level rise. As sea levels rise, existing marshes become continuously submerged and eventually convert to tidal flats or open water, while new marshes may begin to form farther upland where tidal ranges are more suitable. This process is often referred to as "marsh migration" or "marsh transgression."

To preserve wetlands against threats from accelerating sea level rise and increasing development, it is important to identify critical areas to target for protection, policies, and restoration efforts. The RI Coastal Resources Management Agency (CRMC) has adopted, for planning purposes, maps showing the most likely effects that sea level rise will have on Rhode Island's marshes. The Sea Level Affecting Marshes Model (SLAMM) maps are intended to assist communities in planning how to protect and restore marshes as more frequent flooding results in significant changes to existing marshes and the surrounding upland areas.

Identifying the areas within the community where marsh is likely to be lost and the areas where marsh is likely to exist in the future can assist in determining land conservation priorities and opportunities for marsh restoration. To the extent possible, communities should summarize the total acreage of marsh lost and upland marsh transition areas based on these maps for the three sea level rise scenarios.



For additional information including how to incorporate marsh migration considerations into land conservation priorities, see Standard 2.5. For information on including implementation actions within the comprehensive plan that address the effects of sea level rise on saltwater marshes, see Standard 2.8.



## DATA SOURCES

For more information on mapping for comprehensive plans, please visit [www.planning.ri.gov/publications/comprehensive-planning-materials.php](http://www.planning.ri.gov/publications/comprehensive-planning-materials.php)

The following RIGIS data set is recommended for this standard:

| DATA SET NAME                           | DOWNLOAD LINK                 |
|---|-------------------------------|
| Sea Level Affecting Marsh Model (SLAMM) | <a href="#">Download Link</a> |

---

## STANDARD 2.4

### IDENTIFY AND DISCUSS ANY PROMINENT ISSUES FACING THE MUNICIPALITY'S SIGNIFICANT NATURAL RESOURCES.

---

Mapping existing conservation areas and natural resources is the first step in assessing the issues facing these areas now and in the future. Once the community understands what it has it can better plan for the continued protection and restoration of its significant natural resources.

The comprehensive plan need only assess the issues facing the significant natural resources and natural resource areas within the municipality, meaning that the resource is notable due to the quality and/or quantity of the resource within the municipality. Therefore, this assessment should begin with an identification of the community's most significant natural resources. Table 2-1 highlights some of the natural resources and natural resource areas that may be considered significant.

The comprehensive plan must identify the municipality's significant natural resources. The following guiding questions may assist in determining which of the community's natural resources and resource areas should be considered significant:

- Which natural resources and resource areas contribute to the economic vitality of the municipality (e.g. for tourism, agriculture, fisheries, increased land values, etc.)?
- Which resources and resource areas are used recreationally? In what ways are resources used recreationally?
- Which resources and resource areas are important to preserve so that drinking water quality is maintained?
- Are there scenic landscapes and vistas that are important contributors to the character of the community?
- Which of the community's natural resources and resource areas help to protect against or mitigate the impacts of natural hazards, including flooding and high wind?
- Which resource areas are likely to contain or known to contain important plant and animal habitats?

Once the significant natural resources and natural resource areas have been identified, the comprehensive plan must discuss the issues that each resource is facing. When assessing the issues that the community's significant natural resources and natural resource areas face, consider the following guiding questions:

- What types of pollution are currently affecting significant natural resources? Is pollution, including pollution from land use activities such as stormwater runoff, on-site wastewater systems and other discharges, projected to worsen, get better or stay the same over the 20-year planning time frame?
- How does stormwater runoff affect significant natural resources?
- What issues will new development present for significant natural resources? What actions are planned to avoid or reduce impacts to protect or restore these resources?
- How is the quality of the natural resources expected to change over time given current and projected conditions?
- How are natural hazards and climate change anticipated to affect coastal areas, surface water, wetlands, habitat areas, and other types of natural resources?

**TABLE 2-1. EXAMPLES OF SIGNIFICANT NATURAL RESOURCES**

| NATURAL RESOURCE OR RESOURCE AREA  | CHARACTERISTICS OF A “SIGNIFICANT” RESOURCE   |
|--|---|
| Surface water and watersheds   | Serving public water supplies both within and outside of municipal boundaries   |
| Groundwater areas including aquifers, reservoirs, recharge areas, and wellhead protection zones      | Classified as “GAA” by the RI Department of Environmental Management and therefore suitable for drinking water without treatment  |
| Wetlands   | All wetland types and particularly those with flood storage capacity  |
| Floodplains  | Areas that would be inundated during storms with an annual chance of occurrence of 1% and .2% (100-year and 500-year storm events)  |
| Forested areas   | Large, contiguous forested tracks; forests known to be habitats or movement corridors for wildlife  |
| Agricultural soils   | Those classified as “Prime Agricultural” or “Soils of Statewide Significance” by the USDA Natural Resources Conservation Service  |
| Habitat areas  | Habitats of species listed as endangered, threatened or of special concern; habitats supporting economic functions, such as coastal fisheries or shellfish beds; habitats with high conservation value to Species of Greatest Conservation Need (SGCN), such as the largest intact and connected blocks of common habitats and uniquely rare, resilient, or productive natural systems. |
| Scenic landscapes  | Areas identified locally as having important scenic qualities or as critical to maintaining community character   |
| Coastal beaches and other coastal features, including salt ponds and marshes, as defined by the CRMC | Those with recreational, economic, habitat, flood protection or other value   |

- What specific issues are facing coastal areas and features?
- What specific issues are facing wetland areas?



**CRAFT A BETTER PLAN**

Municipalities may also wish to discuss how the significant issues are likely to change over the course of the 20-year planning horizon.

---

## STANDARD 2.5

### DISCUSS THE MUNICIPALITY'S PRIORITIES FOR LAND CONSERVATION.

---

The permanent protection of significant natural resources is both of prime importance to the State and offers multiple benefits to municipalities. Given this, municipalities should be proactive in thinking about the types of natural resources that are most in need of protection and the locations where conservation efforts would have the greatest benefit and impact.

To support the State's goals for natural resource protection, municipalities must determine their local priorities for land conservation, given their local context and significant resources, and formalize these priorities in the comprehensive plan. Outlining a municipal set of priorities for land conservation can assist with acquisition decisions, strengthen discussions with local land trusts and make a stronger case in grant applications.

The following guiding questions may assist in discussions when determining the municipality's priorities for land conservation measures:

- In which areas should the municipality focus its land conservation efforts?
- What types of lands are the most significant for preservation?
- Are there areas of the municipality in which multiple significant resources exist?
- How can land conservation assist in protecting the community's saltwater marshes given the anticipated effects of sea level rise?
- Are there areas of the municipality in which the issues facing natural resources are particularly significant?
- Is it important for the municipality to permanently protect lands that are currently only temporarily protected?
- Are there any specific natural resources or natural resource areas whose development would be particularly detrimental to the natural resource system, the community, the region or the State?
- Are there any specific natural resources or natural resource areas whose preservation would serve multiple purposes and/or values?

---

## STANDARD 2.6 (RECOMMENDATION)

### DISCUSS THE TECHNIQUES THAT ARE IN PLACE FOR MINIMIZING THE NEGATIVE IMPACTS OF DEVELOPMENT ON SIGNIFICANT NATURAL RESOURCES.

---

Many municipalities already have regulations, programs or other techniques in place for minimizing the negative impacts of development on significant natural resources. It is recommended that the comprehensive plan discuss any such techniques that may exist in the community and provide a general overview of their effectiveness. Such techniques could include:

- Low-impact development requirements;
- Green building requirements or incentives;
- Conservation or water protection overlay districts;
- Compact development incentives;
- Conservation and/or acquisition programs;
- Conservation subdivision requirements or incentives;
- Landscaping requirements;
- Community forest or tree management programs;
- Stormwater management and/or treatment requirements; and/or
- On-site wastewater management programs.



## DATA SOURCES

Communities may want to use the following data sources:

- Local ordinances, programs and policies.
- Discussions with local department heads.
- Discussion with other key stakeholders.

---

## STANDARD 2.7

### INCLUDE GOALS THAT EMBODY THE STATE'S GOALS FOR NATURAL RESOURCES AND POLICIES TO SUPPORT EACH GOAL.

---

The State's goals for natural resources focus on protection of significant natural resources through conservation and conscientious development practices. The State Guide Plan calls for the protection of many different types of natural resources, including wetlands, floodplains, forests, wildlife, fish and plant species, and the coastal region. The Rhode Island General Laws affirm the need to preserve, protect, and utilize the State's significant natural resources, calling for the conservation of land and resources using a variety of methods. In several places throughout the law, natural resources are cited as critical to the State's character, economy and vitality.

Comprehensive plans must include one or more goals that further the State's goals for natural resource conservation and policies to support each of the plan's goals. Each municipality should develop natural resource goals and policies that are appropriate to its context, significant natural resources and development expectations. Some municipalities choose to have a single, over-arching goal for natural resource protection, while others choose to provide a goal statement for each type of natural resource. Either option is acceptable and the community should determine which method will best serve the community's natural resource protection priorities.

To determine the natural resource goals and policies that may be appropriate for your municipality, consider the following guiding questions:

- How do the natural resources that exist within the municipality contribute to quality of life? Economic activity? Recreation? Other important community values?
- Which natural resource areas are most in need of protection?
- How do municipal decisions affect the natural resources that exist both within and outside of the municipality?



For more information on the difference between goals, policies and implementation actions, see Guidance Handbook #1 - The Comprehensive Plan 101.



#### SAMPLE GOALS

- Our natural resource systems, sensitive water resources and natural habitat are preserved and protected for future generations.
- Important natural resource areas, including wetlands, wildlife habitats, groundwater aquifers and salt marshes, will be protected.
- Protect and restore coastal and freshwater wetlands and improve water quality.



#### SAMPLE POLICIES

- Promote environmental sustainability and the stewardship of natural resources.
- Encourage acquisition of unique, fragile and scenic coastal areas.

- Encourage land management that provides opportunities for public waterfront access.
- Properly manage areas designated as significant habitats.
- Support integrated strategies to protect and restore natural systems with desirable land use practices and management programs.
- Support policies and measures to protect shellfish resources.
- Support continued initiatives to improve the water and habitat quality.
- Ensure that new facilities, infrastructure and development are sited to accommodate the migration of coastal wetlands as a result of sea level rise.
- Encourage use of native species and the control of invasive species in and around wetland complexes, and protect migration corridors for wildlife.
- Provide for conservation subdivisions on larger development sites, open space acquisition, and sensitive siting of competing land uses.
- Improve the water quality and natural functions of the harbor, rivers, ponds, streams, and other water bodies, and protect the natural integrity of adjacent land areas.
- Coordinate with neighboring municipalities on watershed issues.
- Evaluate and manage natural areas within a watershed framework.
- Ensure that all conservation easements are legally adequate, monitored, and enforced to maintain the resource value.
- Ensure that areas designated for stormwater management are adequately designated and protected to limit future degradation.

---

## STANDARD 2.8

Include implementation actions within the Implementation Program that address:

### THE PROTECTION AND MANAGEMENT OF NATURAL RESOURCES.

---

The comprehensive plan must include implementation actions that address protecting and managing significant natural resources. To fulfill this standard, actions could be included that seek to preserve additional lands that are not currently under conservation and/or, if such lands exist within the municipality, to permanently protect existing conservation areas whose conservation is not currently permanent.

There are many actions that can be used to protect and manage natural resources, including providing for conservation developments, dedicating funding to acquisition and working with a local land trust. The community should decide which actions best suit their needs, based on the assessments completed. Some additional guiding questions that could be considered when determining the actions that are appropriate include:

- What programs are currently in place to conserve significant natural resources? How can these programs be better utilized? How can these programs be adjusted to ensure permanent protection?
- Are there organizations within the municipality that could become partners in conservation efforts?
- How can the municipality support the efforts of the local land trust?
- How can land conservation aid in the protection of the community's saltwater marshes given the anticipated effects of sea level rise?
- With whom can the municipality partner to restore saltwater marshes that are projected to be lost due to sea level rise?



### SAMPLE ACTIONS

- Using the Sea Level Affecting Marshes Model (SLAMM) maps, incorporate maps and goals of SLAMM project into local policies, regulations, and municipal operations.
- Incorporate sea level rise projections and salt marsh migration data into criteria for acquisition, easements, protection, and restoration.
- Work with state and non-governmental organization (NGO) partners to develop appropriate management plans which could include easements, acquisition, preservation, restoration, or management for tidal wetlands to preserve the ecological integrity and functionality of the natural systems.
- Provide education to municipal residents on the values and importance of protection and restoration of water quality and natural areas in order to generate support for the protection of these resources.
- Work with state and NGO partners to identify restoration opportunities to ensure long term viable habitats, including the local Land Conservancy, The Nature Conservancy, the local Conservation Commission, Save the Bay, and the Narragansett Bay Estuarine Research Reserve.

- Identify new areas for conservation within the municipality that provide an ecosystem services function.
- Evaluate ecosystem services to reduce impacts from flooding and increase habitat function, terrestrial and aquatic, for marine fisheries and water quality and implement conservation actions.
- Identify and prioritize specific parcels of land for acquisition, development rights, foreclosing right of redemption (tax sale properties), conservation easements for farmland preservation, and open space purposes.
- Adopt Low Impact Development Standards for new development, substantial renovations, and undersized properties seeking dimensional variances.
- Acquire land and conservation easements to preserve critical wildlife habitat and protect water quality.

---

### SECTION 3. CRAFT A BETTER PLAN

---

---

## RECOMMENDATION 2.9

### ASSESS THE IMPLICATIONS OF EXISTING SOIL HYDROLOGIC CONDITIONS ON STORMWATER INFRASTRUCTURE NEEDS

---

Rhode Island contains a variety of soil types, each with different characteristics and conditions. The hydrologic condition of a soil refers to the rate at which the soil allows rainfall to be absorbed into the ground and the amount of runoff that is likely to be produced. Rhode Island's soils have been grouped into four hydrologic soil groups, groups A through D, with A being the most permeable. The four hydrologic soil groups are used to estimate the rate and volume of runoff from rainfall.

Soil hydrologic groups are used to solve hydrologic problems in watershed planning, flood protection, and for planning or designing stormwater management practices with new construction and redevelopment. Hydrologic groups are used in the Rhode Island Stormwater Design and Installation Standards Manual to determine the required infiltration volume and in siting and design of both vegetated and structural stormwater practices.

For a comprehensive plan, hydrologic soil groups can be used to identify areas in which the spread of impervious surfaces may be especially detrimental to the surrounding ecosystem. Areas in which soils are present that are likely to cause a large amount of runoff, hydrologic soil groups C and D, will have different needs for stormwater management. Municipalities should consider the areas in which the existing soil hydrologic conditions warrant additional policies and/or regulations and should pay special attention to areas where hydrologic soil conditions overlap with slope, vegetative cover and impervious surface concerns.

---

## RECOMMENDATION 2.10

Include implementation actions within the Implementation Program that address:

### MINIMIZING THE NEGATIVE IMPACTS OF DEVELOPMENT ON SIGNIFICANT NATURAL RESOURCES.

---

An important aspect of protecting significant natural resources is minimizing the negative impacts of development on such resources. The required assessments should assist the municipality in determining the issues that face significant natural resources and the effectiveness of current programs. Based on the results of these assessments, the community should determine and the comprehensive plan should include implementation actions that best serve the natural resource protection goal of minimizing the impacts of development. To determine which implementation actions would be appropriate, the community should consider the following guiding questions:

- How can existing techniques for minimizing the negative impacts of development on significant natural resources be improved?
- Are any of the issues facing significant natural resources either directly or indirectly related to development practices?
- Could amendments be made to the zoning ordinance or subdivision and land development regulations to minimize developmental impacts?



### SAMPLE ACTIONS

- Encourage the use of native species and the control of invasive species in and around wetland complexes, and protect migration corridors for wildlife.
- Evaluate ecosystem services to reduce impacts from flooding and increase habitat function, terrestrial and aquatic, for marine fisheries and water quality and implement conservation actions.
- Preserve open space through the promotion of conservation subdivisions on larger development sites, open space acquisition, and sensitive siting of competing land uses.
- Adopt Low Impact Development Standards for new development, substantial renovations, and undersized properties seeking dimensional variances.
- Acquire land and conservation easements to preserve critical wildlife habitat and protect water quality.